

Joaquín J. García

Atlas of Salivary Gland Pathology



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Dedicated to Qwest, Arolyn, & the Queen Bee . . .

Preface

The incidence of salivary gland cancer is relatively low, affecting approximately 8 per 100,000 persons in the United States each year. Since benign and malignant salivary gland neoplasms commonly share overlapping clinical, radiologic, and pathologic features, a subset of cases continues to pose diagnostic challenges to head and neck specialists. Misclassification may pose patient care challenges, including undertreatment or overtreatment. The *Atlas of Salivary Gland Pathology* represents a gross and microscopic visual tour of salivary gland neoplasms for aspiring and practicing diagnosticians.

Rochester, MN, USA

Joaquín J. García, MD

Contents

1	Gross Anatomy	1
2	Microscopic Anatomy	9
3	Intraoperative Examination.....	15
4	Gross Examination	21
5	Microscopic Examination.....	29
6	Acinic Cell Carcinoma	37
7	Adenoid Cystic Carcinoma	47
8	Basal Cell Adenoma	57
9	Basal Cell Adenocarcinoma	65
10	Canalicular Adenoma	73
11	Carcinosarcoma	79
12	Clear Cell Carcinoma	85
13	Epithelial-Myoepithelial Carcinoma.....	91
14	Intraductal Carcinoma.....	99
15	Lymphadenoma.....	107
16	Lymphoepithelial Carcinoma	113
17	Mucoepidermoid Carcinoma.....	119
18	Myoepithelioma.....	129
19	Myoepithelial Carcinoma.....	135
20	Oncocytoma	141
21	Oncocytic Carcinoma	149
22	Pleomorphic Adenoma	153
23	Pleomorphic Adenoma, Carcinoma Ex.....	161
24	Polymorphous Adenocarcinoma	171
25	Salivary Duct Carcinoma.....	179
26	Secretory Carcinoma	187
27	Small Cell Neuroendocrine Carcinoma	195
28	Warthin's Tumor	203
	Index.....	209

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Gross Anatomy

1

Major salivary glands are visible as three paired organs: *parotid*, *submandibular*, and *sublingual glands*. The parotid gland is, for practical purposes, divided into superficial and deep lobes. The facial nerve courses between the superficial and deep lobes, serving as a surgical landmark. *Stensen's duct*, formed by the convergence of several excretory ducts within the parotid gland, empties into oral cavity buccal mucosa opposite the maxillary second molar. The subman-

dibular gland is located in the submandibular triangle and empties glandular secretions into the anterior floor of mouth by way of *Wharton's duct*. Lastly, the sublingual gland is situated in the lingual sulcus of the floor of mouth and empties into the oral cavity via *Bartholin's duct*.

Minor salivary glands, distributed widely throughout the mucosa and submucosa of the upper aerodigestive tract, are typically grossly inapparent (Figs. 1.1–1.8).

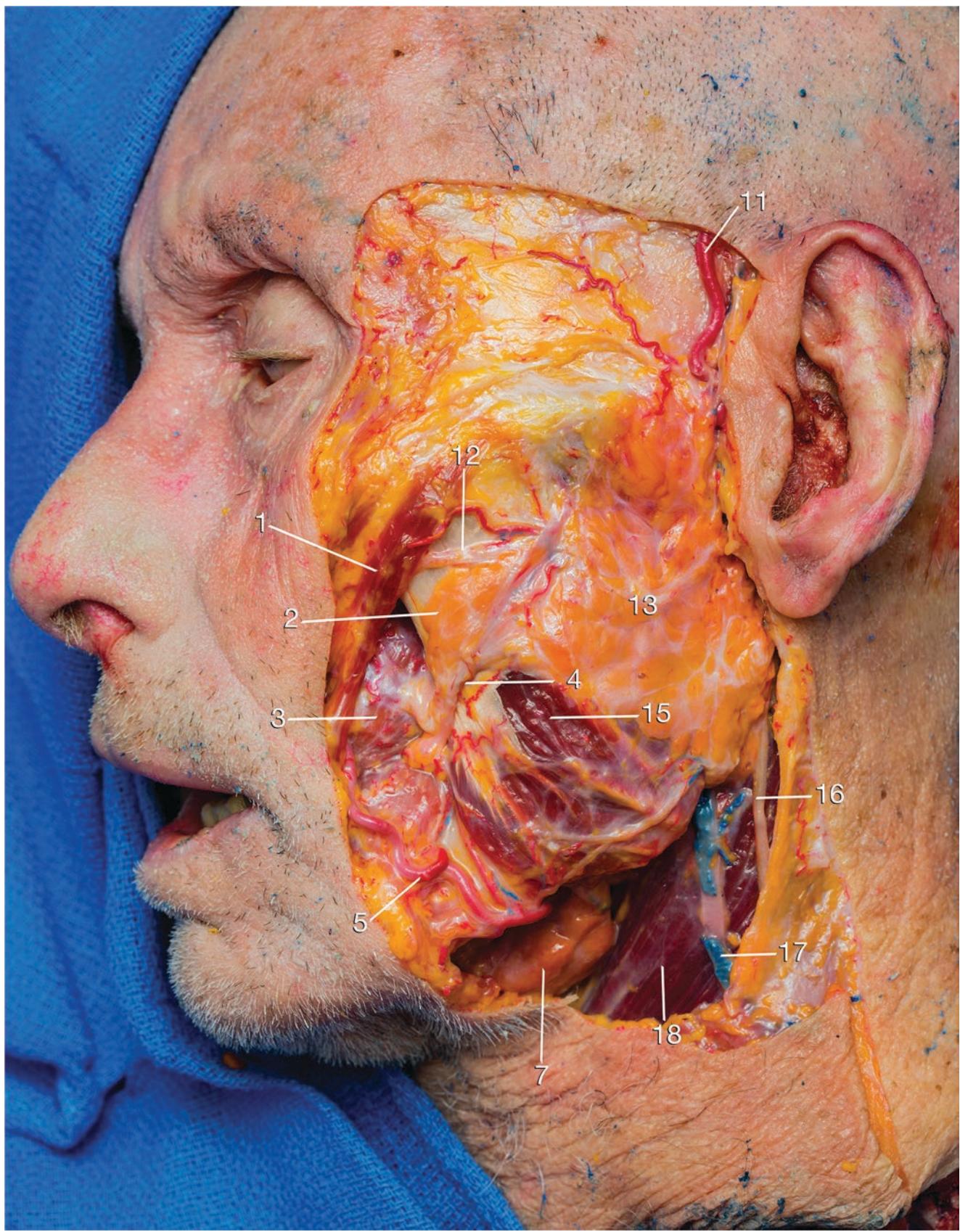


Fig. 1.1 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 1—Zygomaticus major muscle, 2—Accessory parotid gland, 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 11—Superficial temporal artery, 12—Zygomatic branch of facial nerve, 13—Parotid gland, superficial lobe, 15—Masseter muscle, 16—Great auricular nerve, 17—External jugular vein, 18—Sternocleidomastoid muscle



Fig. 1.2 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 1—Zygomaticus major muscle, 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 11—Superficial temporal artery, 12—Zygomatic branch of facial nerve, 15—Masseter muscle, 16—Great auricular nerve, 17—External jugular vein, 18—Sternocleidomastoid muscle

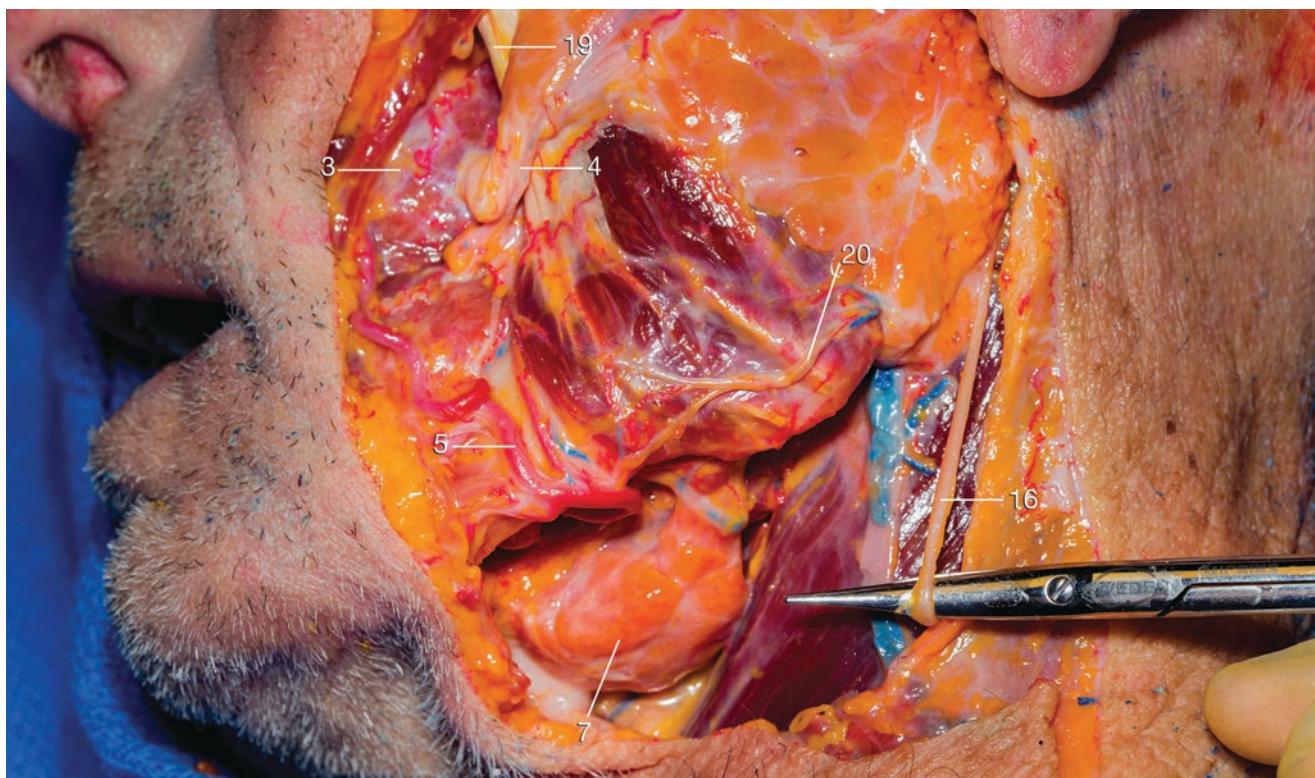


Fig. 1.3 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 3—Buccinator muscle, 4—Stensen’s duct, 5—Facial artery, 7—Submandibular gland, 16—Great auricular nerve, 19—Tendon of masseter muscle, 20—Marginal mandibular branch of facial nerve

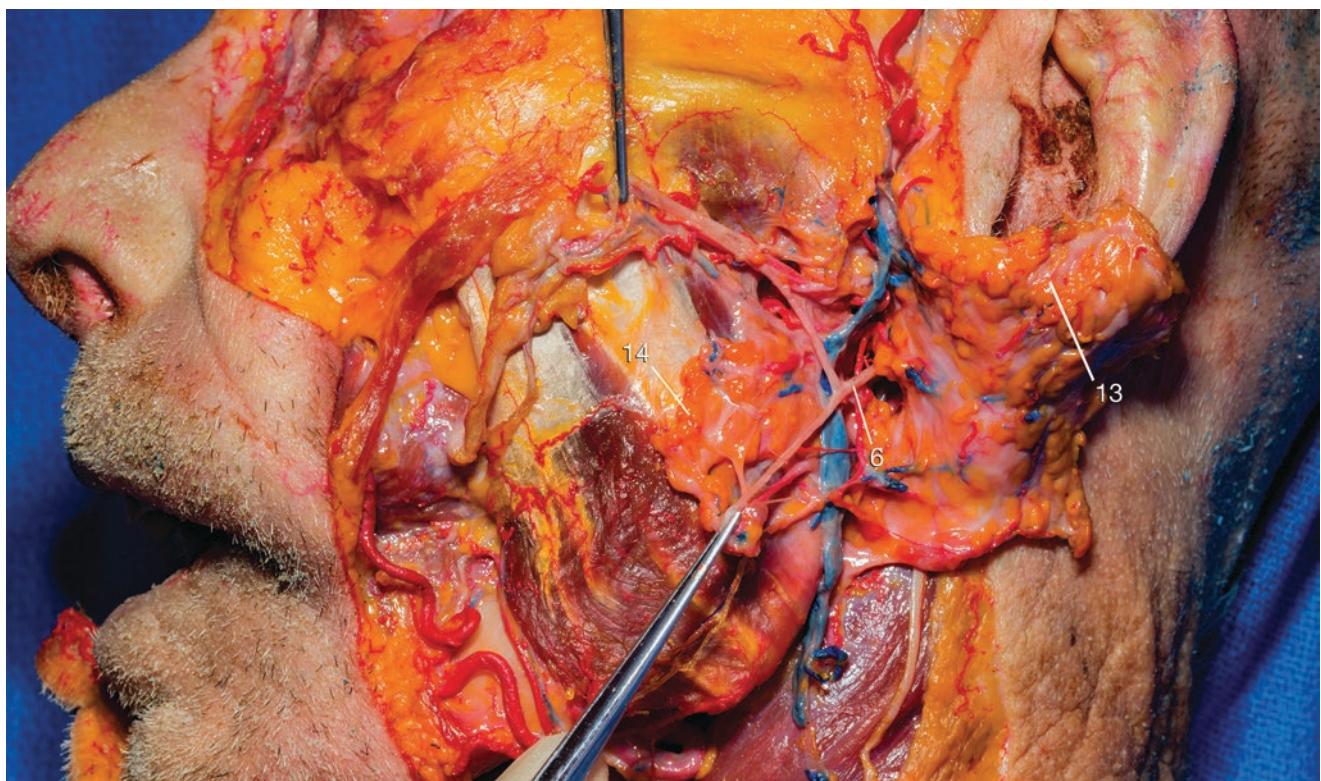


Fig. 1.4 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 6—Buccal branch of facial nerve, 13—Parotid gland, superficial lobe, 14—Parotid gland, deep lobe

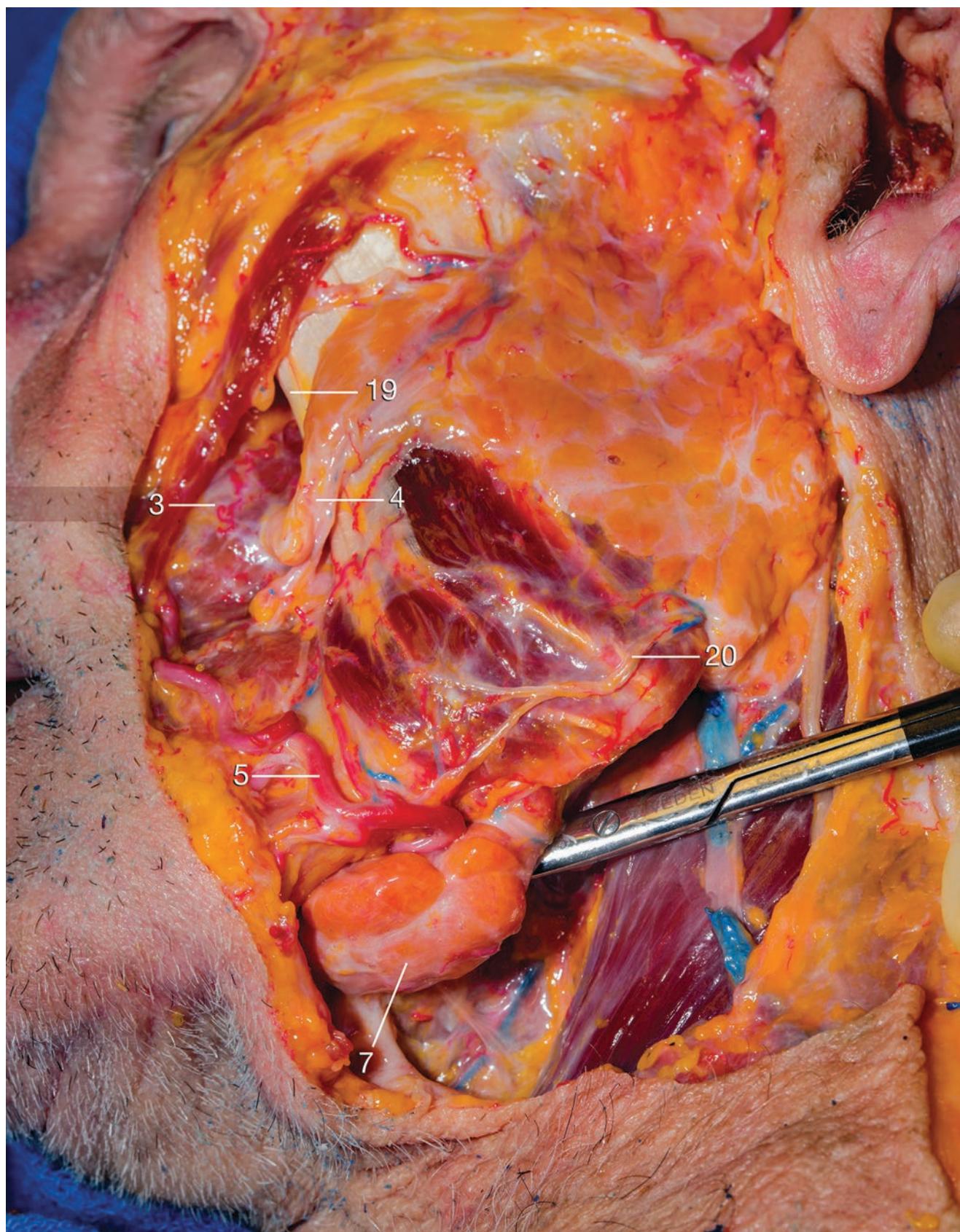


Fig. 1.5 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 19—Tendon of masseter muscle, 20—Marginal mandibular branch of facial nerve

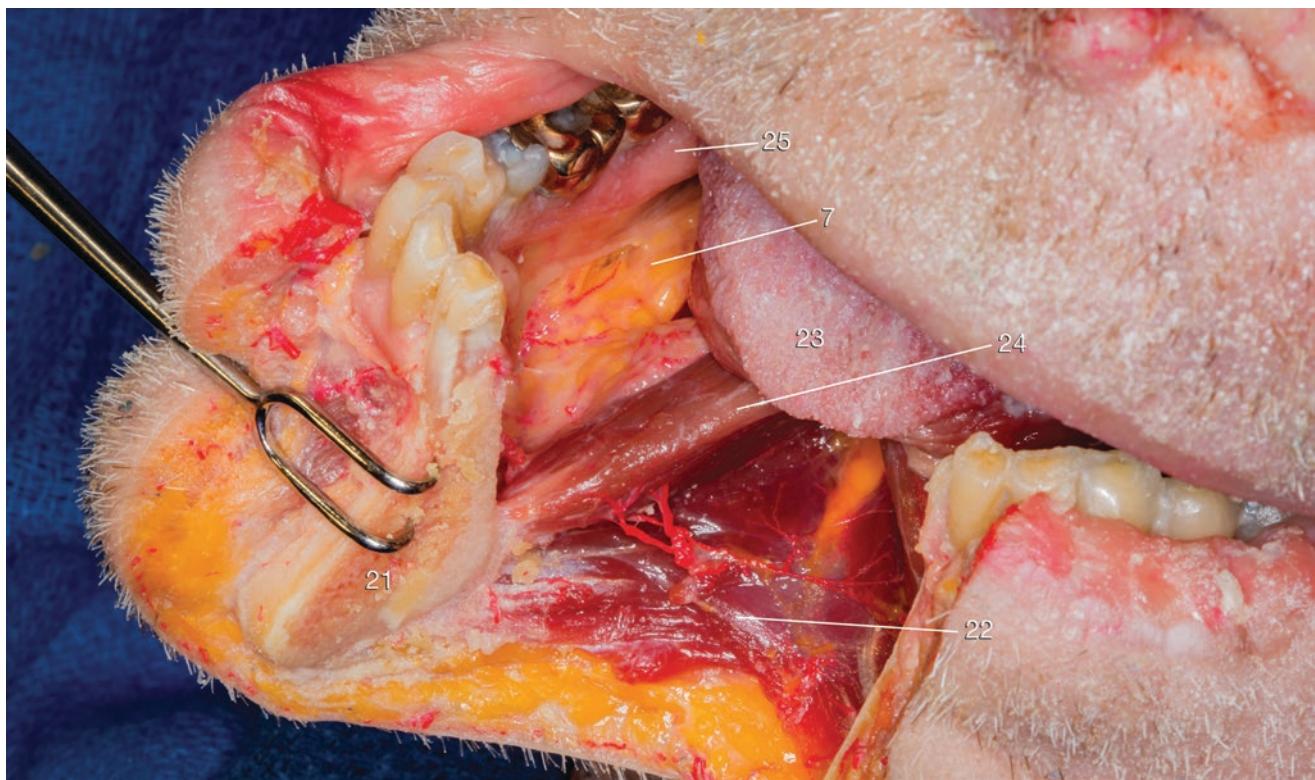


Fig. 1.6 (Gross Anatomy) Anatomic relationships of submandibular gland. 7—Submandibular gland, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue, 24—Geniohyoid muscle, 25—Gingival mucosa

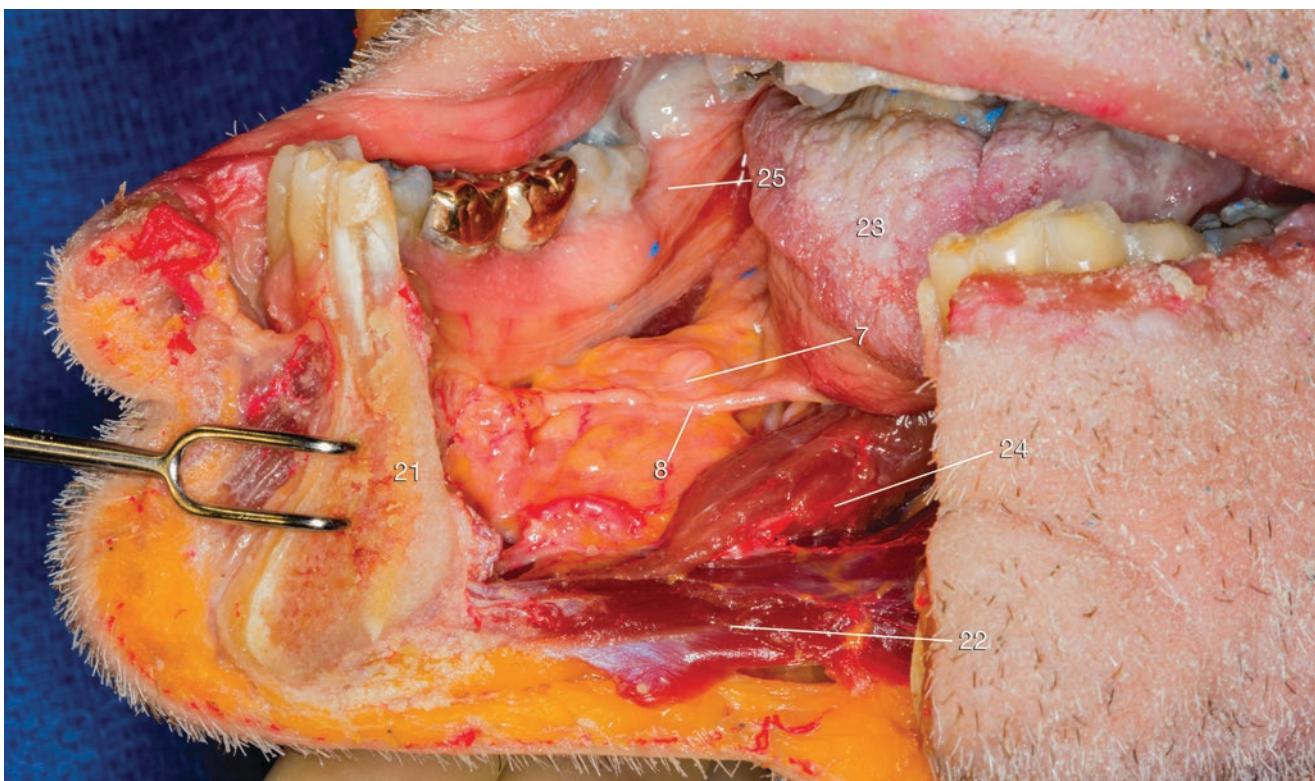


Fig. 1.7 (Gross Anatomy) Anatomic relationships of submandibular gland. 7—Submandibular gland, 8—Wharton's duct, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue, 24—Geniohyoid muscle, 25—Gingival mucosa

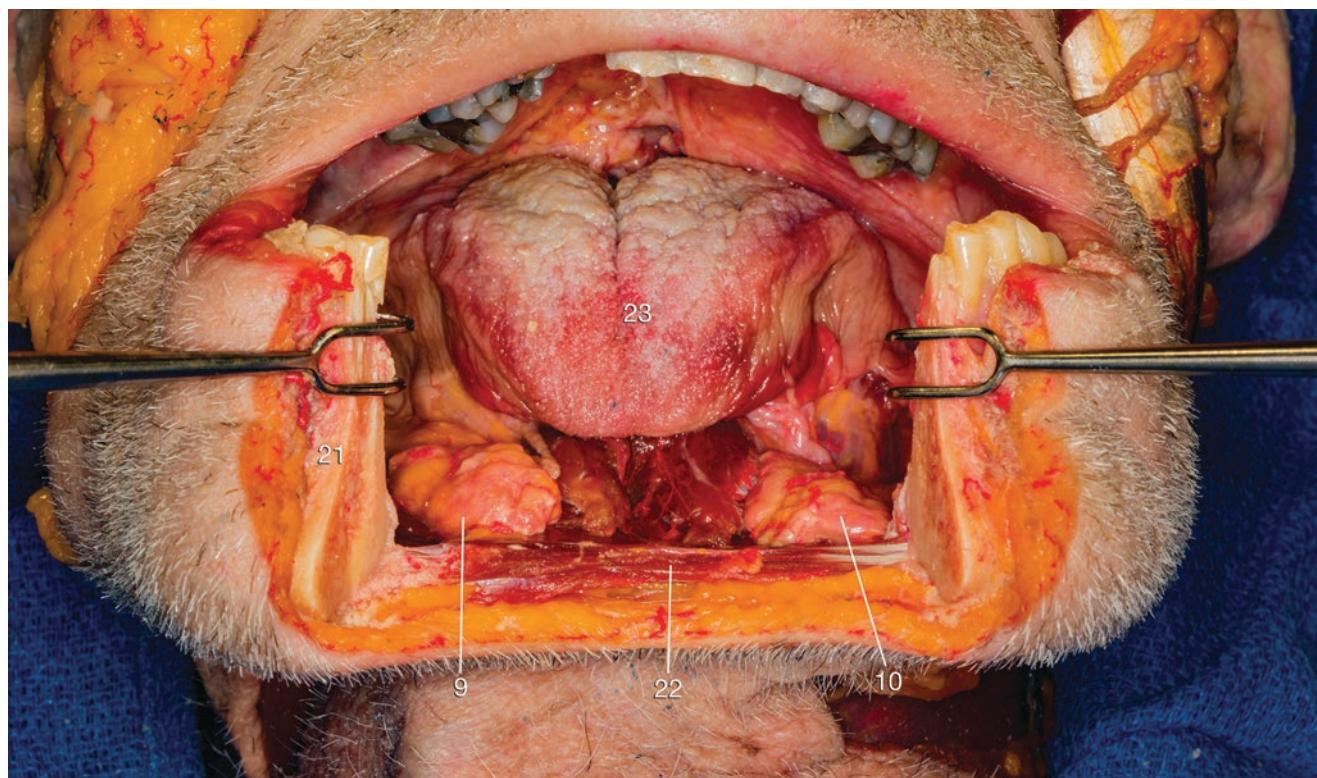


Fig. 1.8 (Gross Anatomy) Anatomic relationships of sublingual glands. 9—Sublingual gland, right, 10—Sublingual gland, left, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue

Suggested Reading

Standring S. Section 4: head and neck. In: Standring S, editor. Gray's anatomy: the anatomical basis of clinical practice. 40th ed. Edinburgh: Churchill Livingstone/Elsevier; 2008. p. 467–95.



Microscopic Anatomy

2

Salivary gland tissue contains two types of secretory cells: *serous* and *mucous*. The relative distribution of serous and mucous cells varies tremendously between parotid, submandibular, and sublingual glands. Parotid gland secretory units are lined primarily by serous cells and produce a watery secretion. Submandibular gland secretory units have a higher density of mucous cells and produce a secretion of intermediate consistency. Sublingual gland secretory units have the highest density of mucous cells and produce a viscous secretion. *Myoepithelial cells* circumferentially envelop secretory acini and intercalated ducts to aid in secretion.

Terminal secretory units lead into a series of ducts with diverse histomorphologic and physiologic attributes. *Intercalated ducts* are most proximal to the secretory unit

and lined by cuboidal cells. Intercalated ducts lead to *striated ducts*, lined by eosinophilic columnar cells and named after the striated appearance caused by prominent basal plasma membrane folds and mitochondria. Lastly, interlobular and extraglandular *excretory ducts* are lined by pseudostratified columnar cells and converge upon one another before leading to Stensen's, Wharton's, or Bartholin's ducts.

Minor salivary glands are composed of serous and mucous cells arranged in lobules within the mucosa and submucosa of the upper aerodigestive tract. Given that most of these glands contribute little, if anything, to saliva, the term *submucosal seromucinous glands* is also used (Figs. 2.1–2.15).

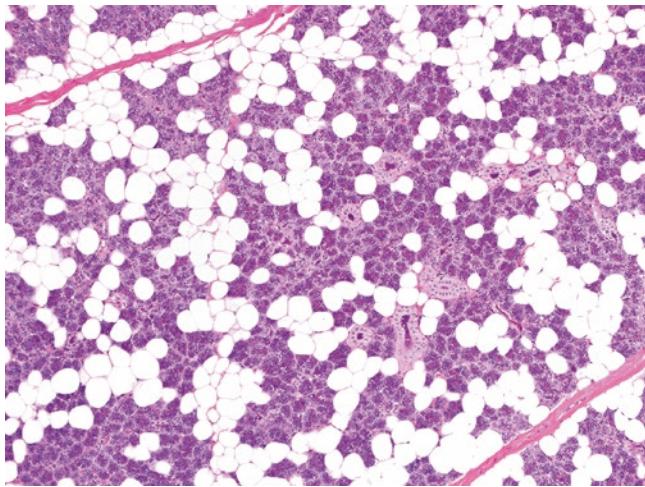


Fig. 2.1 (H&E, 100×) Parotid gland, lobules

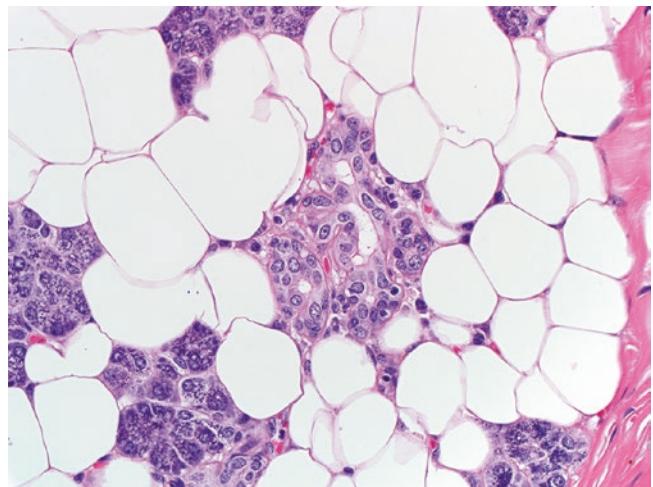


Fig. 2.4 (H&E, 400×) Parotid gland, intercalated ducts

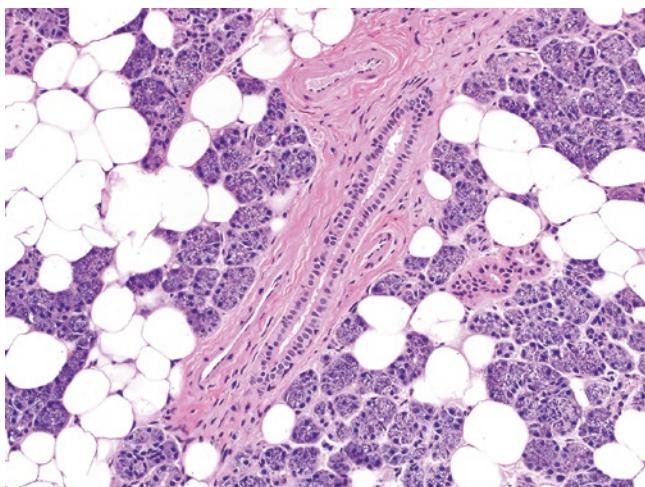


Fig. 2.2 (H&E, 200×) Parotid gland, excretory duct

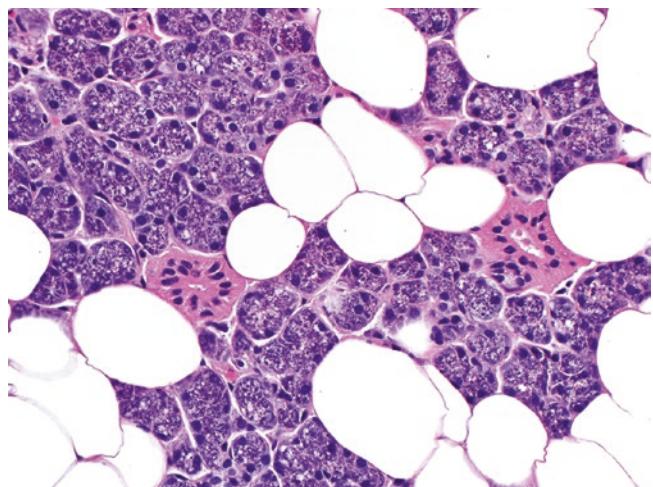


Fig. 2.5 (H&E, 400×) Parotid gland, serous acini

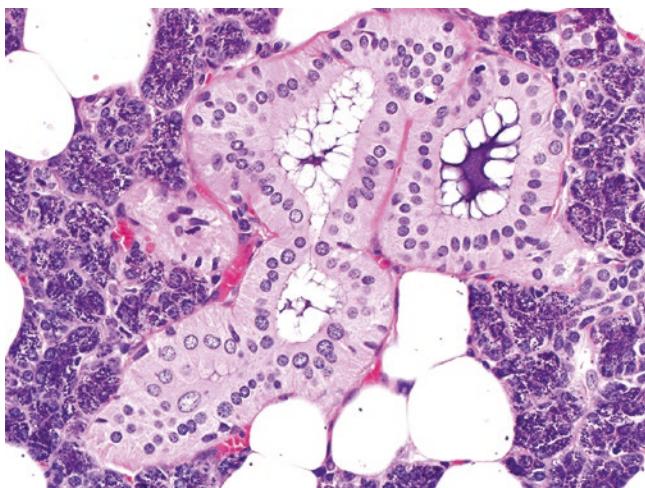


Fig. 2.3 (H&E, 400×) Parotid gland, striated ducts

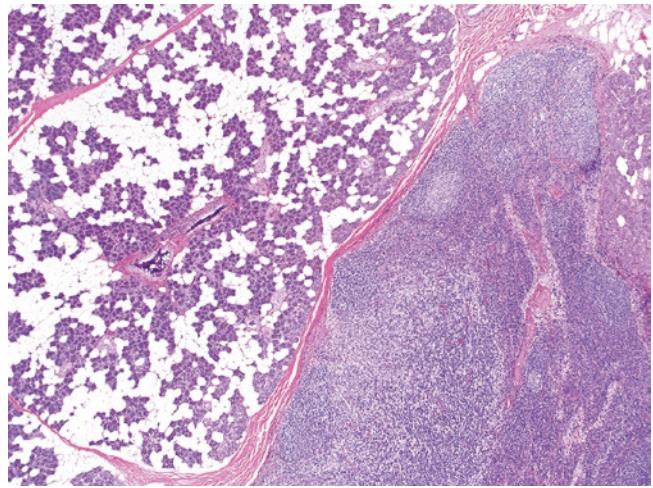


Fig. 2.6 (H&E, 40×) Parotid gland, intraparotid lymph node

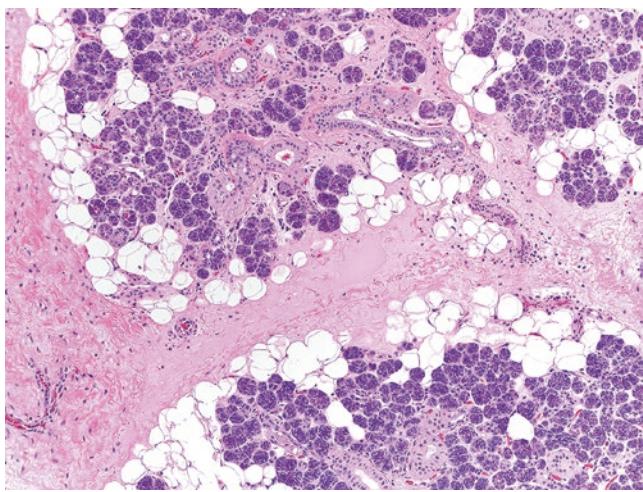


Fig. 2.7 (H&E, 100×) Submandibular gland, lobules

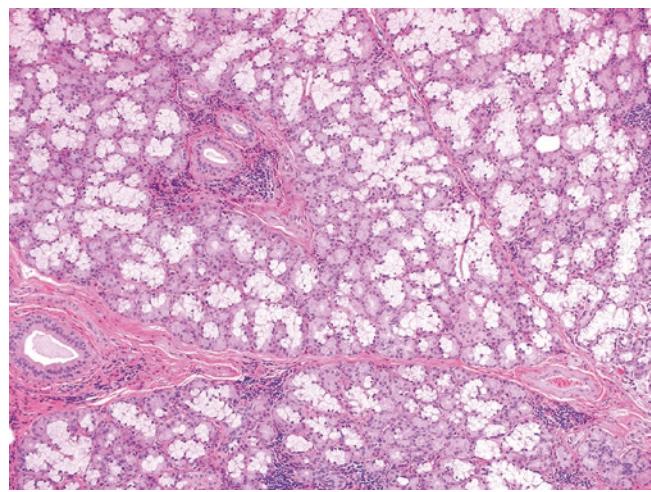


Fig. 2.10 (H&E, 100×) Sublingual gland, lobules

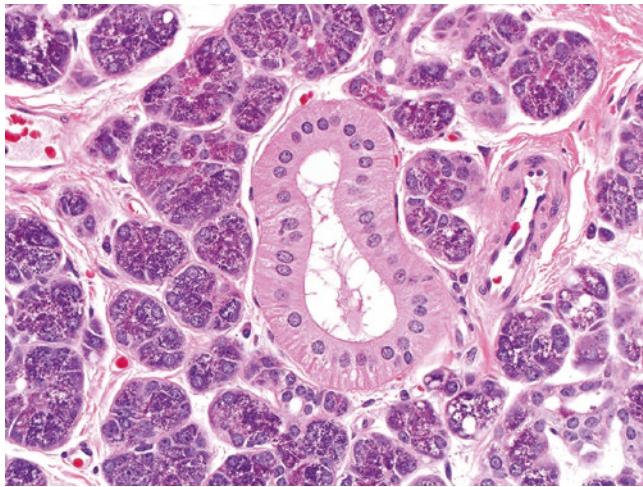


Fig. 2.8 (H&E, 400×) Submandibular gland, striated duct

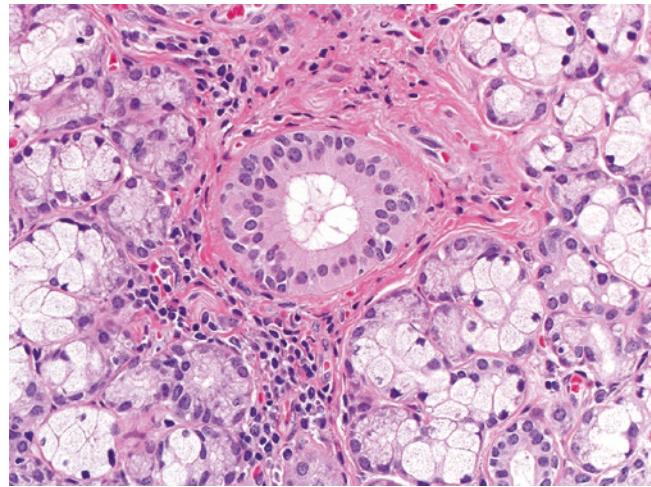


Fig. 2.11 (H&E, 400×) Sublingual gland, striated duct

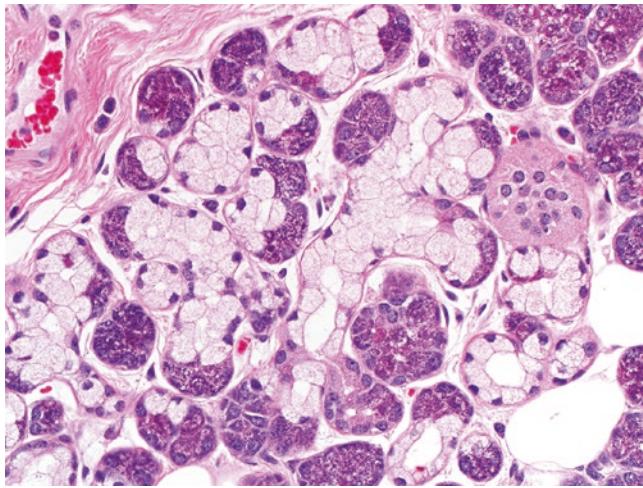


Fig. 2.9 (H&E, 400×) Submandibular gland, seromucinous acini (serous demilunes)

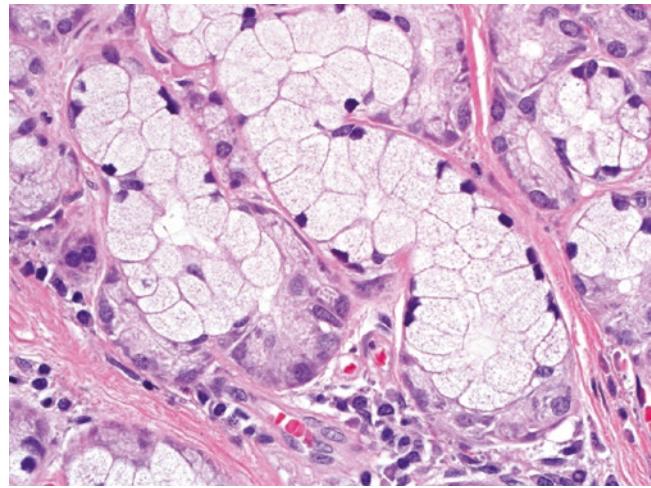


Fig. 2.12 (H&E, 600×) Sublingual gland, mucinous acini

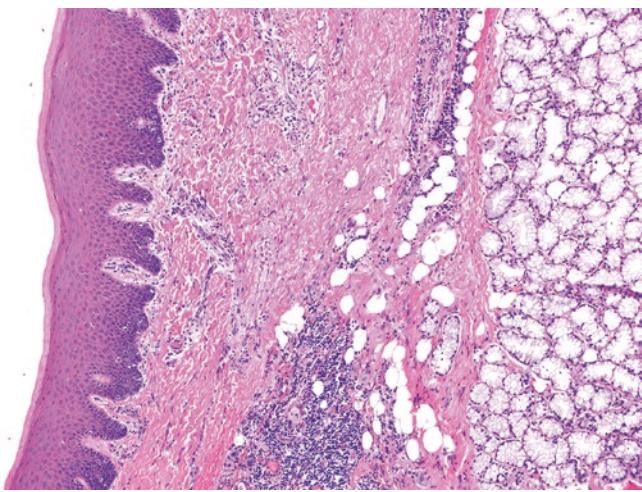


Fig. 2.13 (H&E, 100×) Palate, lobules

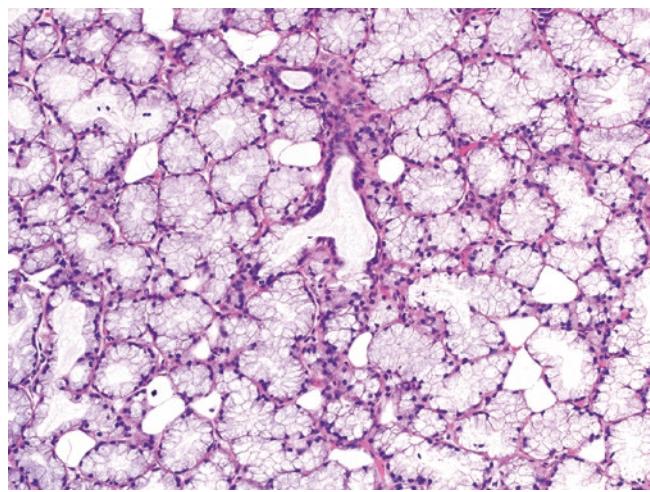


Fig. 2.15 (H&E, 400×) Palate, mucinous acini

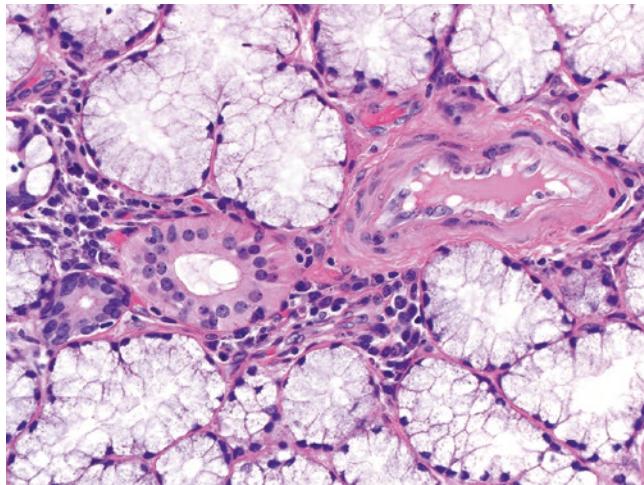


Fig. 2.14 (H&E, 200×) Palate, striated duct

Suggested Reading

Mill SE. Histology for Pathologists. 4th ed. Philadelphia: Lippincott Williams & Wilkins; 2012. p. 477–502.

Young B, Lowe JS, Stevens A, Heath JW. Wheater's functional histology: a text and colour atlas. 5th ed. Edinburgh: Churchill Livingstone/Elsevier; 2006. p. 251–62.



Intraoperative Examination

3

The complexity of head and neck anatomy and biologic heterogeneity of salivary gland neoplasms present several challenges to surgeons. Surgical management may be further complicated by the need to preserve function and meet

cosmetic expectations. In the setting of clear surgical margins, benign salivary gland parenchyma or capsule surround the neoplasm (Figs. 3.1–3.7).

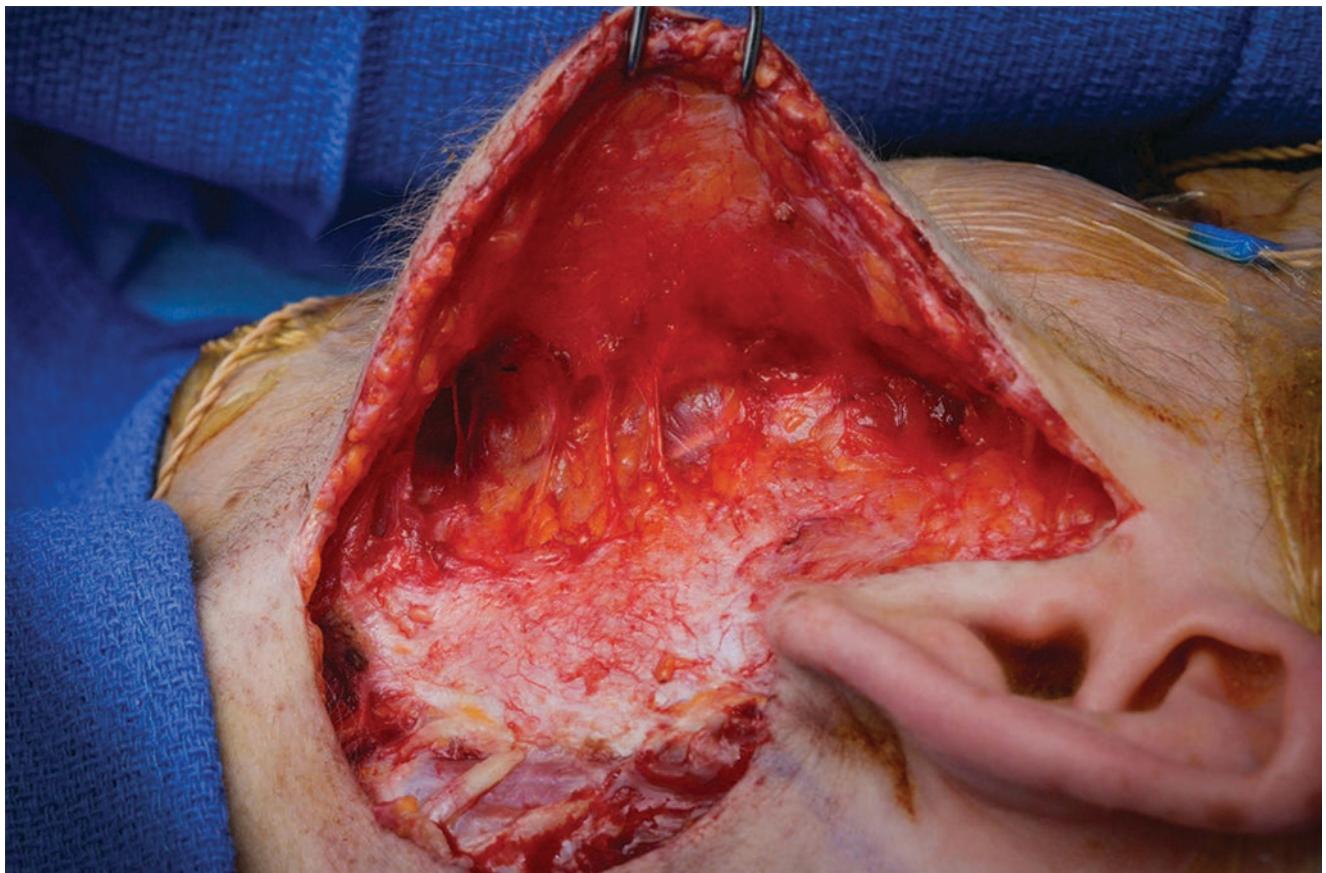


Fig. 3.1 (Intraoperative examination) Parotid gland, fascia intact

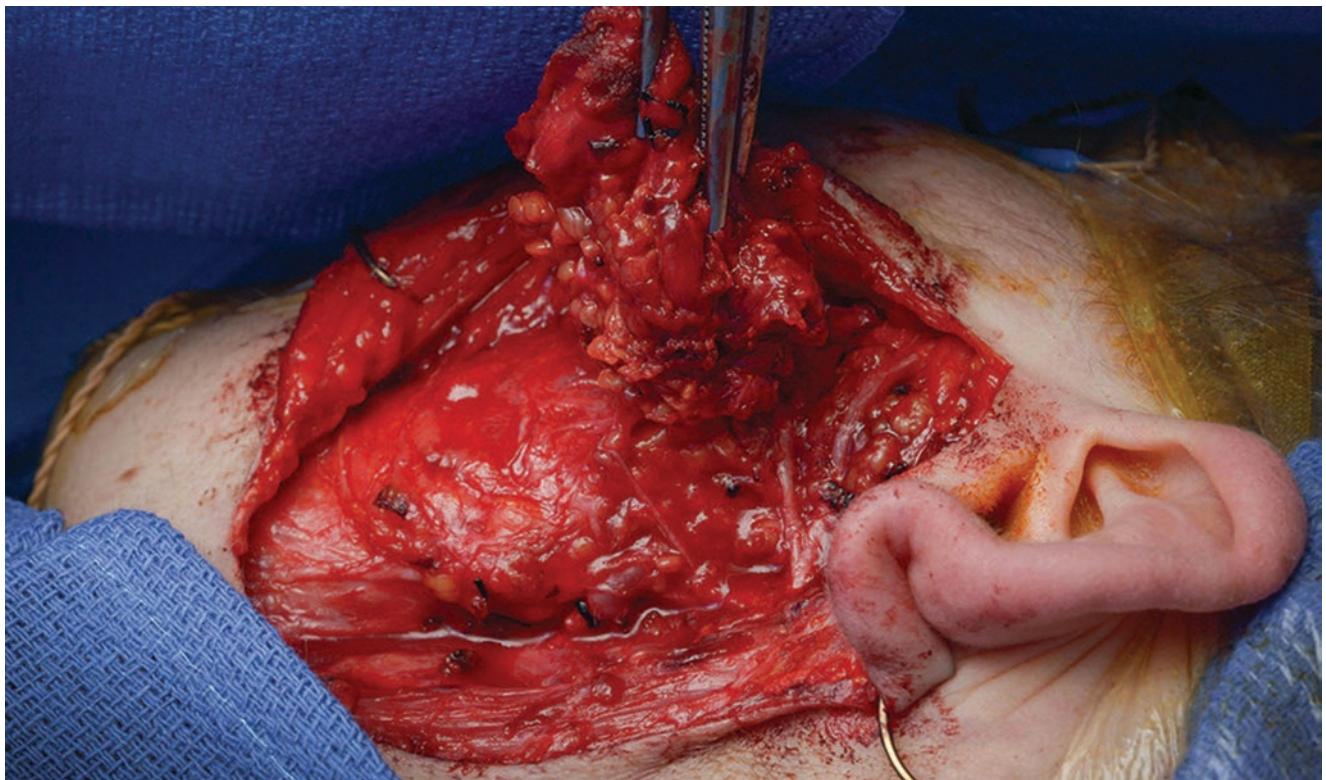


Fig. 3.2 (Intraoperative examination) Parotid gland, superficial lobe reflected

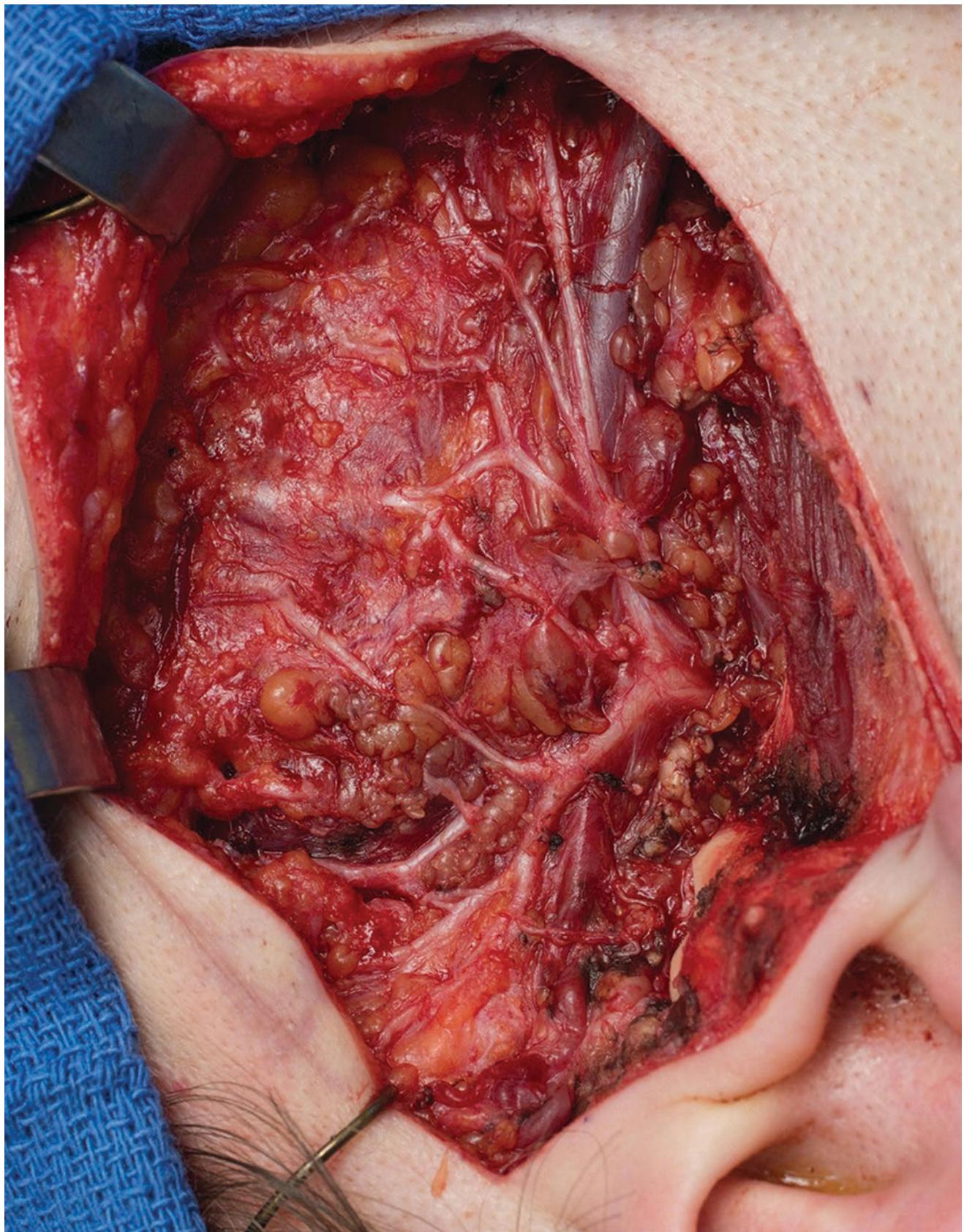


Fig. 3.3 (Intraoperative examination) Parotid gland, superficial lobe removed



Fig. 3.4 (Intraoperative examination) Parotid gland, deep lobe removed

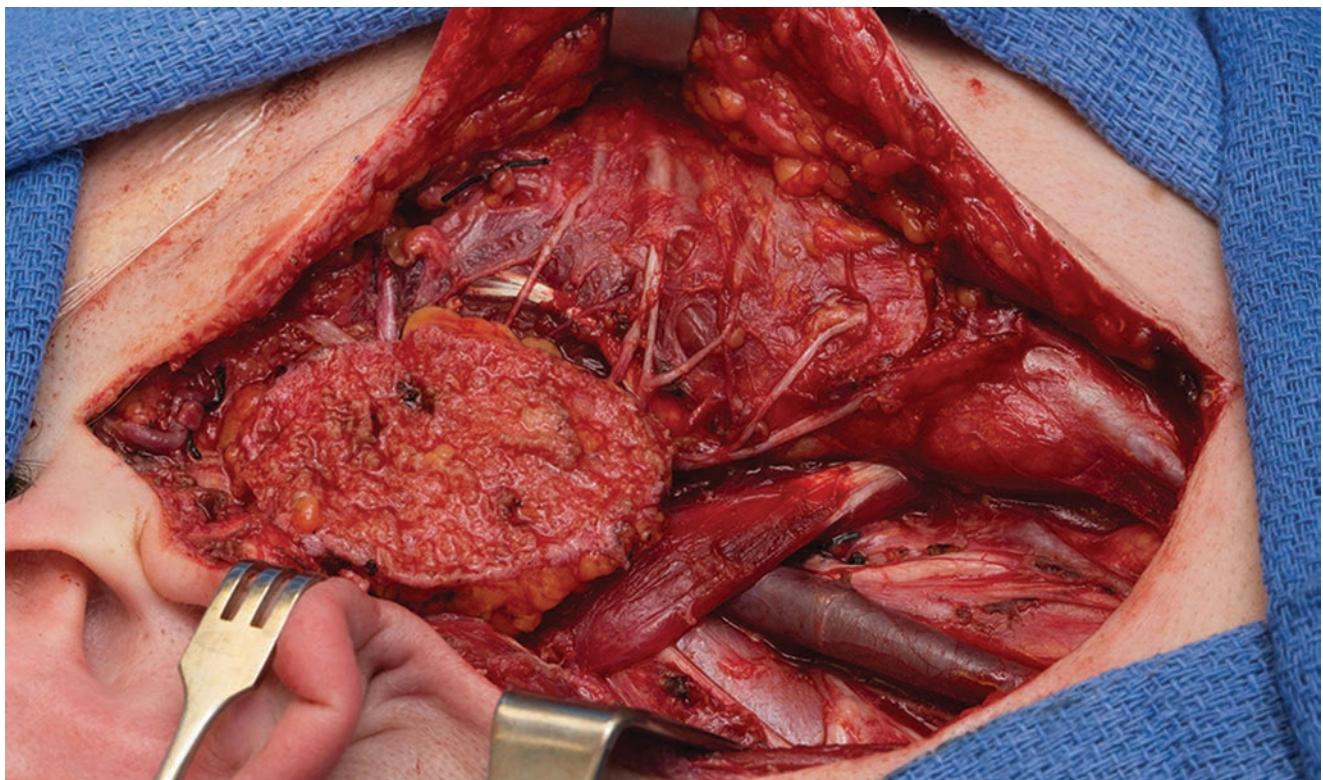


Fig. 3.5 (Intraoperative examination) Parotid gland, abdominal dermal fat graft

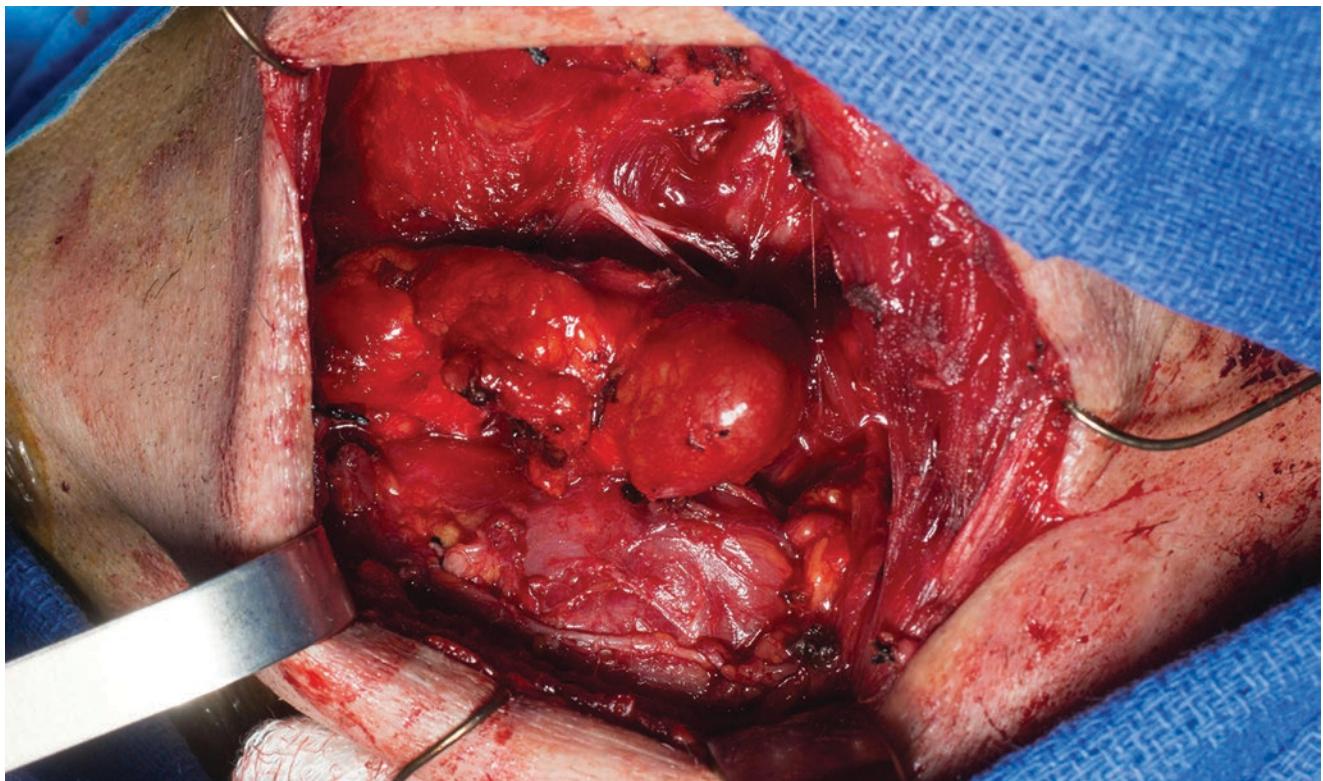


Fig. 3.6 (Intraoperative examination) Submandibular gland, submandibular triangle

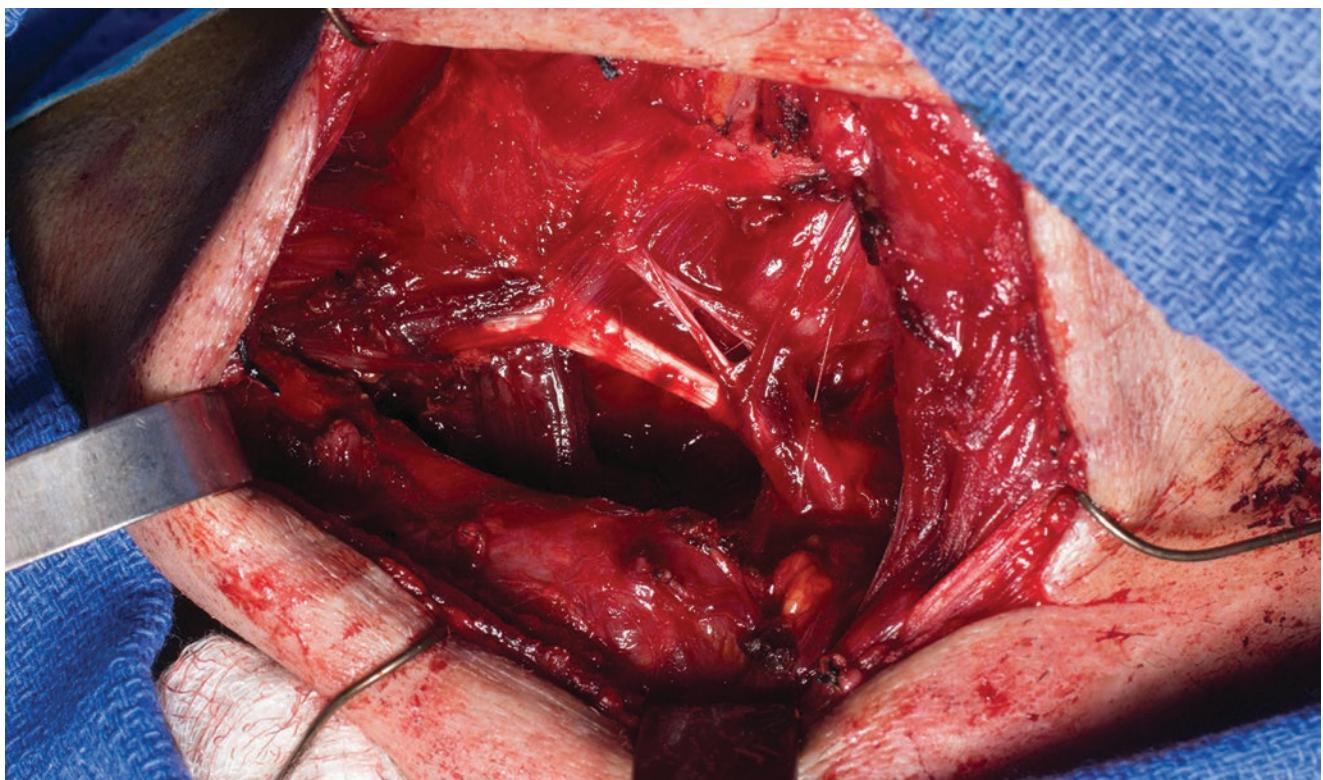


Fig. 3.7 (Intraoperative examination) Submandibular gland, removed



Gross Examination

4

Comprehensive gross examination of a salivary gland neoplasm is often requisite to its accurate classification. Although benign and malignant neoplasms routinely mimic one another grossly, visual inspection directs appropriate tissue sampling for microscopic examination. Some of the commonly encountered gross appearances include the following (Figs. 4.1–4.36):

- *Encapsulated*
- *Circumscribed*
- *Nodular*
- *Infiltrative*
- *Chondroid*
- *Oncocytic*
- *Hemorrhagic*
- *Cystic*
- *Necrotic*

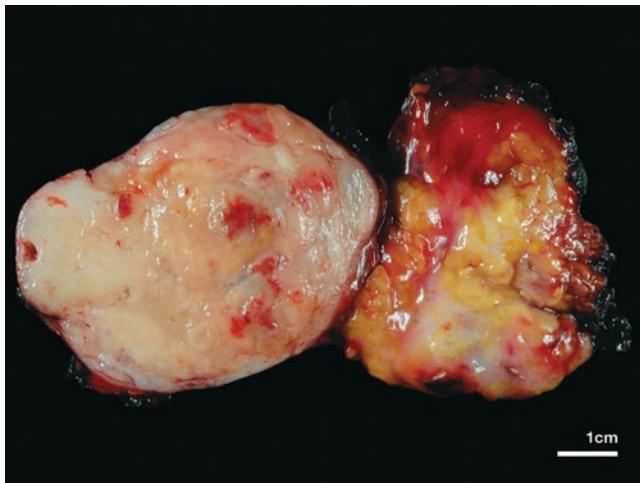


Fig. 4.1 (Gross examination) Encapsulated, pleomorphic adenoma

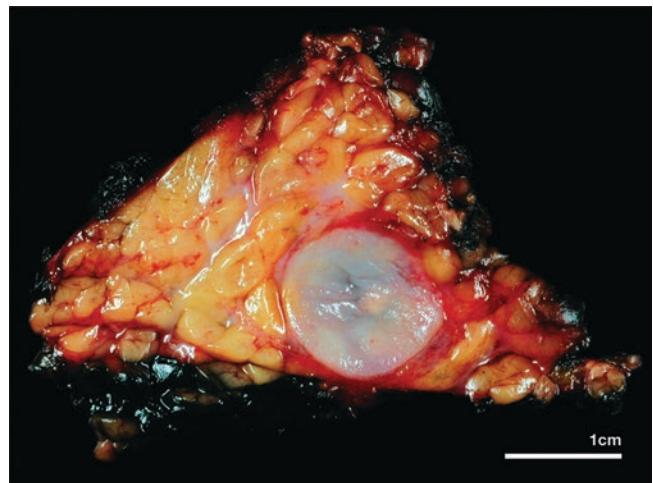


Fig. 4.4 (Gross examination) Circumscribed, basal cell adenoma



Fig. 4.2 (Gross examination) Encapsulated, carcinoma ex pleomorphic adenoma

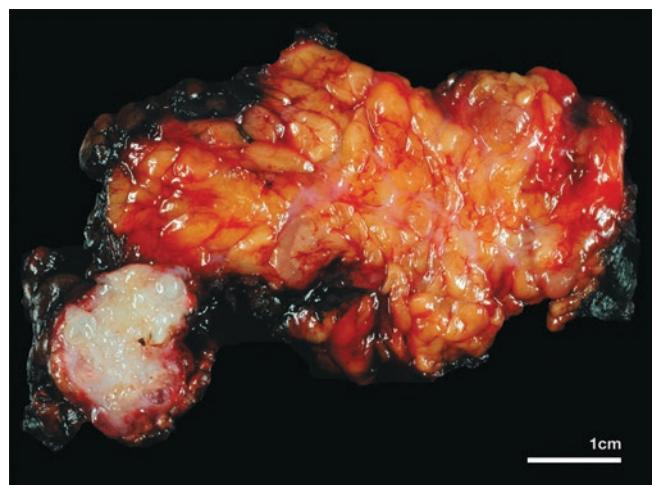


Fig. 4.5 (Gross examination) Circumscribed, mucoepidermoid carcinoma

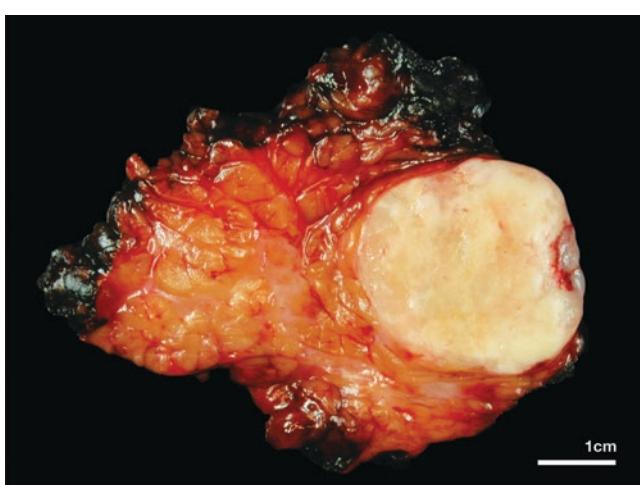


Fig. 4.3 (Gross examination) Circumscribed, pleomorphic adenoma



Fig. 4.6 (Gross examination) Circumscribed, acinic cell carcinoma

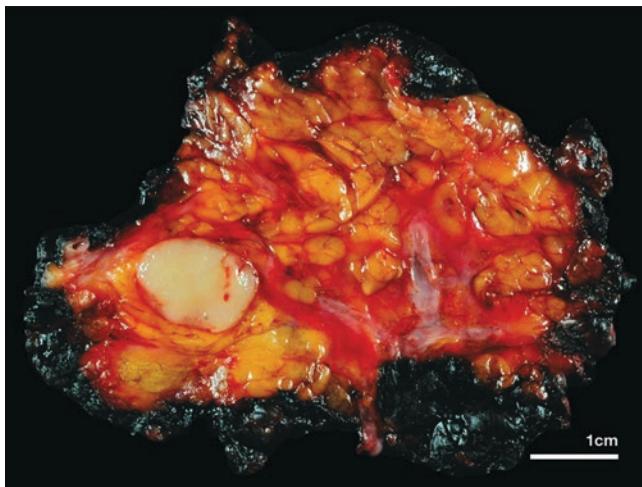


Fig. 4.7 (Gross examination) Circumscribed, lymphoepithelial carcinoma

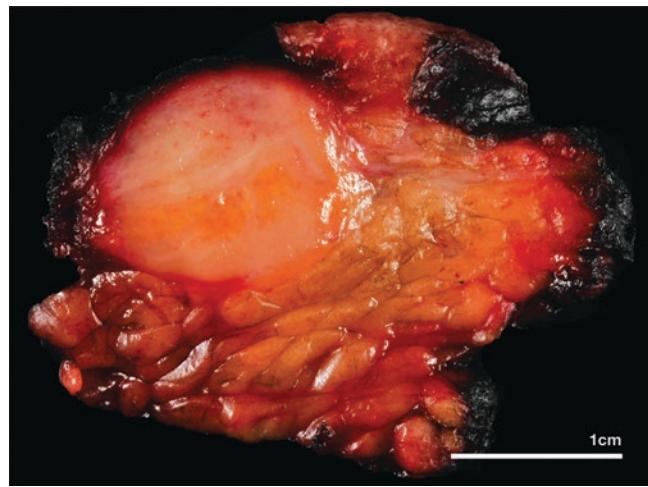


Fig. 4.10 (Gross examination) Circumscribed, metastatic lung adenocarcinoma

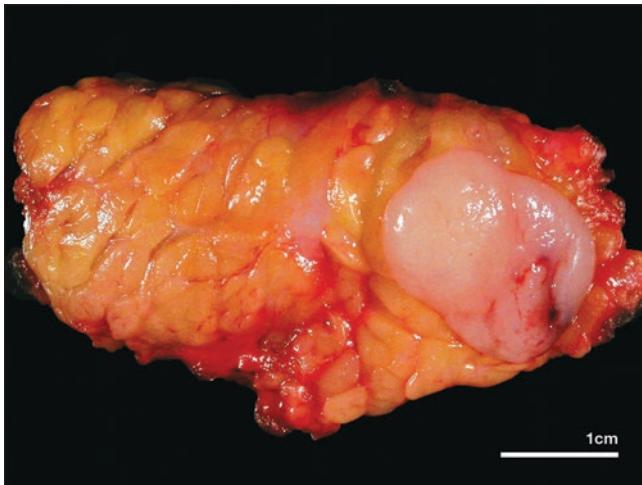


Fig. 4.8 (Gross examination) Circumscribed, lymphoma

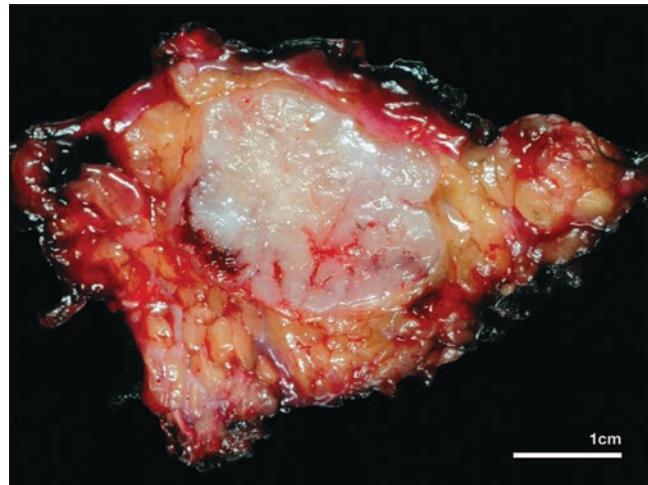


Fig. 4.11 (Gross examination) Nodular, pleomorphic adenoma

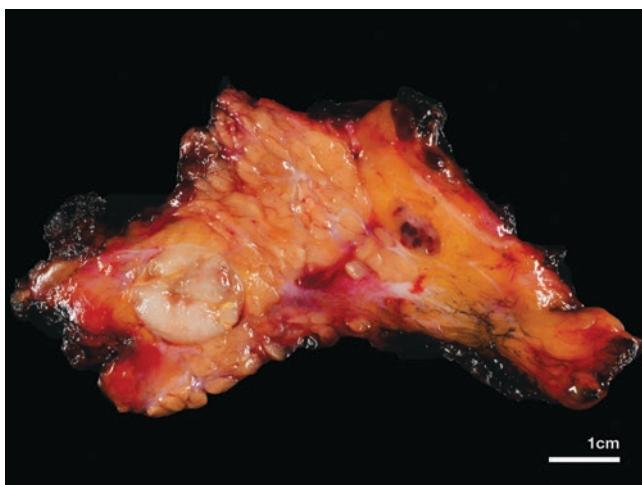


Fig. 4.9 (Gross examination) Circumscribed, metastatic oropharyngeal cancer



Fig. 4.12 (Gross examination) Nodular, basal cell adenoma



Fig. 4.13 (Gross examination) Nodular, oncocytoma

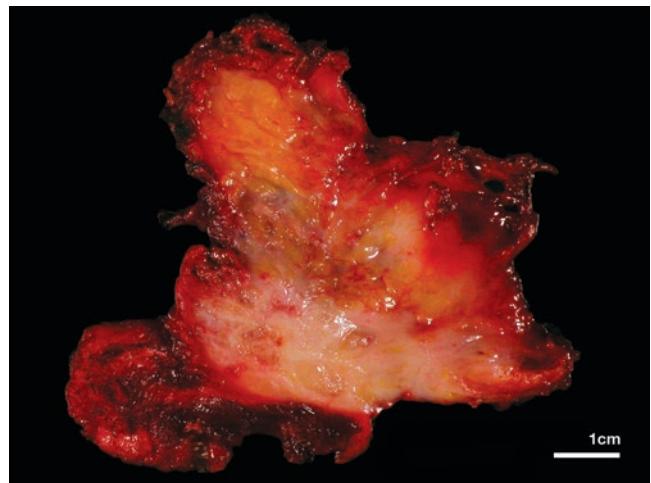


Fig. 4.16 (Gross examination) Infiltrative, adenoid cystic carcinoma



Fig. 4.14 (Gross examination) Nodular, salivary duct carcinoma



Fig. 4.17 (Gross examination) Infiltrative, carcinoma ex pleomorphic adenoma

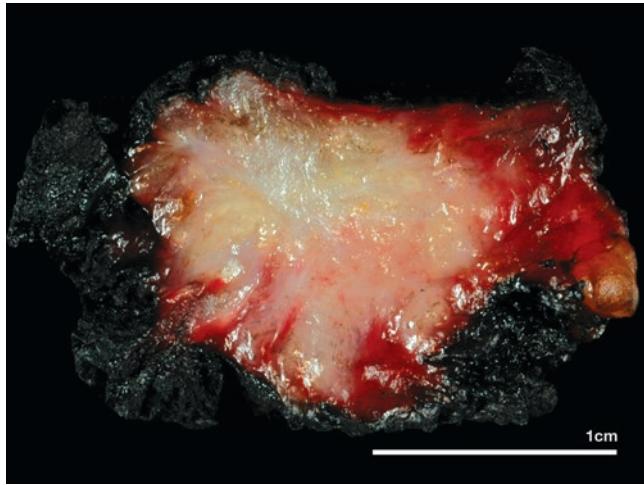


Fig. 4.15 (Gross examination) Infiltrative, mucoepidermoid carcinoma

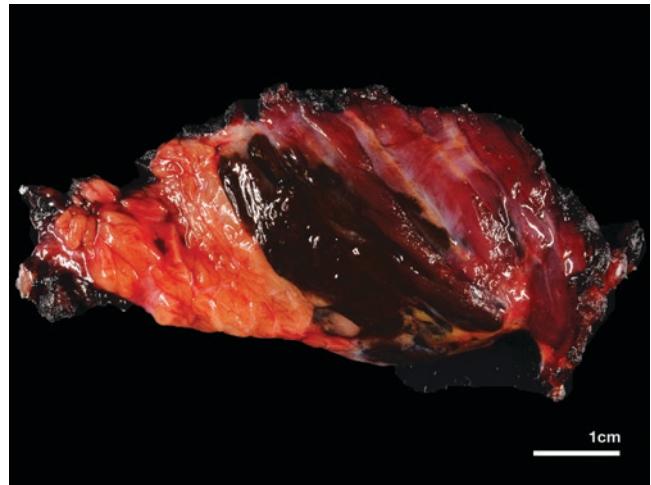


Fig. 4.18 (Gross examination) Infiltrative, metastatic melanoma

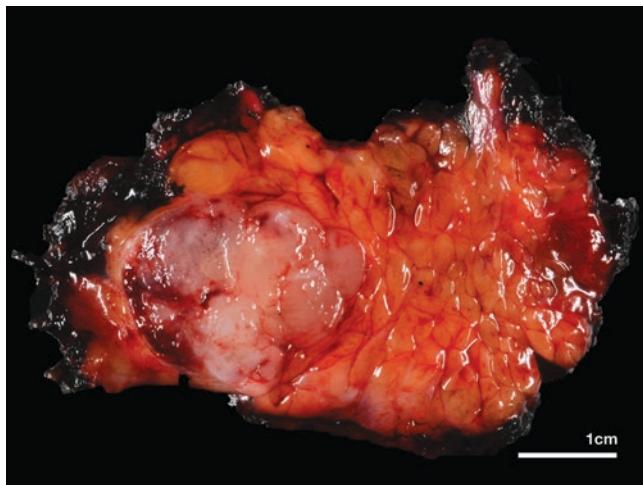


Fig. 4.19 (Gross examination) Chondroid, pleomorphic adenoma

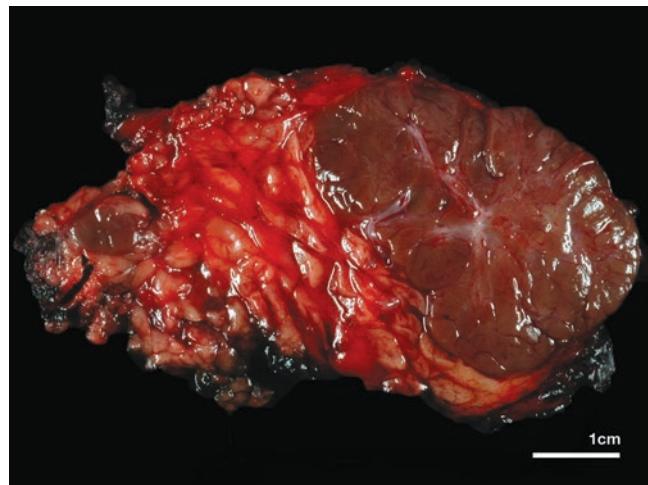


Fig. 4.22 (Gross examination) Oncocytic, oncocytoma



Fig. 4.20 (Gross examination) Chondroid, pleomorphic adenoma



Fig. 4.23 (Gross examination) Oncocytic, Warthin's tumor

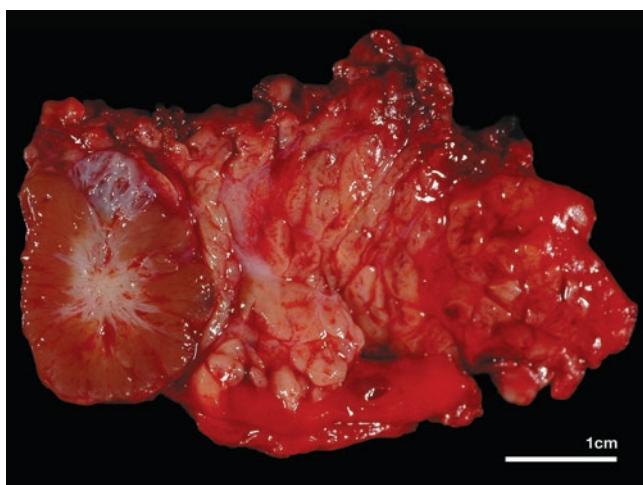


Fig. 4.21 (Gross examination) Oncocytic, oncocytoma



Fig. 4.24 (Gross examination) Oncocytic, basal cell adenoma

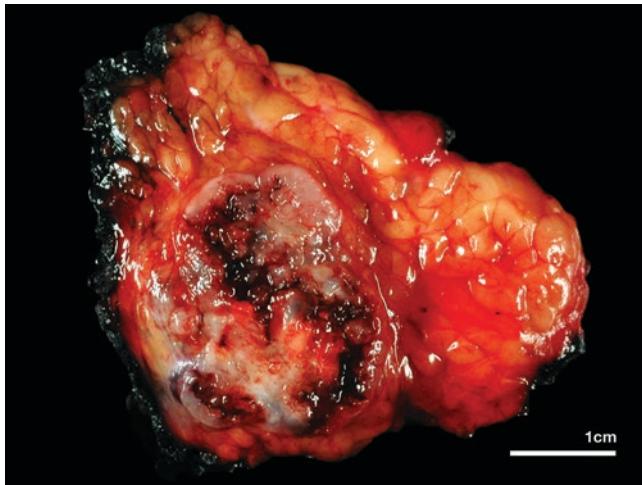


Fig. 4.25 (Gross examination) Hemorrhagic, pleomorphic adenoma

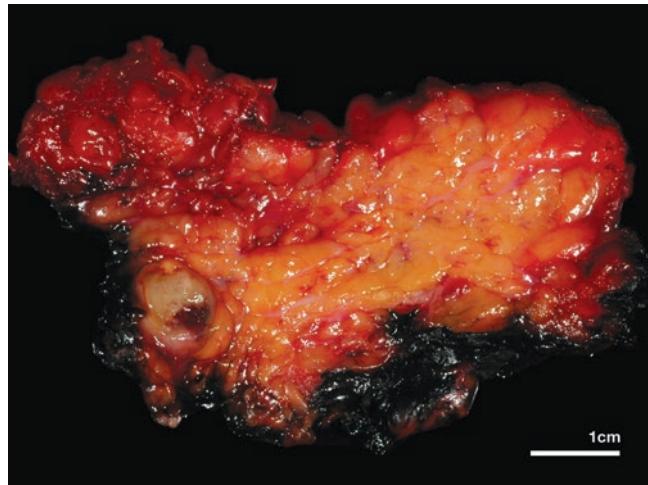


Fig. 4.28 (Gross examination) Hemorrhagic, epithelial-myoepithelial carcinoma

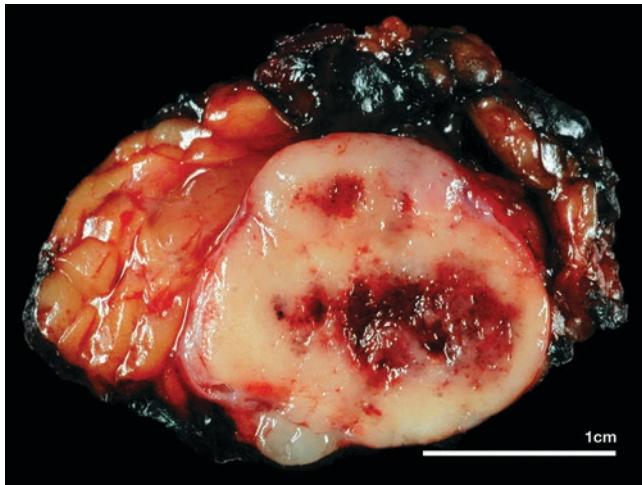


Fig. 4.26 (Gross examination) Hemorrhagic, basal cell adenoma

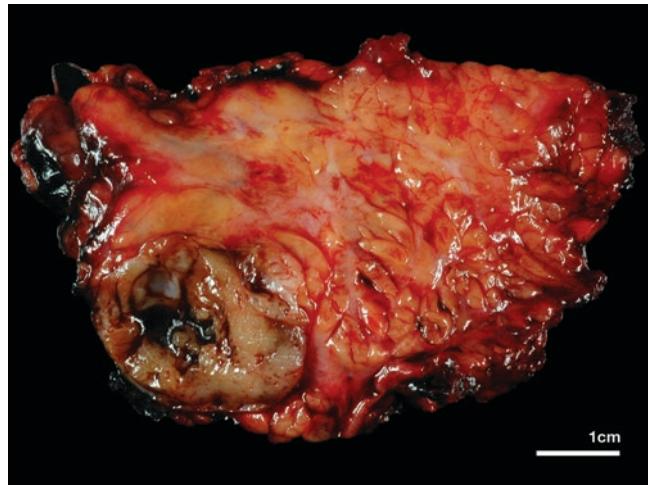


Fig. 4.29 (Gross examination) Cystic, basal cell adenoma

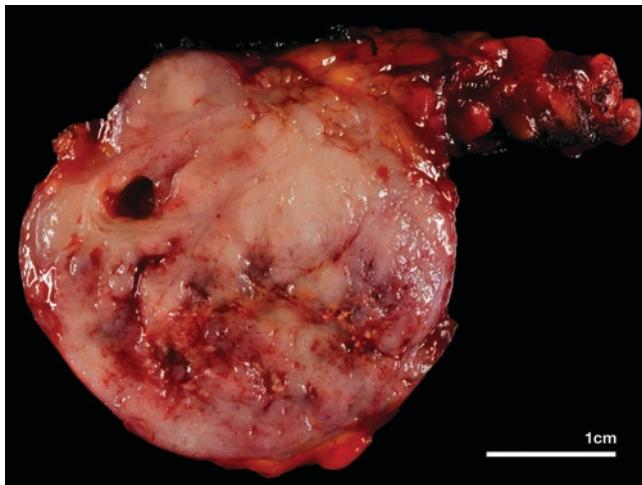


Fig. 4.27 (Gross examination) Hemorrhagic, acinic cell carcinoma



Fig. 4.30 (Gross examination) Cystic, lymphadenoma

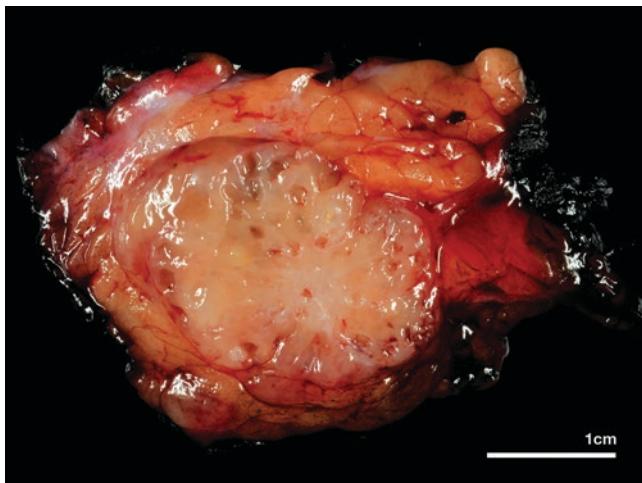


Fig. 4.31 (Gross examination) Cystic, mucoepidermoid carcinoma



Fig. 4.34 (Gross examination) Necrotic, mucoepidermoid carcinoma



Fig. 4.32 (Gross examination) Cystic, acinic cell carcinoma



Fig. 4.35 (Gross examination) Necrotic, salivary duct carcinoma

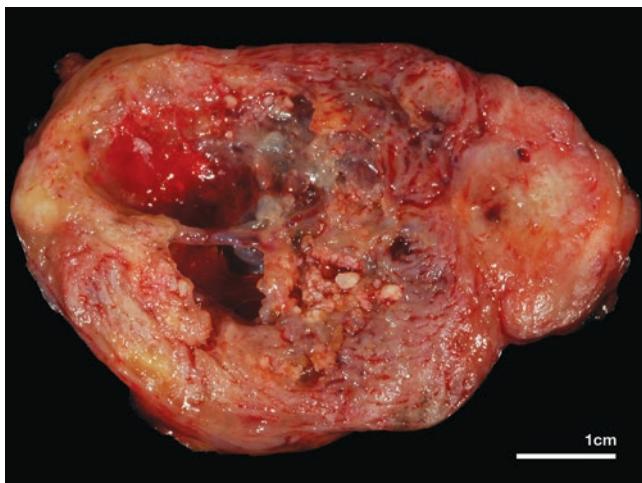


Fig. 4.33 (Gross examination) Necrotic, myoepithelioma

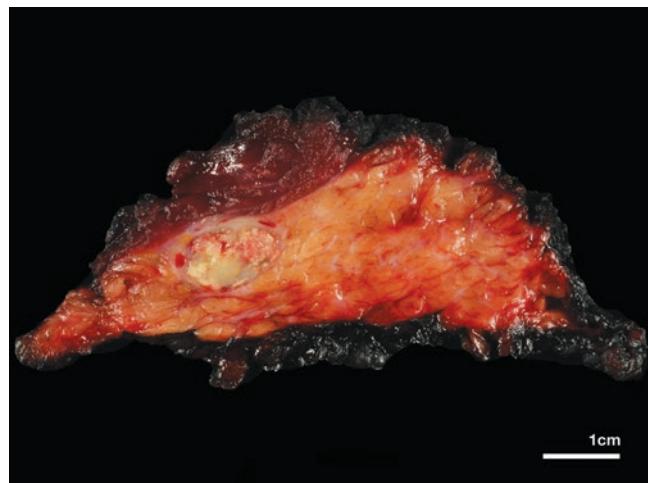


Fig. 4.36 (Gross examination) Necrotic, metastatic cutaneous squamous cell carcinoma

Microscopic Examination

5

The diagnostic complexity of salivary gland neoplasms is not to be underestimated. Although many cases are resolved at first microscopic glance, others require systematic evaluation to avoid diagnostic pitfalls. *Salivary Gland Pathology A, B, C, and D* represents the author's systematic approach to classifying neoplasms. The accuracy of this approach has limitations—a common theme in surgical pathology—and a subset of cases is best handled by consultation or committee (Figs. 5.1–5.35).

- *Architecture*—interface between neoplasm and adjacent parenchyma (e.g., circumscribed, infiltrative) often delineates benignity from malignancy
- *Biphasic*—number of cell phases/types (e.g., monophasic, biphasic, triphasic or more) often determines differential diagnostic considerations
- *Cytology*—cytology of cells (e.g., clear, oncocytic) often determines differential diagnostic considerations
- *Differential*—accurate classification often requires re-consideration of differential diagnostic considerations

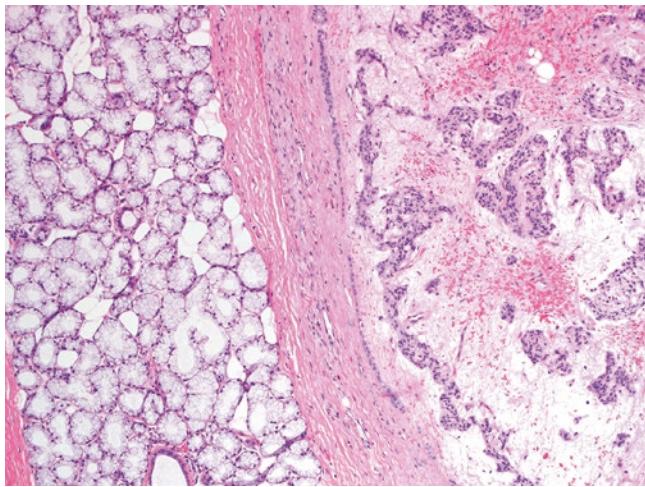


Fig. 5.1 (H&E, 100×) Encapsulated, pleomorphic adenoma

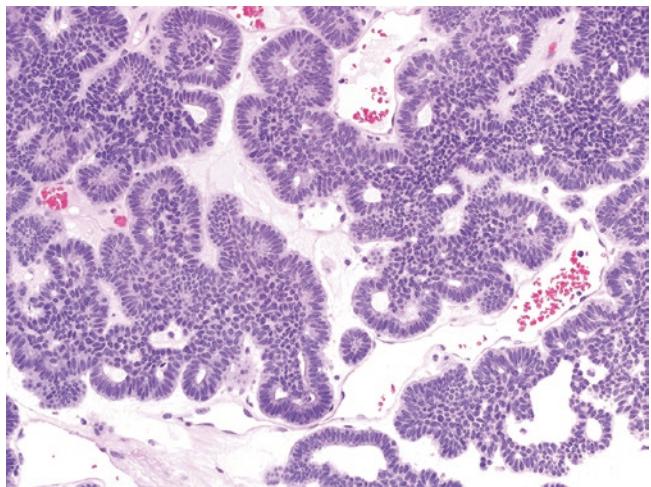


Fig. 5.4 (H&E, 200×) Monophasic, canalicular adenoma

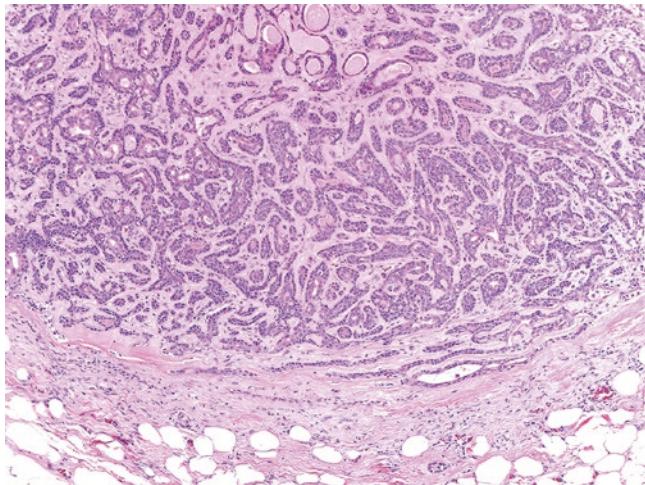


Fig. 5.2 (H&E, 100×) Circumscribed, basal cell adenoma

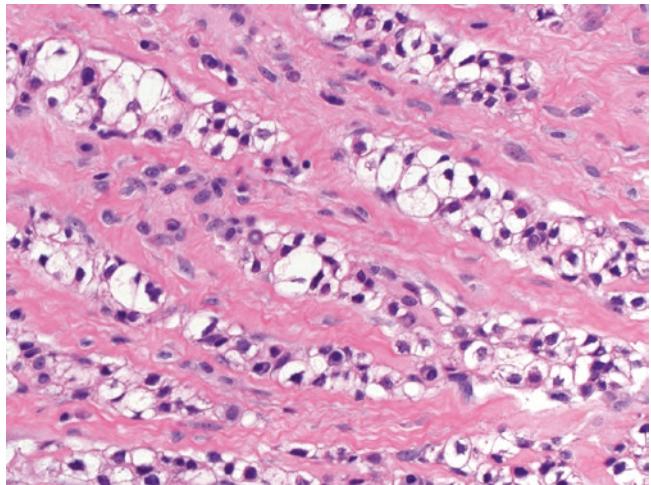


Fig. 5.5 (H&E, 400×) Monophasic, clear cell carcinoma

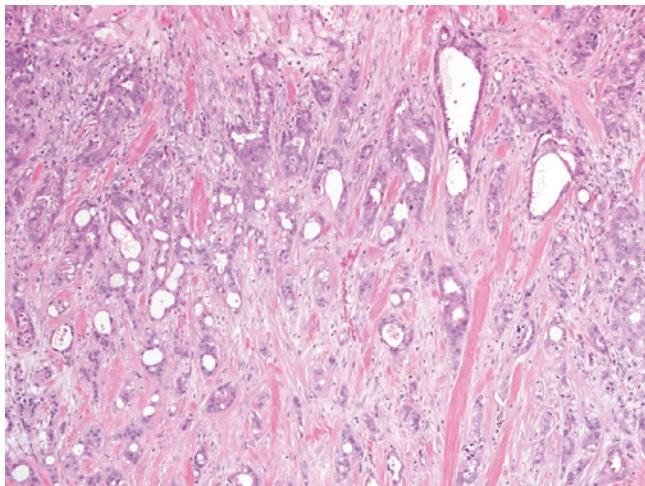


Fig. 5.3 (H&E, 100×) Infiltrative, salivary duct carcinoma

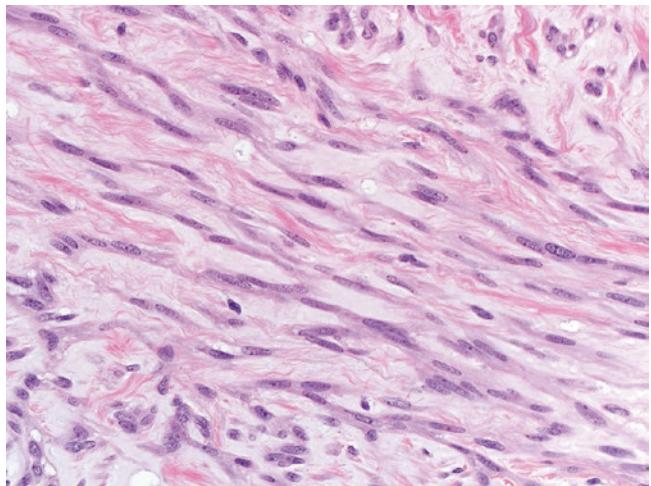


Fig. 5.6 (H&E, 400×) Monophasic, myoepithelioma

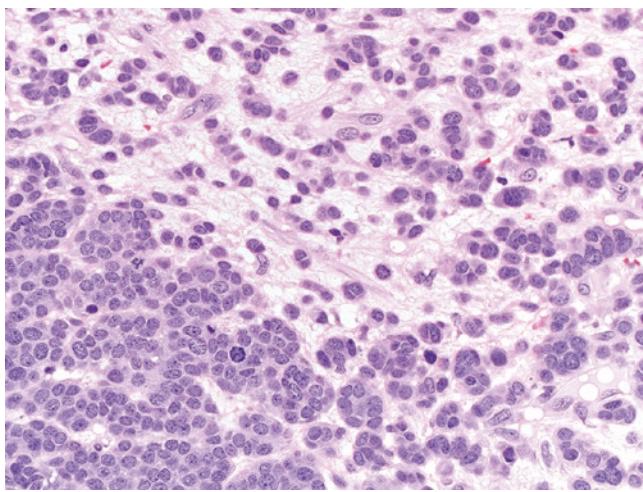


Fig. 5.7 (H&E, 400 \times) Monophasic, myoepithelial carcinoma

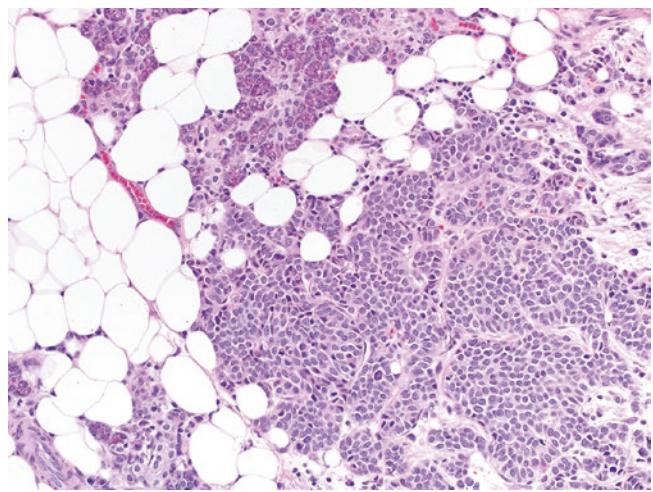


Fig. 5.10 (H&E, 200 \times) Monophasic, small cell neuroendocrine carcinoma

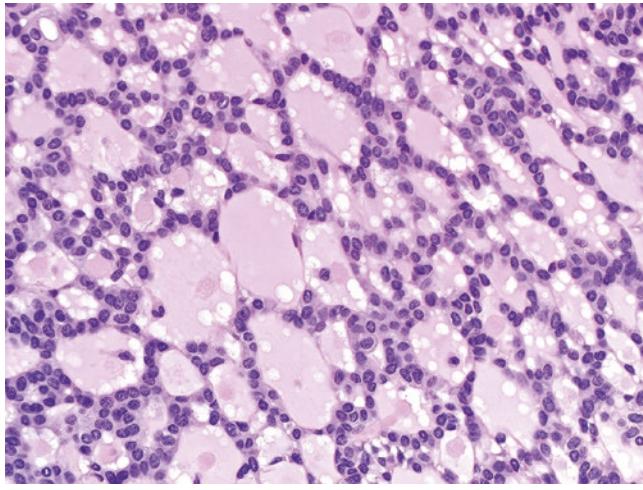


Fig. 5.8 (H&E, 400 \times) Monophasic, polymorphous adenocarcinoma

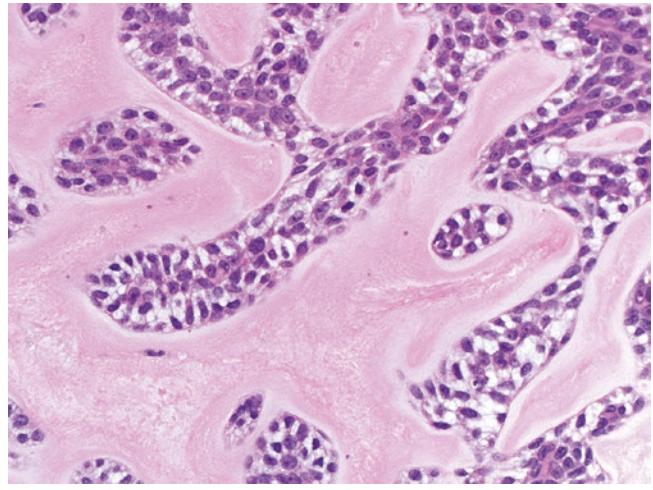


Fig. 5.11 (H&E, 400 \times) Biphasic, adenoid cystic carcinoma

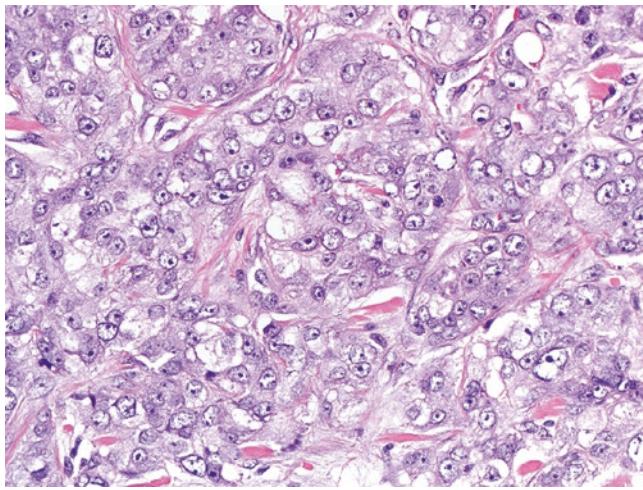


Fig. 5.9 (H&E, 400 \times) Monophasic, salivary duct carcinoma

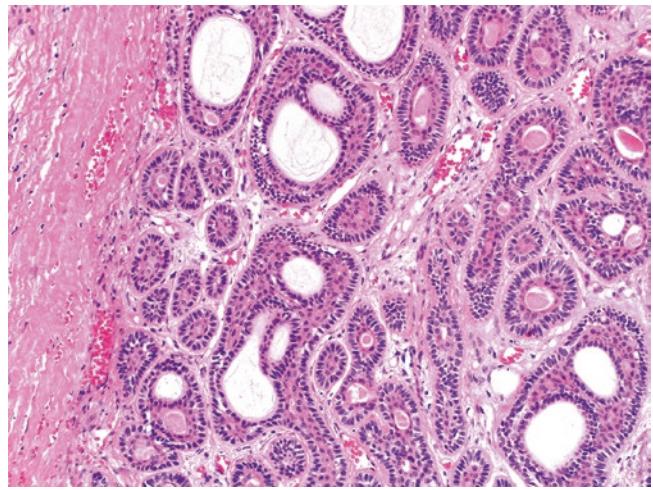


Fig. 5.12 (H&E, 200 \times) Biphasic, basal cell adenoma

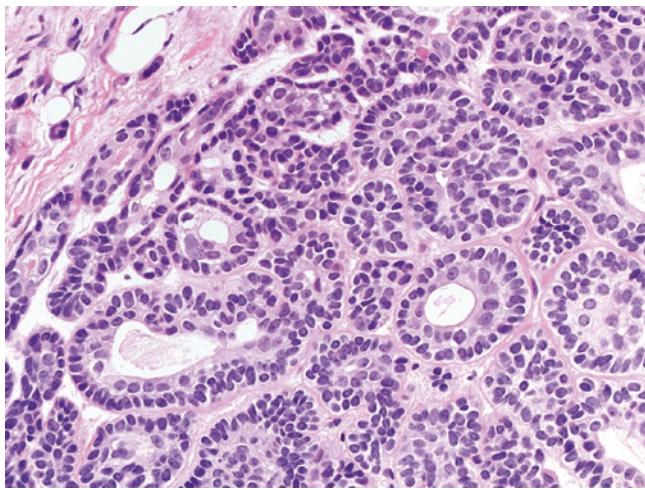


Fig. 5.13 (H&E, 400×) Biphasic, basal cell adenocarcinoma

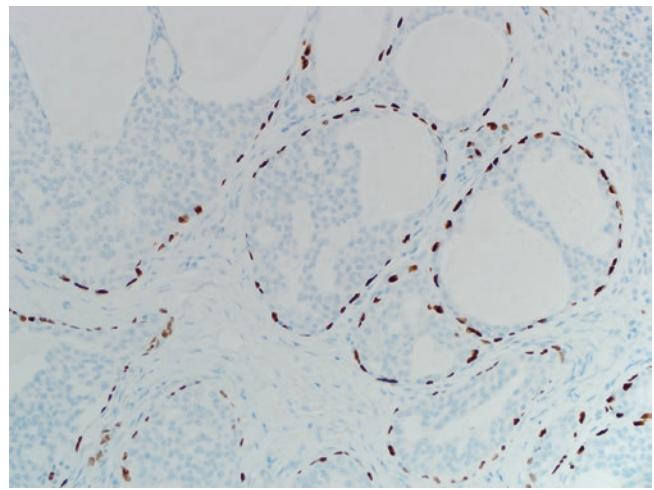


Fig. 5.16 (p63, 200×) Biphasic, intraductal carcinoma

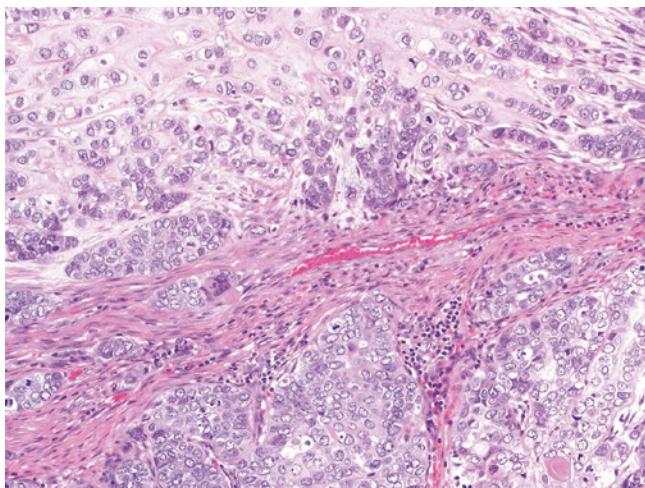


Fig. 5.14 (H&E, 200×) Biphasic, carcinosarcoma

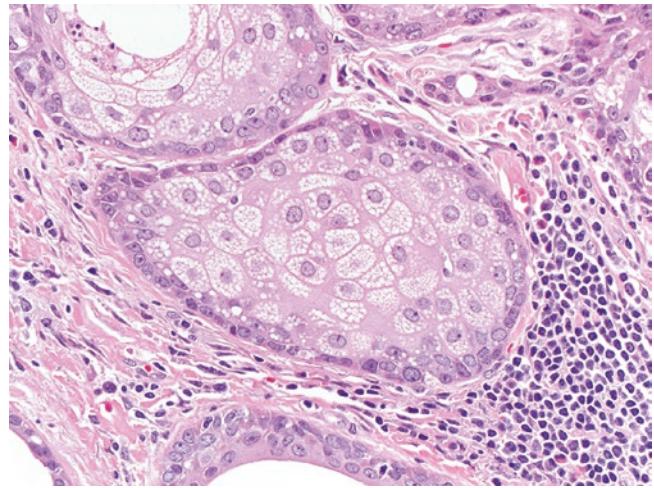


Fig. 5.17 (H&E, 400×) Biphasic, lymphadenoma

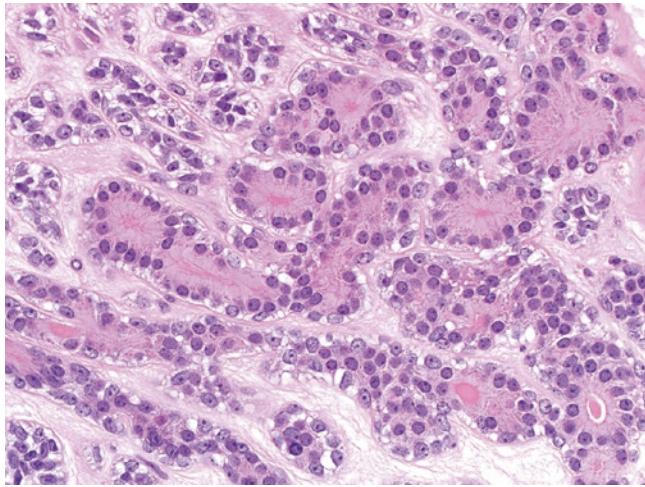


Fig. 5.15 (H&E, 400×) Biphasic, epithelial-myoepithelial carcinoma

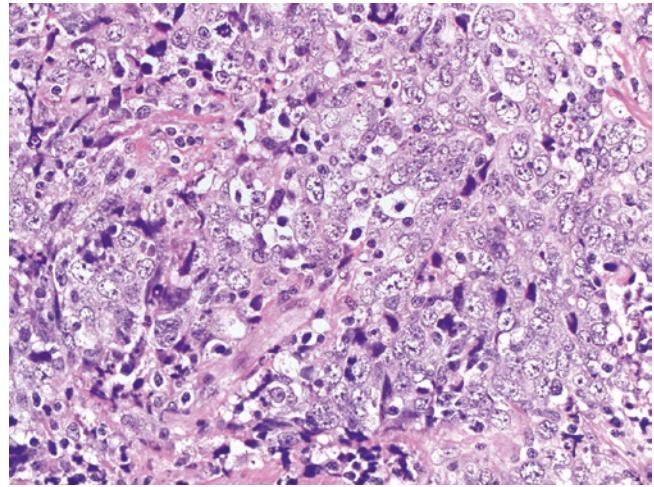


Fig. 5.18 (H&E, 400×) Biphasic, lymphoepithelial carcinoma

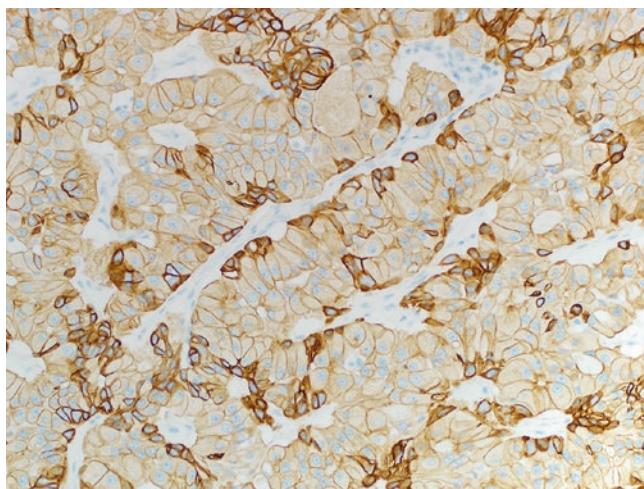


Fig. 5.19 (AE1/AE3, 200×) Biphasic, oncocytoma

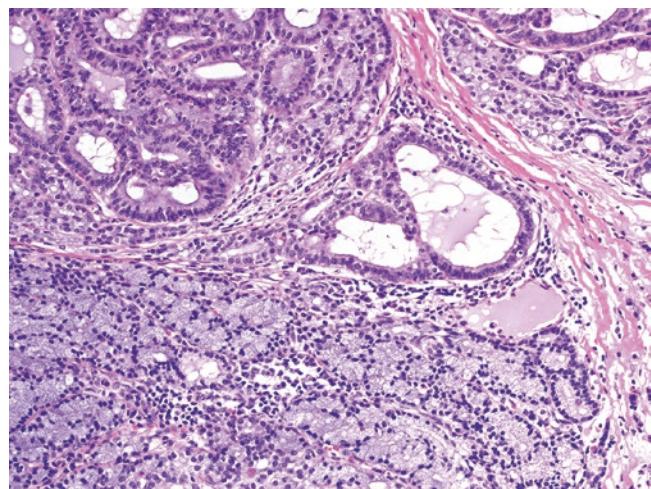


Fig. 5.22 (H&E, 200×) Triphasic or more, acinic cell carcinoma

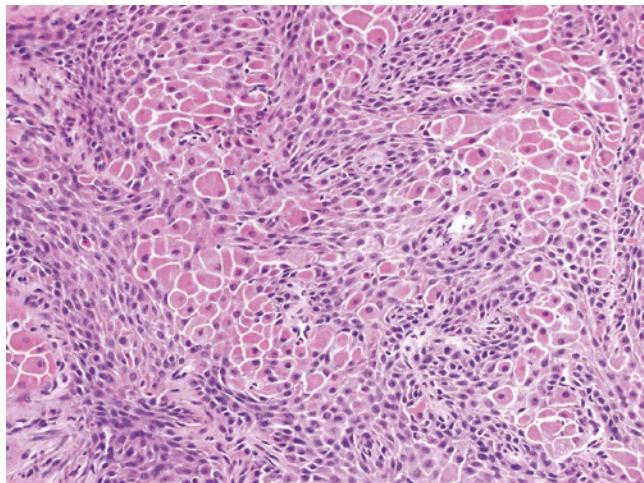


Fig. 5.20 (H&E, 200×) Biphasic, oncocytic carcinoma

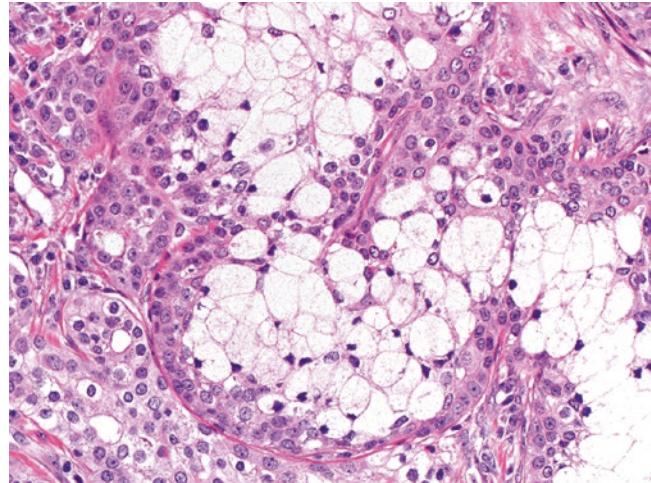


Fig. 5.23 (H&E, 400×) Triphasic or more, mucoepidermoid carcinoma

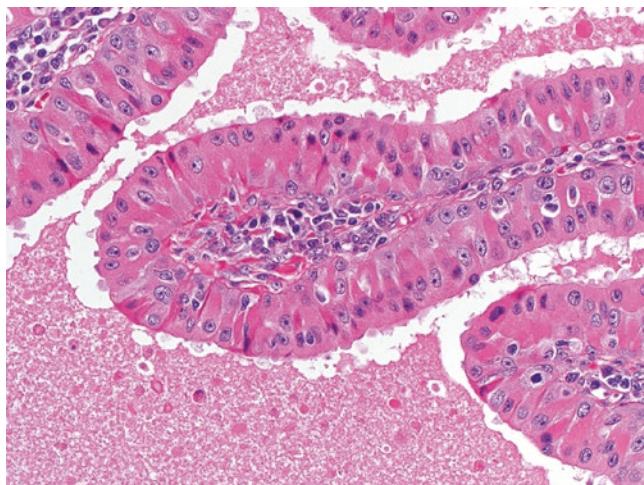


Fig. 5.21 (H&E, 400×) Biphasic, Warthin's tumor

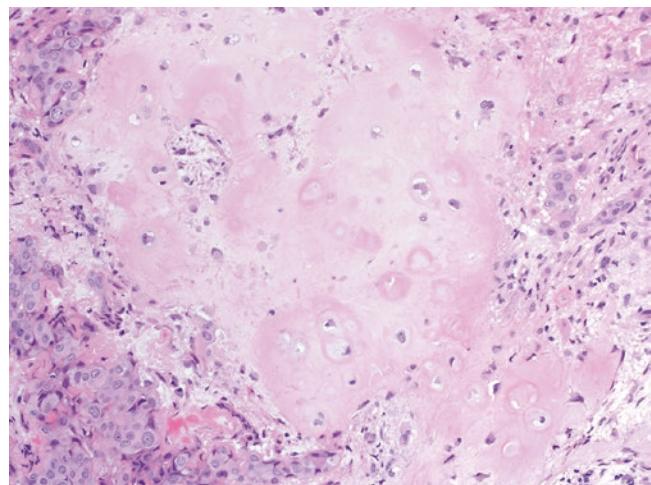


Fig. 5.24 (H&E, 200×) Triphasic or more, pleomorphic adenoma

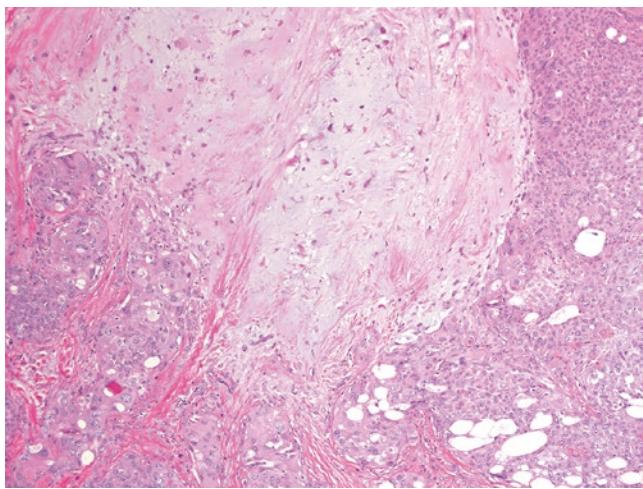


Fig. 5.25 (H&E, 100×) Triphasic or more, carcinoma ex pleomorphic adenoma

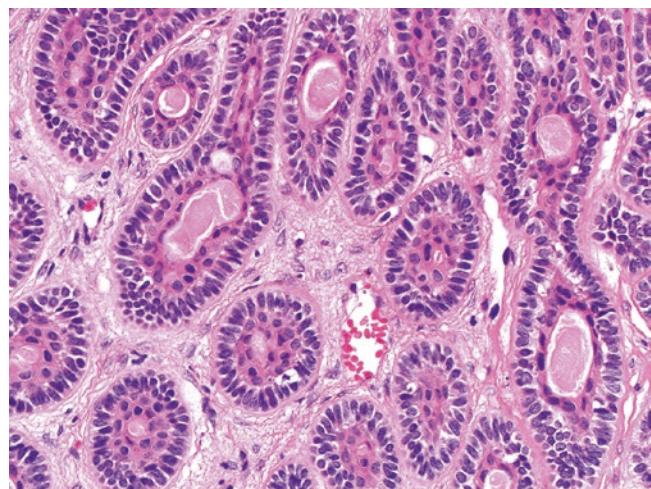


Fig. 5.28 (H&E, 400×) Basal cells, basal cell adenoma

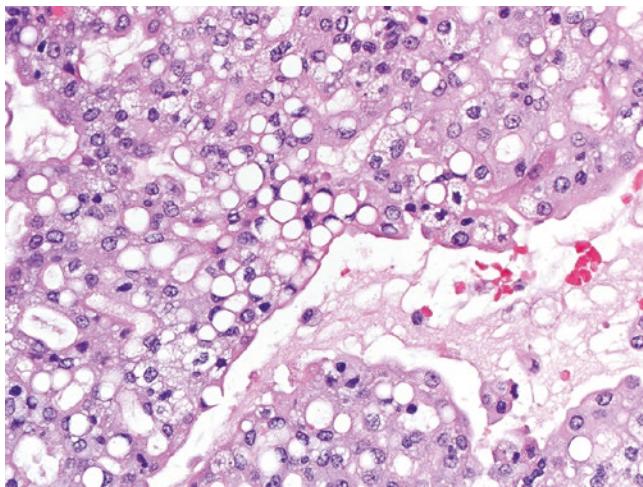


Fig. 5.26 (H&E, 400×) Triphasic or more, secretory carcinoma

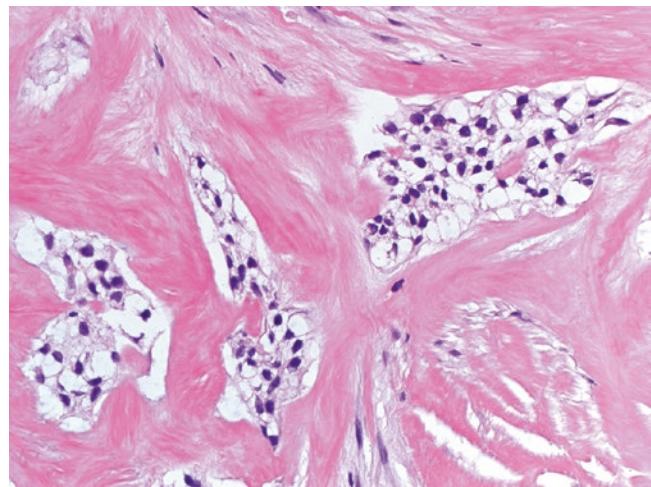


Fig. 5.29 (H&E, 400×) Clear cells, clear cell carcinoma

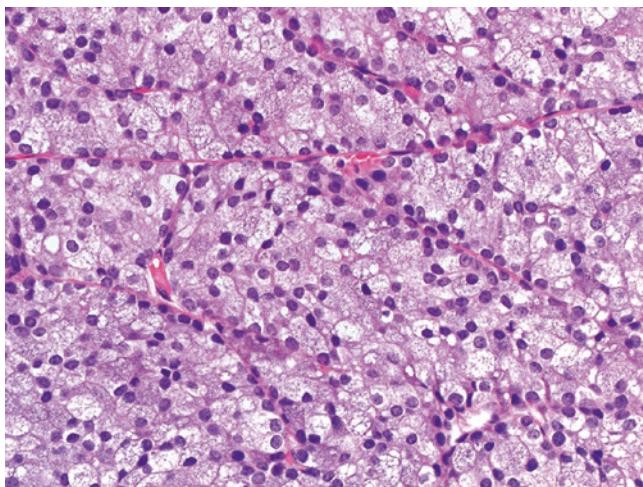


Fig. 5.27 (H&E, 400×) Acinar cells (serous), acinic cell carcinoma

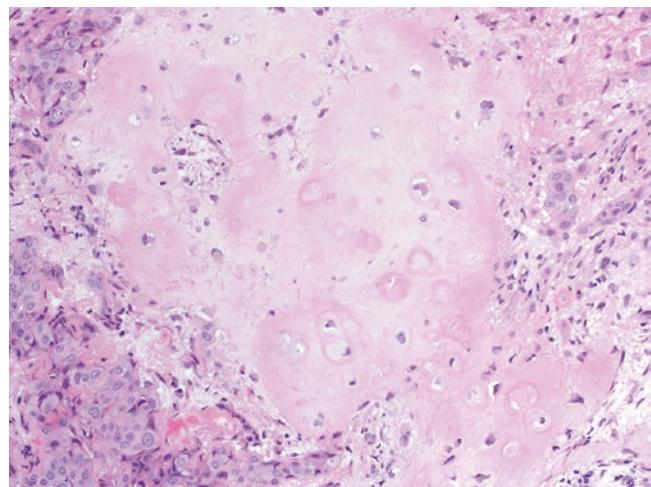


Fig. 5.30 (H&E, 200×) Chondrocytes, pleomorphic adenoma

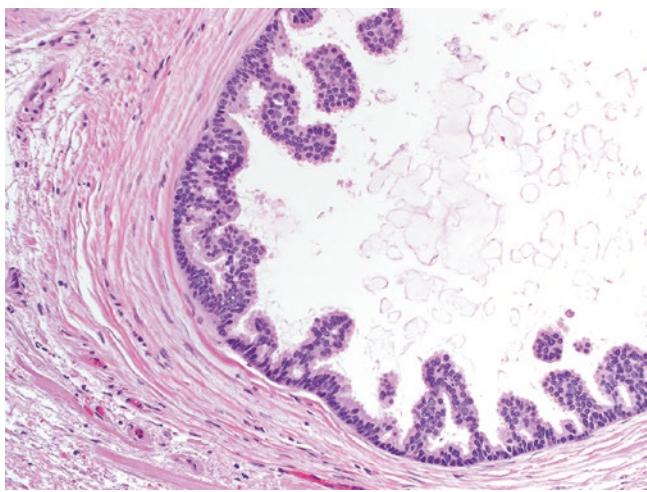


Fig. 5.31 (H&E, 200 \times) Ductal cells, intraductal carcinoma

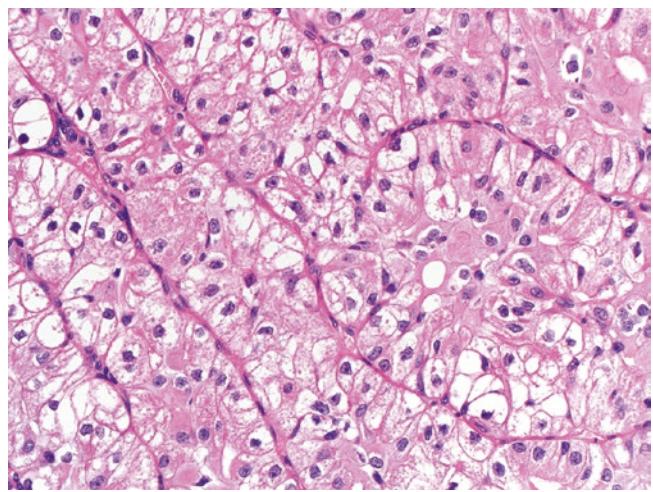


Fig. 5.34 (H&E, 400 \times) Oncocytes, oncytoma

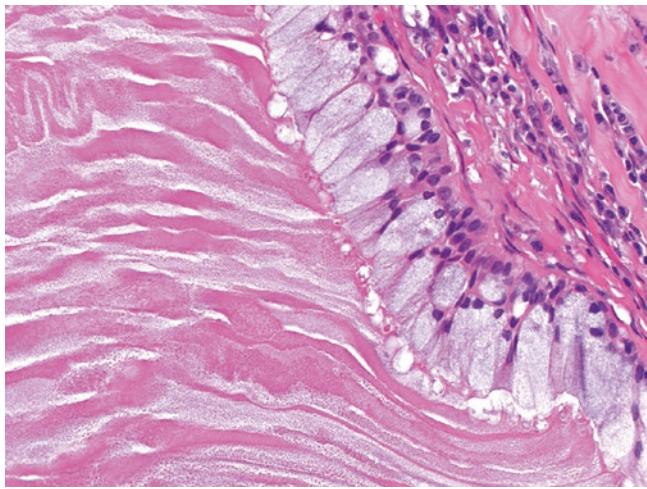


Fig. 5.32 (H&E, 400 \times) Mucous cells, mucoepidermoid carcinoma

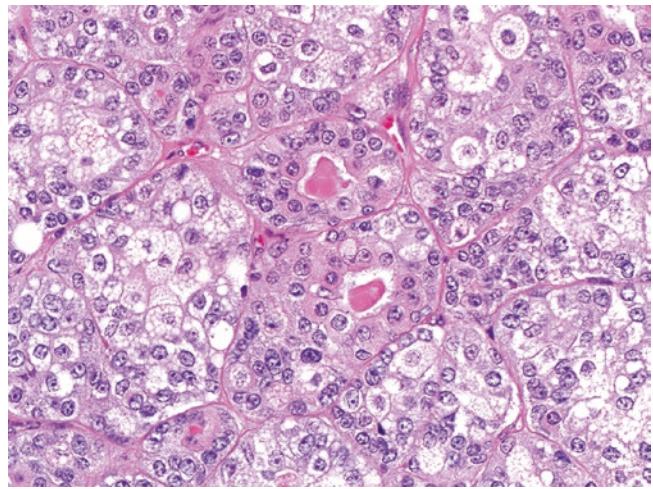


Fig. 5.35 (H&E, 400 \times) Sebaceous cells, epithelial-myoepithelial carcinoma

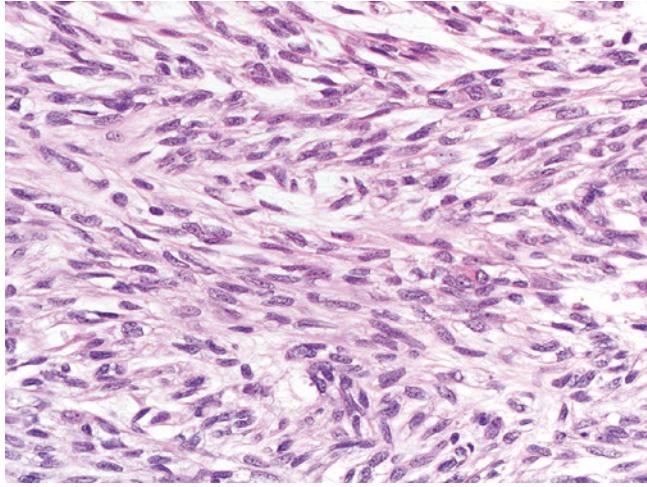


Fig. 5.33 (H&E, 400 \times) Myoepithelial cells, myoepithelioma



Acinic Cell Carcinoma

6

Acinic cell carcinoma affects children and adults and presents at a mean age of approximately 50 years. Women are involved slightly more than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of acinic cell carcinoma behave as low to intermediate-grade malignancies; however, a subset of cases with high-grade transformation (necrosis, elevated mitotic

activity, and cytomorphologic atypia) are predisposed to recurrence, lymph node involvement, and distant metastasis. Acinic cell carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (acinar, intercalated ductal, vacuolated, clear, and non-specific glandular), and exhibit a variety of architectural patterns (solid, follicular, papillary, and cystic) (Figs. 6.1–6.43).

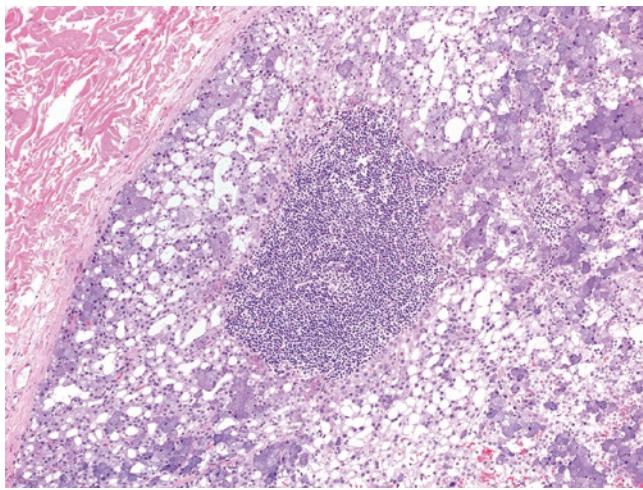


Fig. 6.1 (H&E, 100×) Acinic cell carcinoma, circumscribed

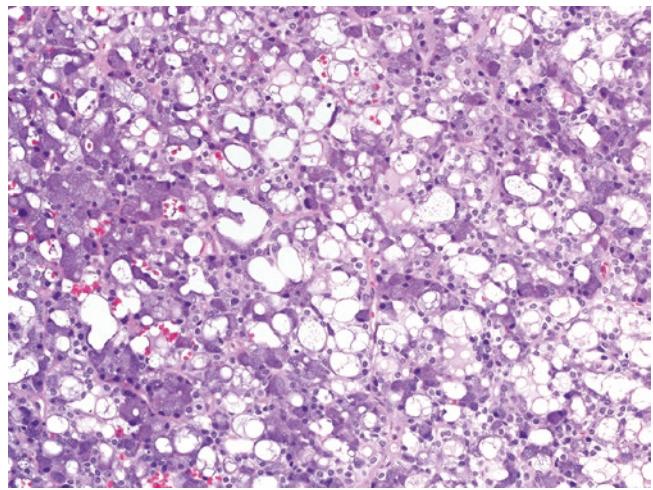


Fig. 6.4 (H&E, 200×) Acinic cell carcinoma, microcystic

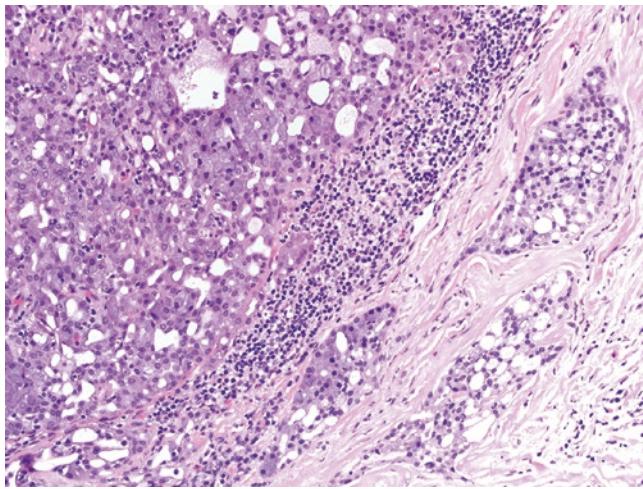


Fig. 6.2 (H&E, 200×) Acinic cell carcinoma, infiltrative

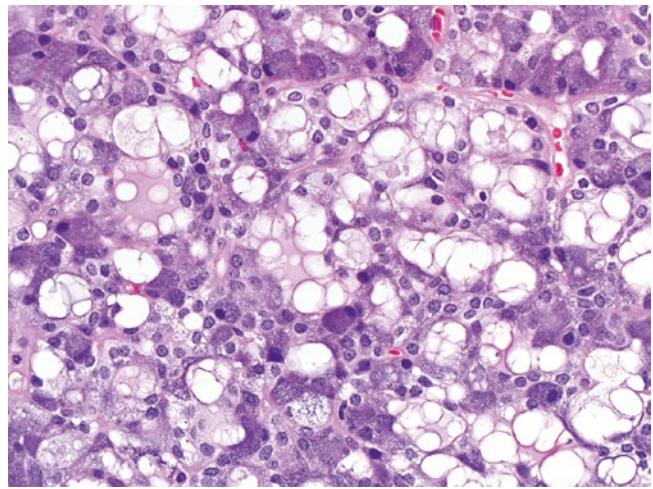


Fig. 6.5 (H&E, 400×) Acinic cell carcinoma, microcystic

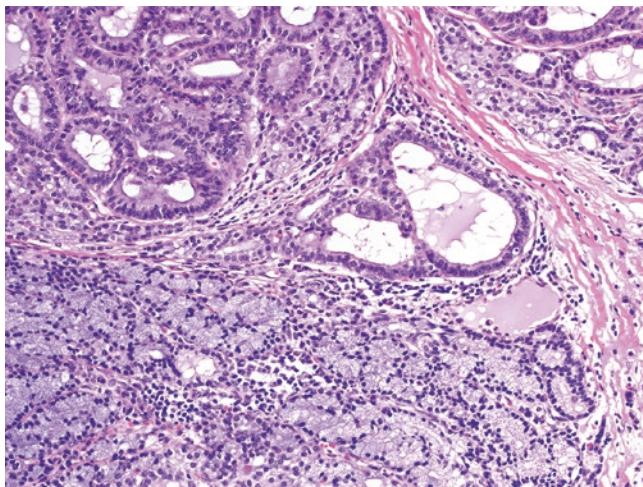


Fig. 6.3 (H&E, 200×) Acinic cell carcinoma, triphasic or more

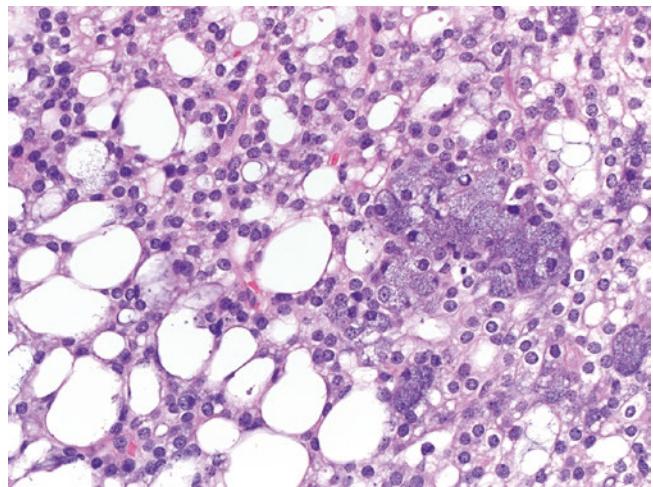


Fig. 6.6 (H&E, 400×) Acinic cell carcinoma, microcystic

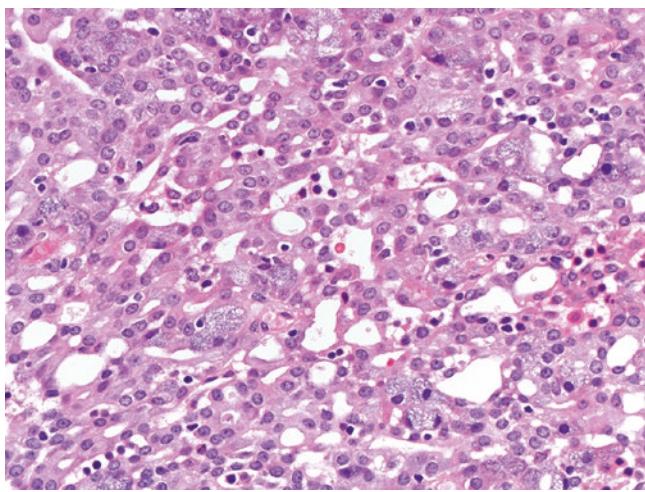


Fig. 6.7 (H&E, 400×) Acinic cell carcinoma, microcystic

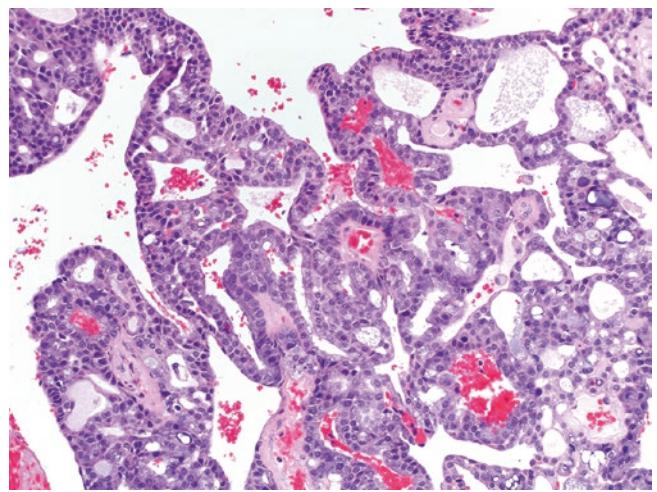


Fig. 6.10 (H&E, 200×) Acinic cell carcinoma, papillary-cystic

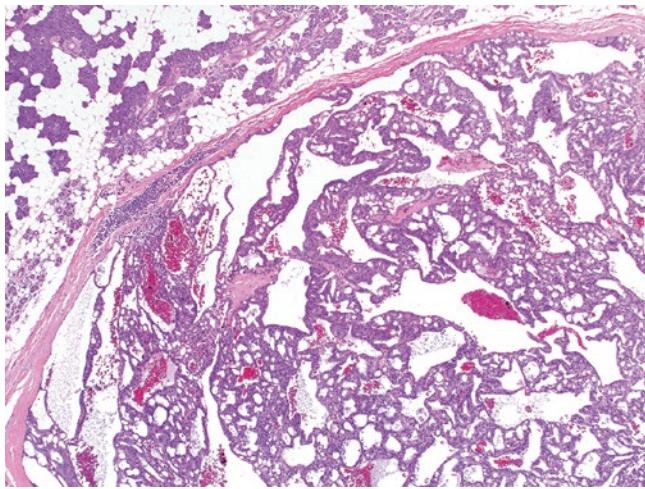


Fig. 6.8 (H&E, 40×) Acinic cell carcinoma, papillary-cystic

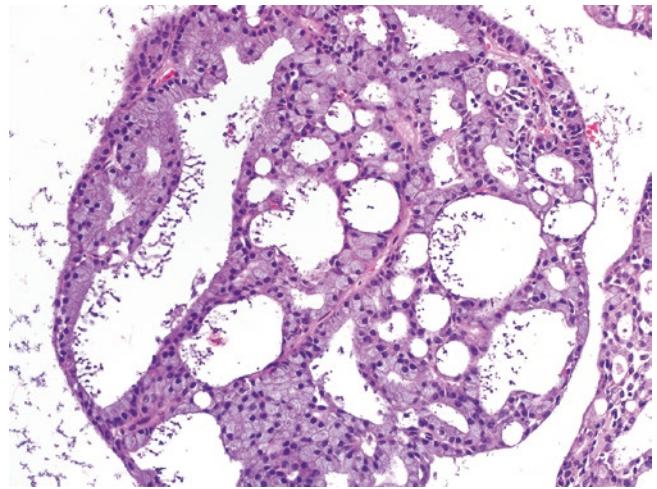


Fig. 6.11 (H&E, 200×) Acinic cell carcinoma, papillary-cystic

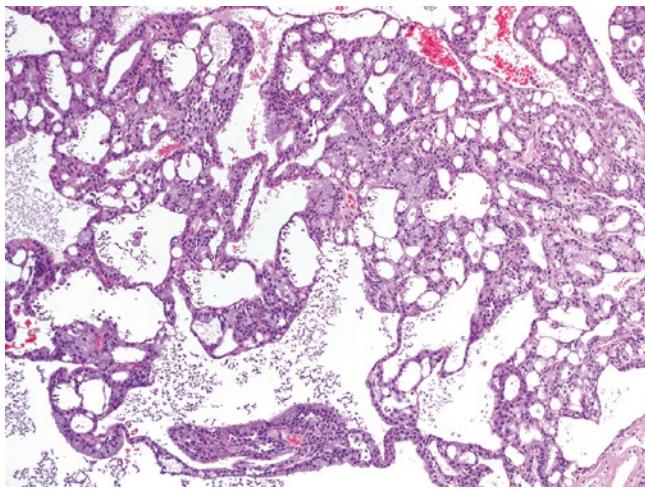


Fig. 6.9 (H&E, 100×) Acinic cell carcinoma, papillary-cystic

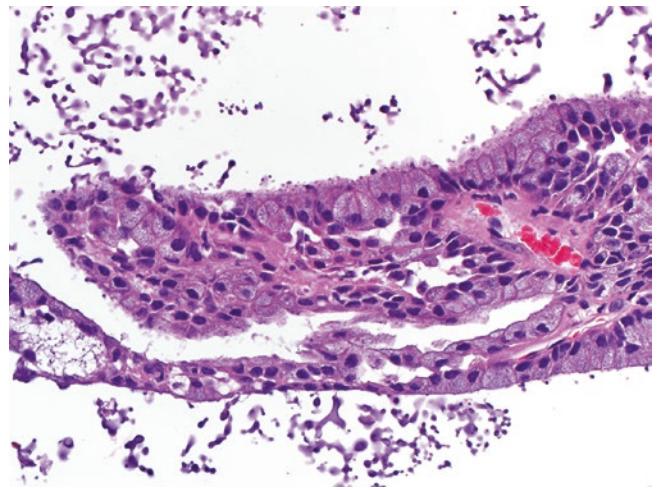


Fig. 6.12 (H&E, 400×) Acinic cell carcinoma, papillary-cystic

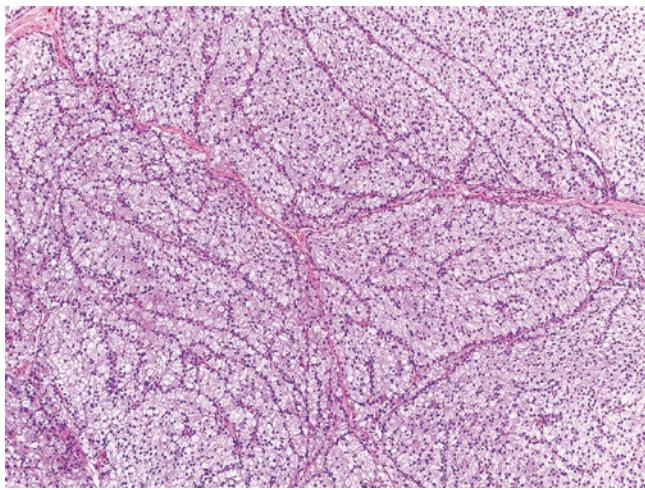


Fig. 6.13 (H&E, 100×) Acinic cell carcinoma, solid

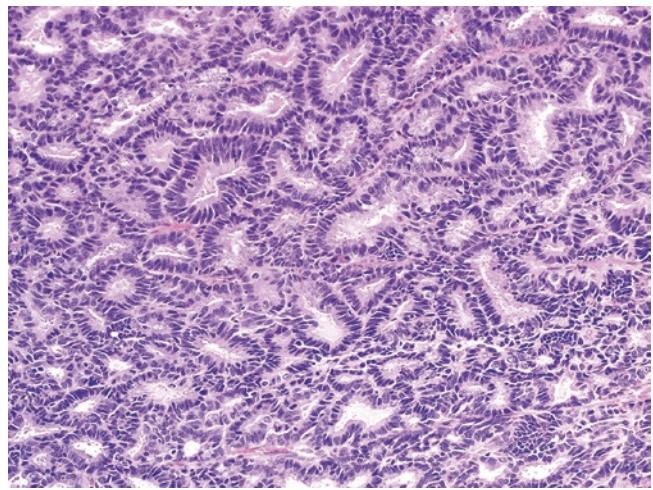


Fig. 6.16 (H&E, 200×) Acinic cell carcinoma, follicular

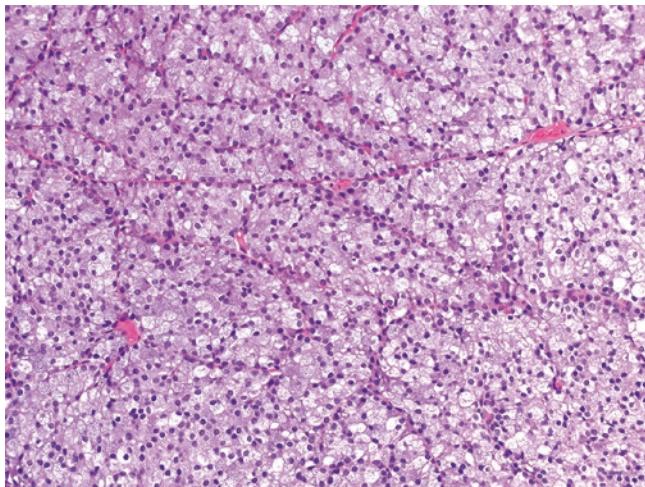


Fig. 6.14 (H&E, 200×) Acinic cell carcinoma, solid

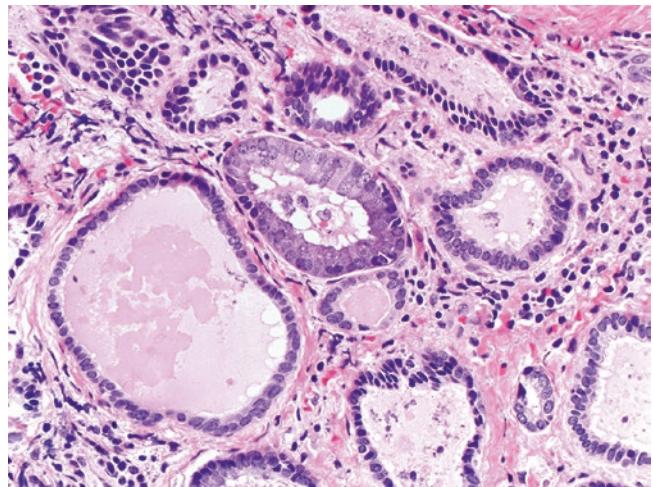


Fig. 6.17 (H&E, 400×) Acinic cell carcinoma, follicular

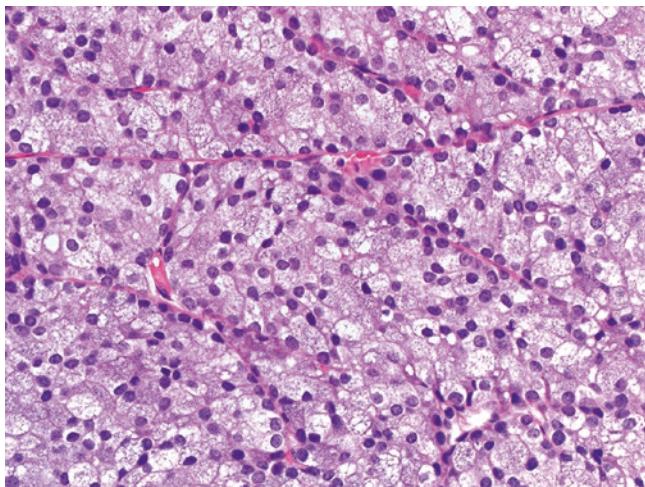


Fig. 6.15 (H&E, 400×) Acinic cell carcinoma, solid

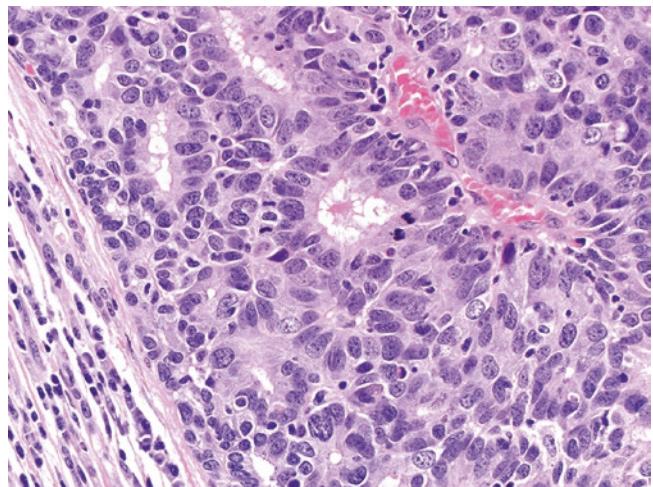


Fig. 6.18 (H&E, 400×) Acinic cell carcinoma, follicular

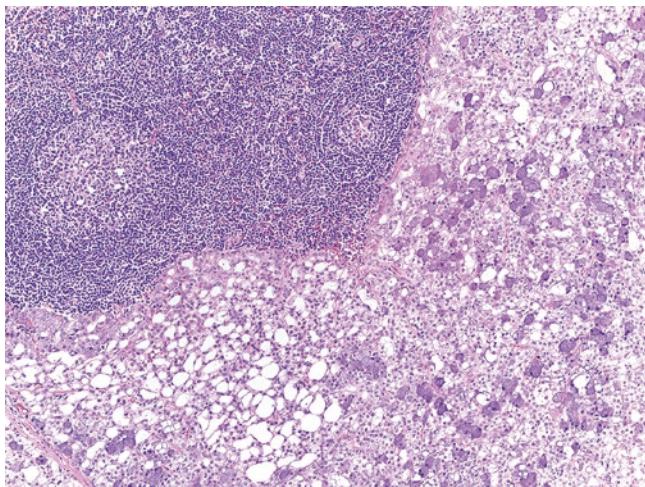


Fig. 6.19 (H&E, 100 \times) Acinic cell carcinoma, tumor-associated lymphoid proliferation

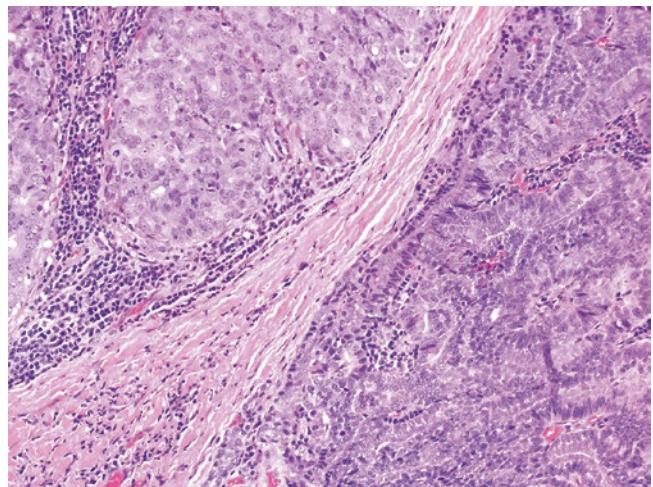


Fig. 6.22 (H&E, 200 \times) Acinic cell carcinoma, high-grade transformation, cytomorphologic atypia

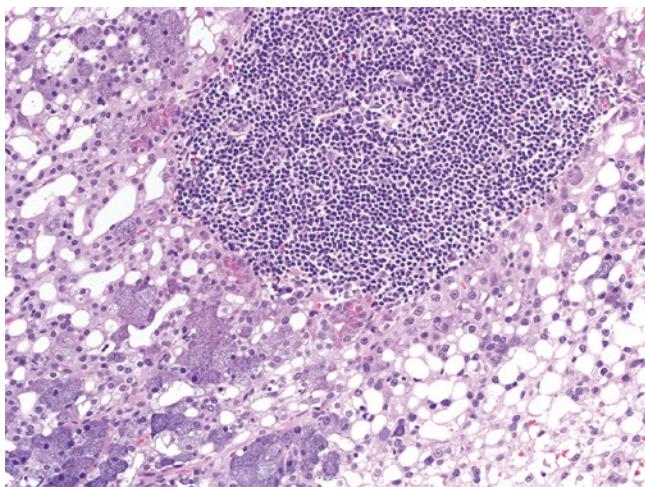


Fig. 6.20 (H&E, 200 \times) Acinic cell carcinoma, tumor-associated lymphoid proliferation

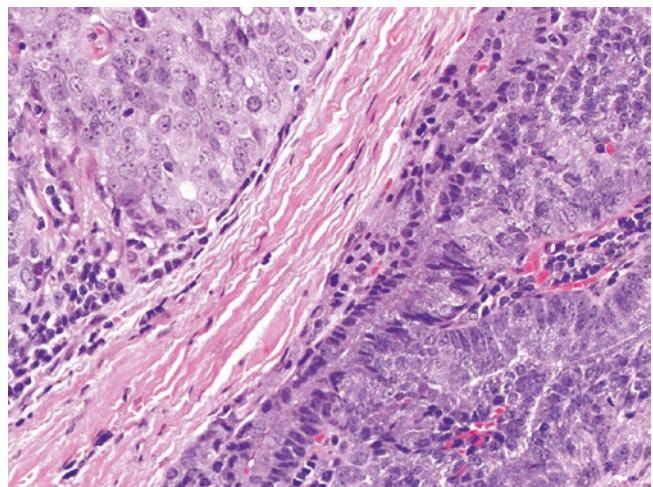


Fig. 6.23 (H&E, 400 \times) Acinic cell carcinoma, high-grade transformation, cytomorphologic atypia

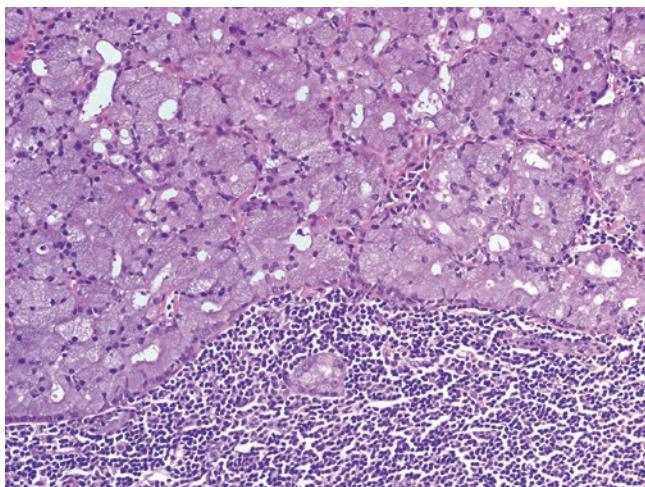


Fig. 6.21 (H&E, 200 \times) Acinic cell carcinoma, tumor-associated lymphoid proliferation

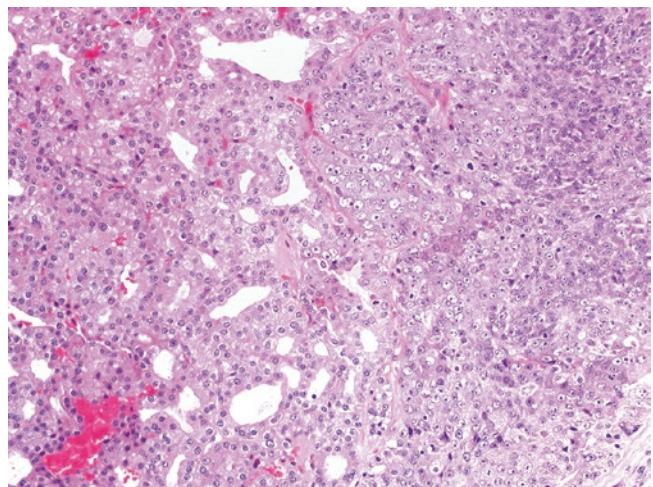


Fig. 6.24 (H&E, 200 \times) Acinic cell carcinoma, high-grade transformation, mitotic activity

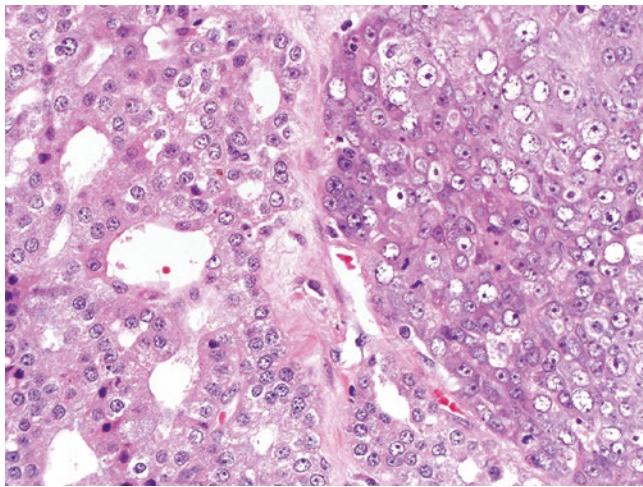


Fig. 6.25 (H&E, 400 \times) Acinic cell carcinoma, high-grade transformation, mitotic activity

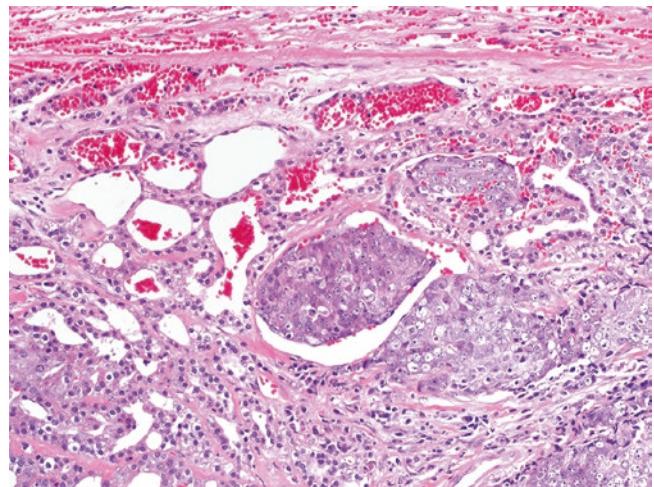


Fig. 6.28 (H&E, 200 \times) Acinic cell carcinoma, high-grade transformation, angiolympathic invasion

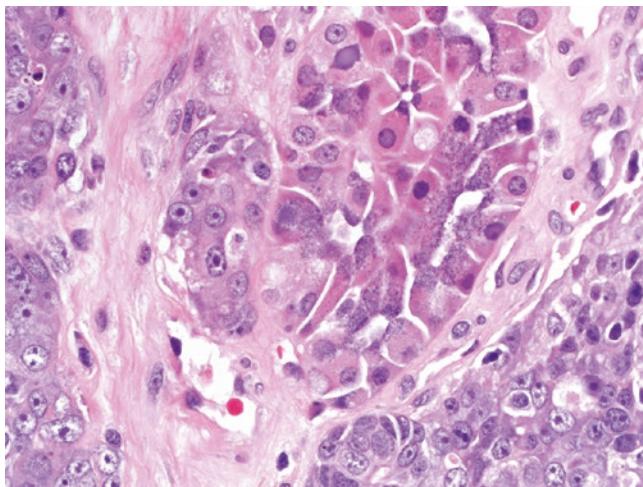


Fig. 6.26 (H&E, 600 \times) Acinic cell carcinoma, high-grade transformation, zymogen-like granules

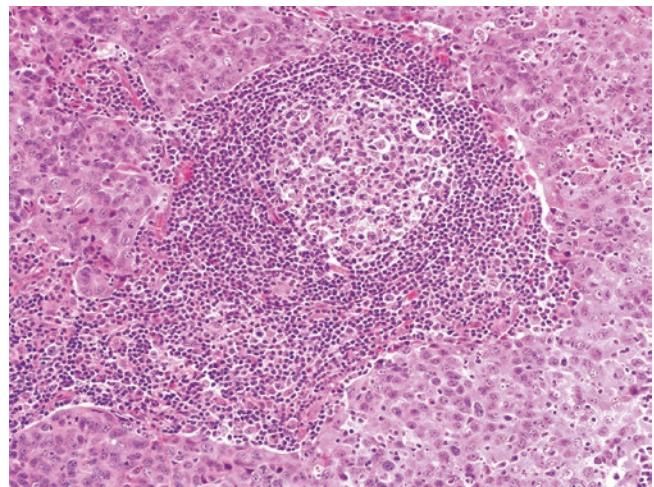


Fig. 6.29 (H&E, 200 \times) Acinic cell carcinoma, high-grade transformation, tumor-associated lymphoid proliferation

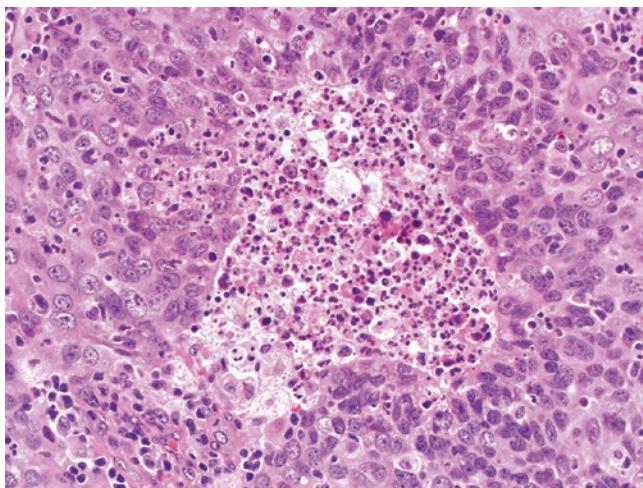


Fig. 6.27 (H&E, 400 \times) Acinic cell carcinoma, high-grade transformation, necrosis

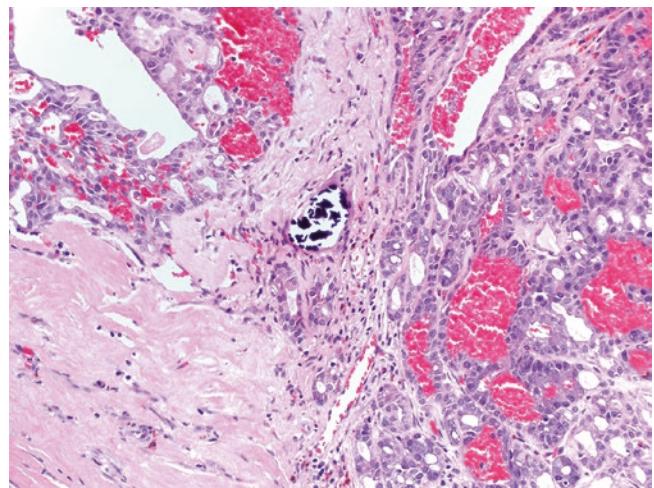


Fig. 6.30 (H&E, 200 \times) Acinic cell carcinoma, microcalcifications

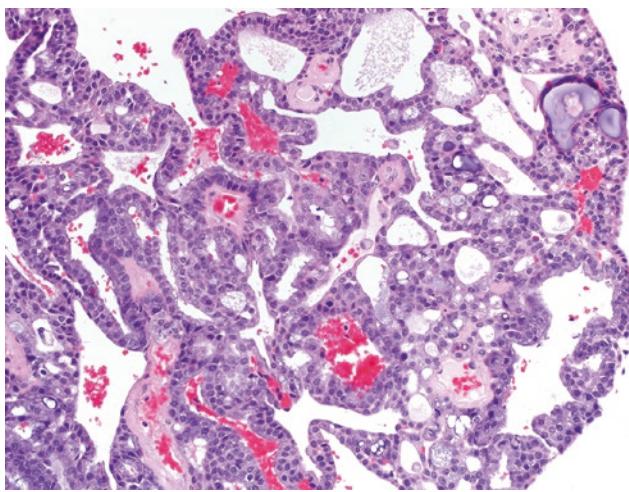


Fig. 6.31 (H&E, 200×) Acinic cell carcinoma, microcalcifications

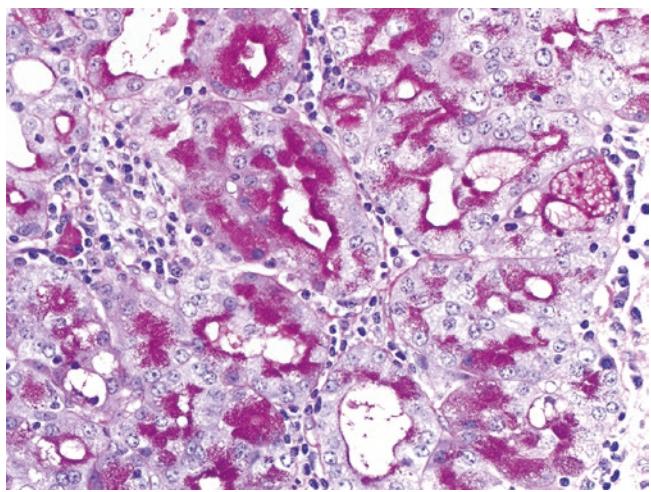


Fig. 6.34 (PAS-D, 400×) Acinic cell carcinoma, zymogen-like granules

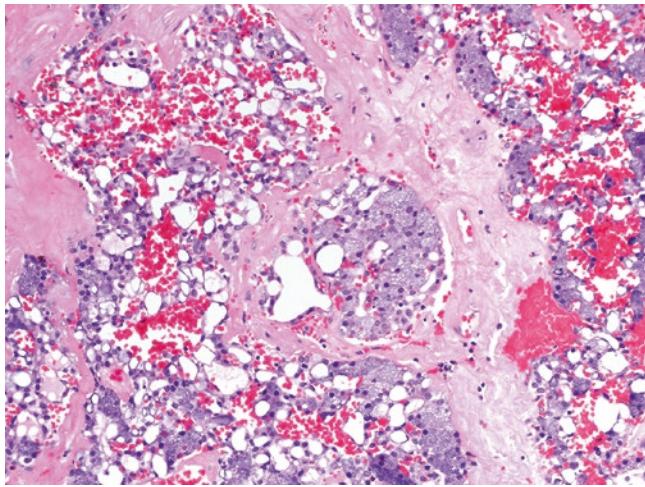


Fig. 6.32 (H&E, 200×) Acinic cell carcinoma, hemorrhagic

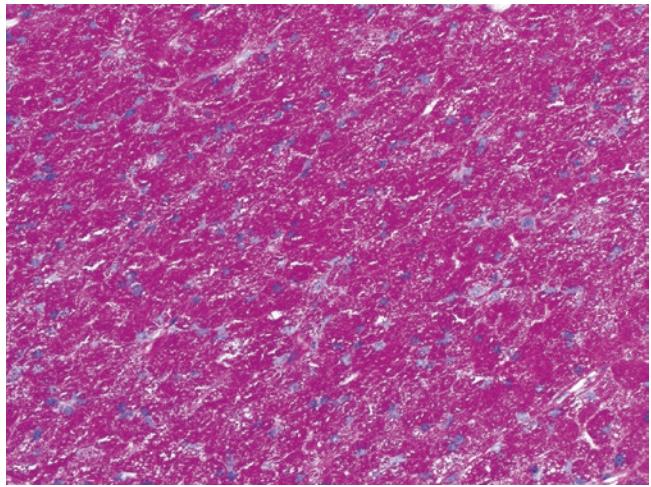


Fig. 6.35 (PAS-D, 400×) Acinic cell carcinoma, zymogen-like granules

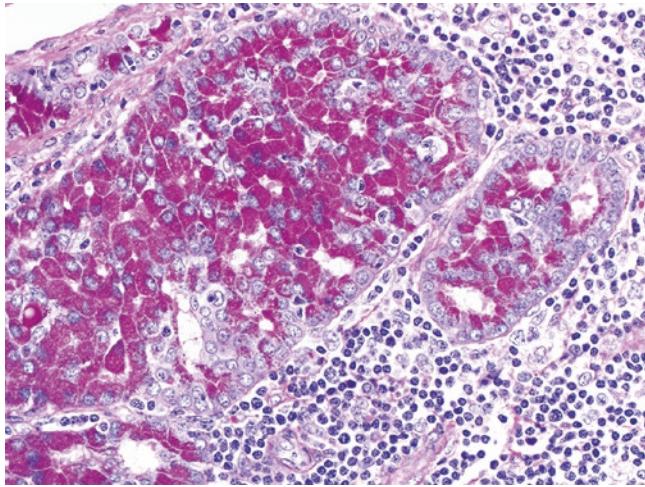


Fig. 6.33 (PAS-D, 400×) Acinic cell carcinoma, zymogen-like granules

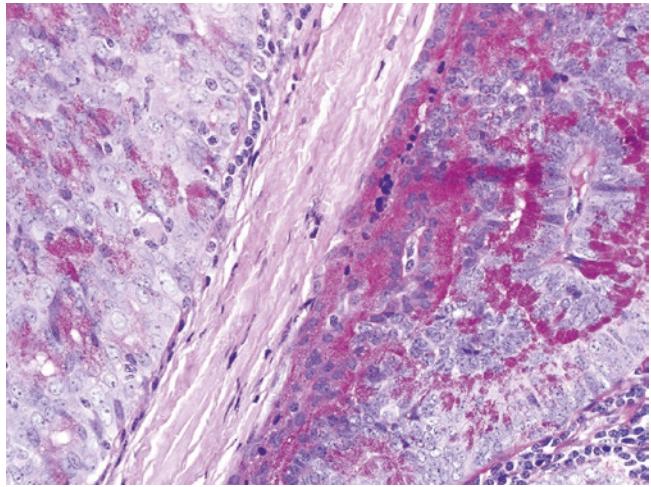


Fig. 6.36 (PAS-D, 400×) Acinic cell carcinoma, high-grade transformation, zymogen-like granules

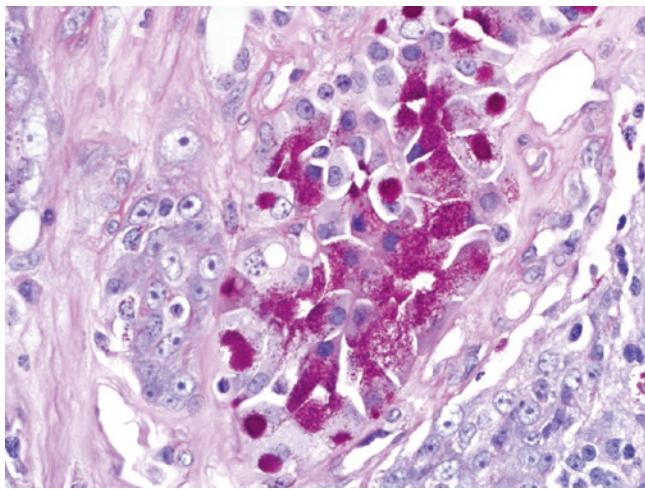


Fig. 6.37 (PAS-D, 600 \times) Acinic cell carcinoma, high-grade transformation, zymogen-like granules

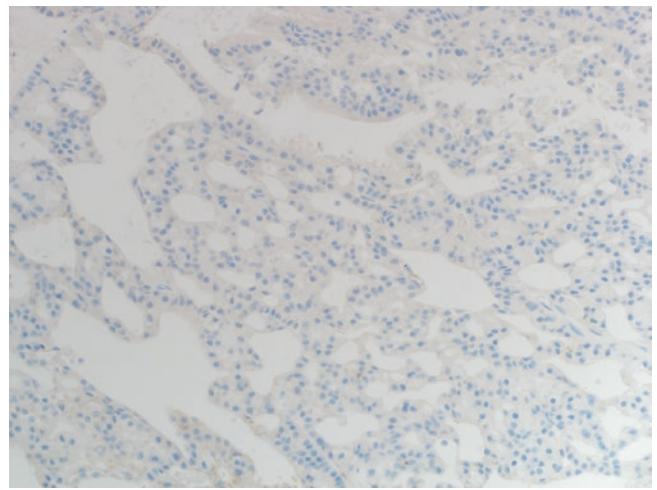


Fig. 6.40 (S-100, 200 \times) Acinic cell carcinoma, negative immunoreactivity

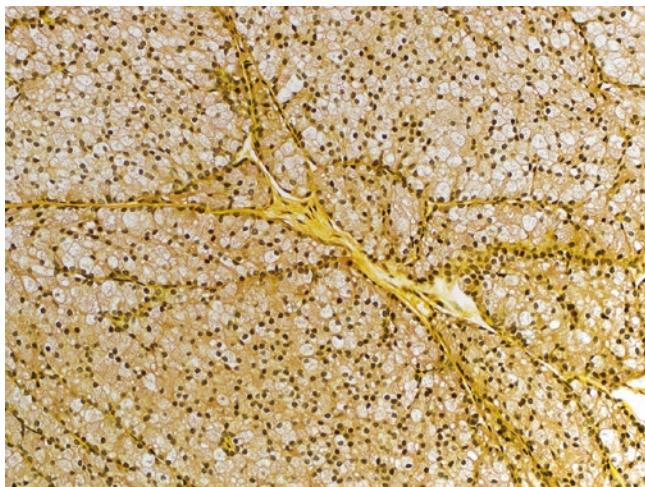


Fig. 6.38 (Mucicarmine, 200 \times) Acinic cell carcinoma, negative reactivity

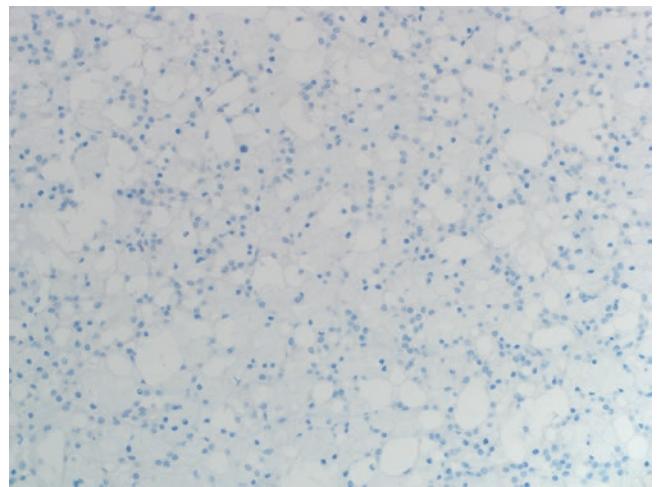


Fig. 6.41 (p63, 200 \times) Acinic cell carcinoma, negative immunoreactivity

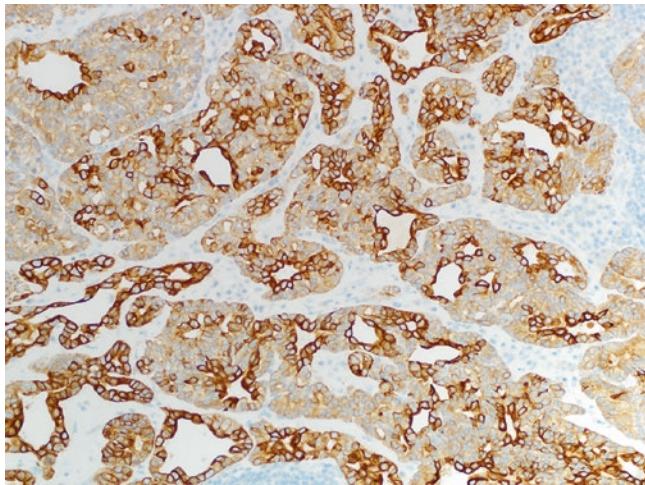


Fig. 6.39 (AE1/AE3, 200 \times) Acinic cell carcinoma, diffuse immunoreactivity

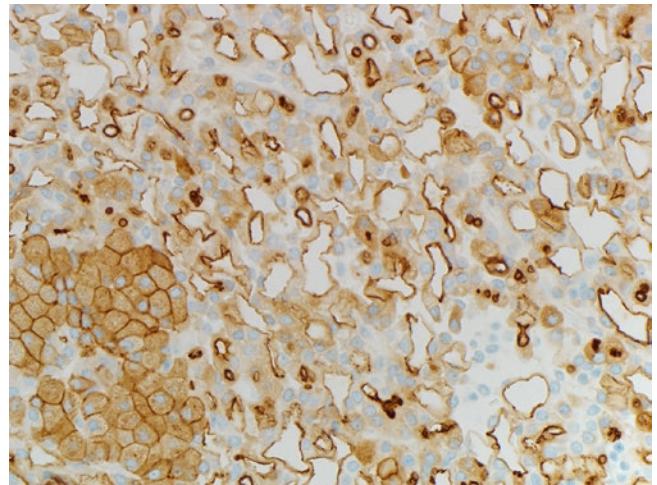


Fig. 6.42 (DOG1, 400 \times) Acinic cell carcinoma, diffuse immunoreactivity

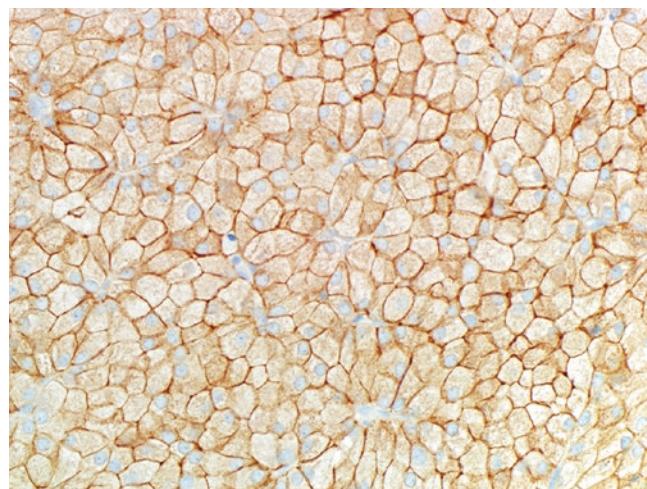


Fig. 6.43 (DOG1, 400 \times) Acinic cell carcinoma, diffuse immunoreactivity

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Adenoid Cystic Carcinoma

7

Adenoid cystic carcinoma affects children and adults and presents at a mean age of approximately 60 years. Women are involved slightly more than men. Major or minor salivary glands may be involved, presenting as single or multiple masses. Most cases of adenoid cystic carcinoma behave as low to intermediate-grade malignancies; however, a subset of cases with high-grade transformation

(necrosis, elevated mitotic activity, and cytomorphologic atypia) are predisposed to recurrence, lymph node involvement, and distant metastasis. Adenoid cystic carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (ductal and myoepithelial), and may exhibit a variety of architectural patterns (solid, cribriform, and tubular) (Figs. 7.1–7.37).

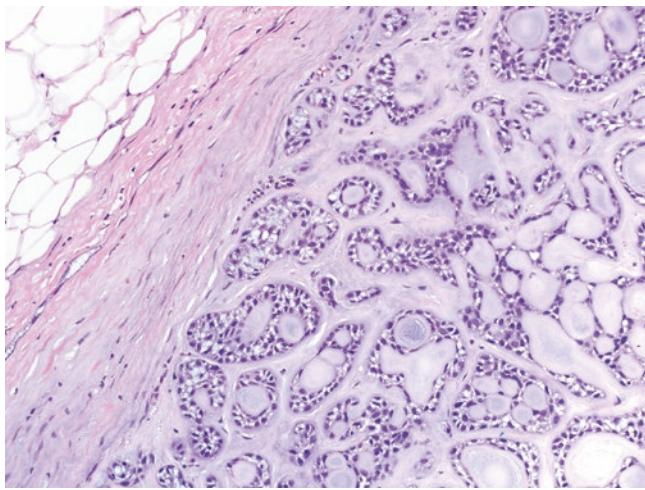


Fig. 7.1 (H&E, 200 \times) Adenoid cystic carcinoma, circumscribed

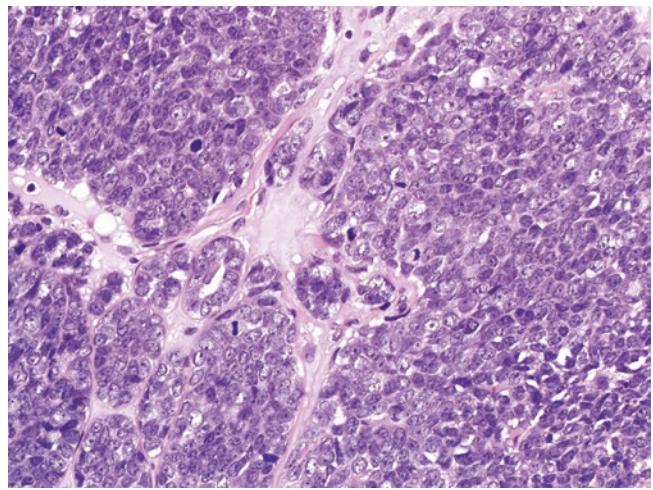


Fig. 7.4 (H&E, 400 \times) Adenoid cystic carcinoma, solid

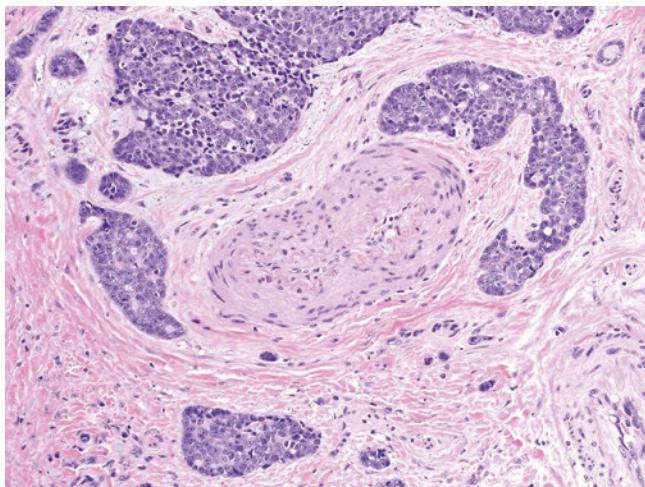


Fig. 7.2 (H&E, 200 \times) Adenoid cystic carcinoma, infiltrative

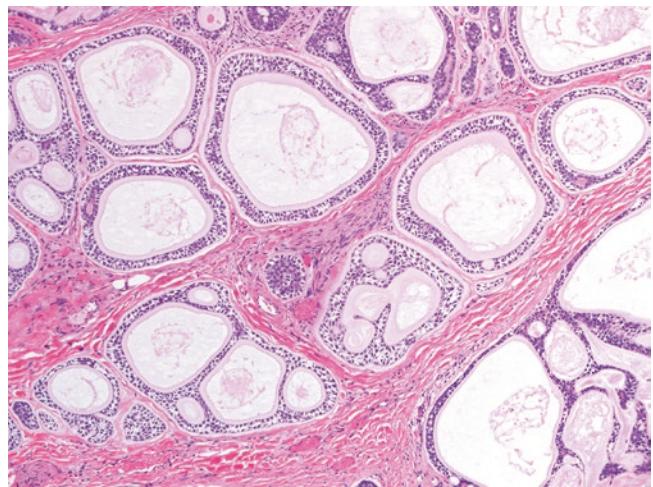


Fig. 7.5 (H&E, 100 \times) Adenoid cystic carcinoma, tubular

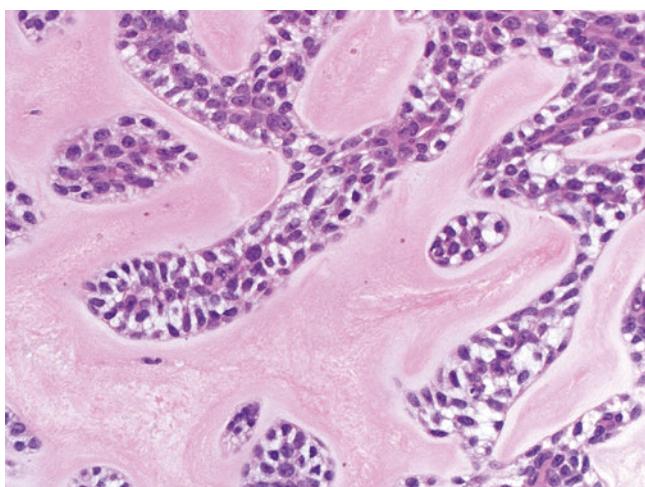


Fig. 7.3 (H&E, 400 \times) Adenoid cystic carcinoma, biphasic

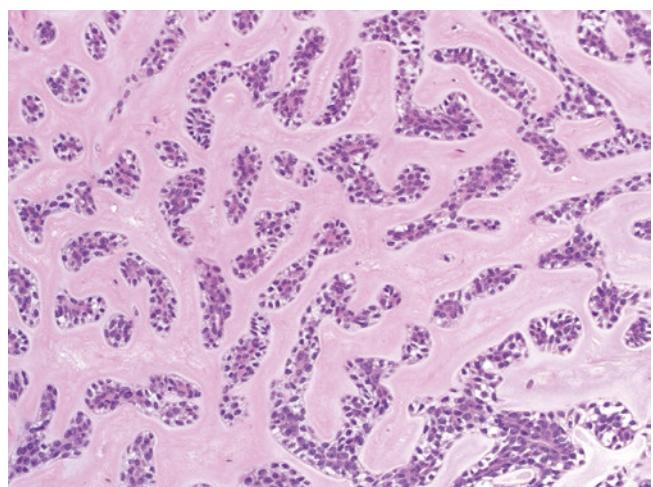


Fig. 7.6 (H&E, 200 \times) Adenoid cystic carcinoma, tubular

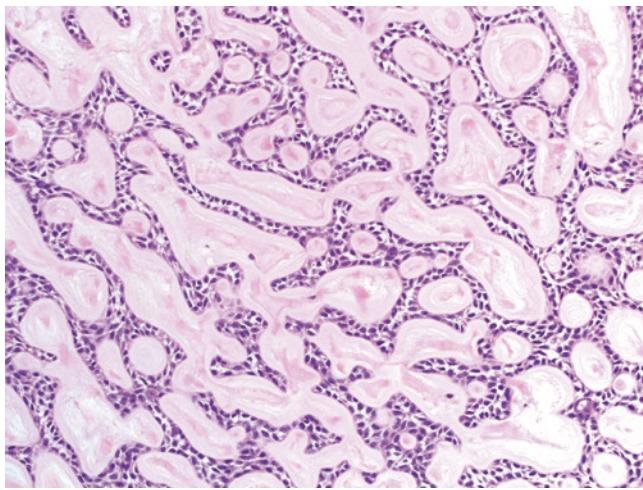


Fig. 7.7 (H&E, 200x) Adenoid cystic carcinoma, tubular

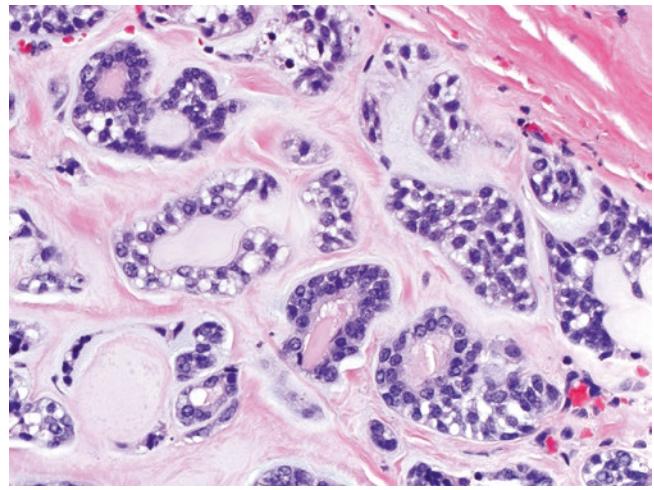


Fig. 7.10 (H&E, 400x) Adenoid cystic carcinoma, tubular

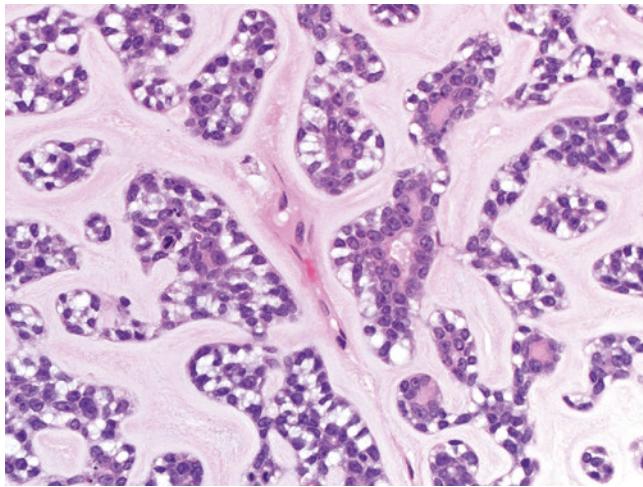


Fig. 7.8 (H&E, 400x) Adenoid cystic carcinoma, tubular

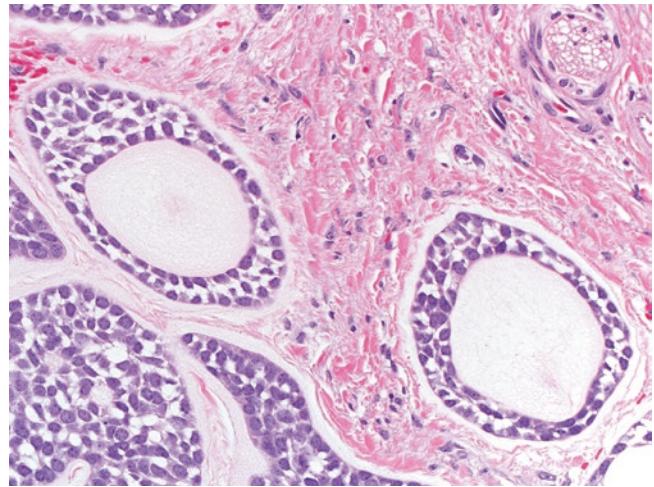


Fig. 7.11 (H&E, 400x) Adenoid cystic carcinoma, tubular

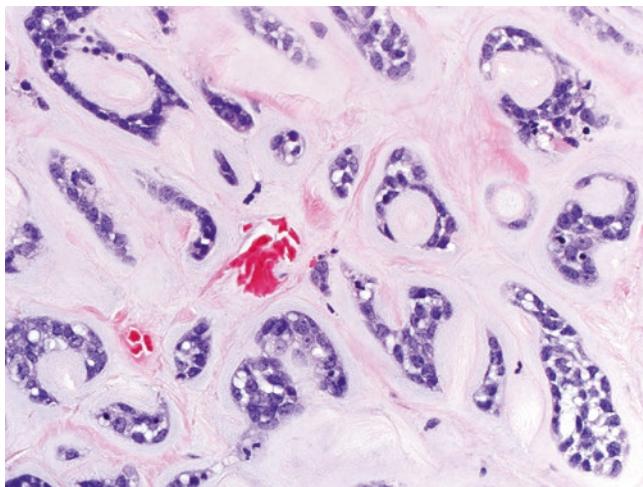


Fig. 7.9 (H&E, 400x) Adenoid cystic carcinoma, tubular

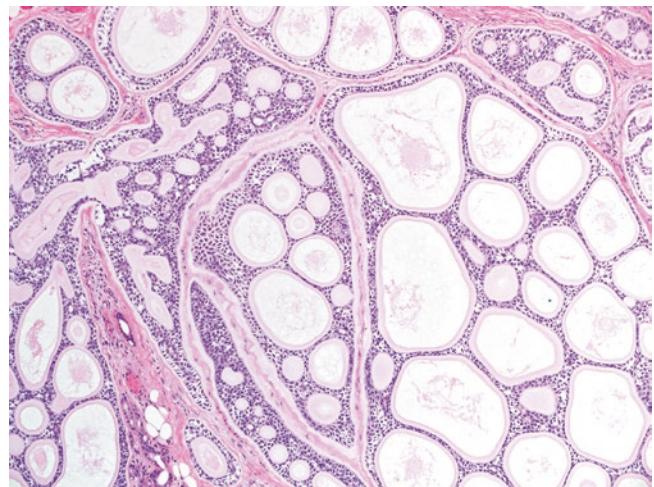


Fig. 7.12 (H&E, 100x) Adenoid cystic carcinoma, cribriform

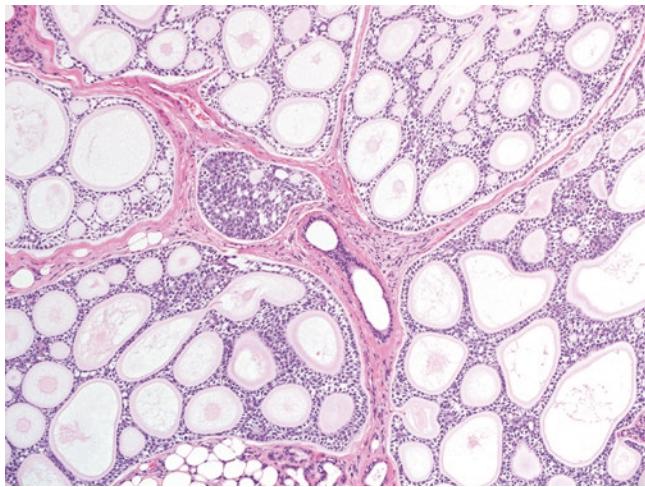


Fig. 7.13 (H&E, 100x) Adenoid cystic carcinoma, cribriform

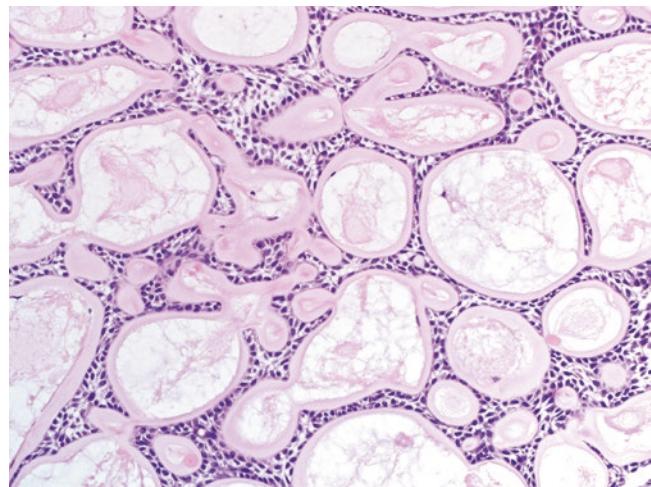


Fig. 7.16 (H&E, 200x) Adenoid cystic carcinoma, cribriform

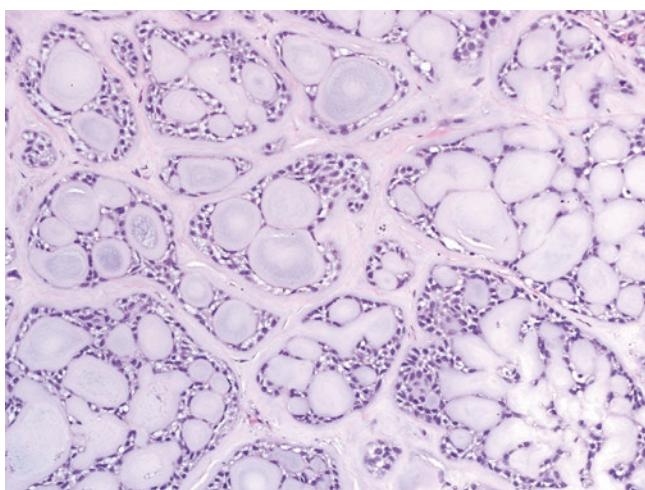


Fig. 7.14 (H&E, 200x) Adenoid cystic carcinoma, cribriform

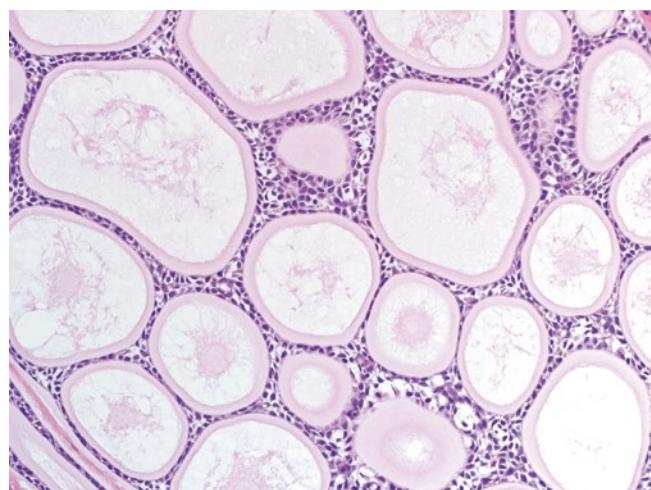


Fig. 7.17 (H&E, 200x) Adenoid cystic carcinoma, cribriform

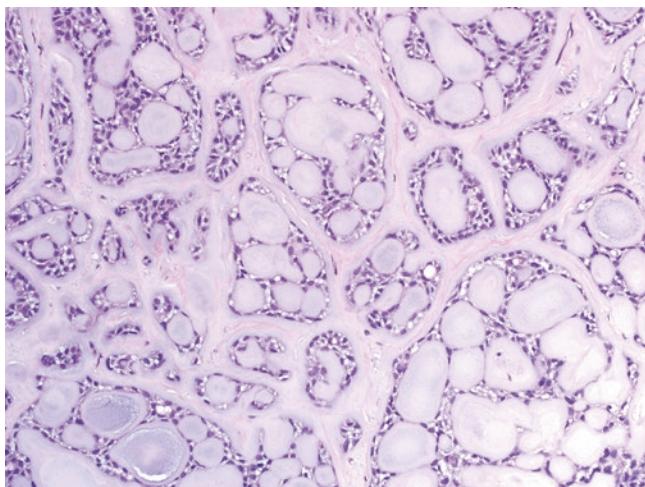


Fig. 7.15 (H&E, 200x) Adenoid cystic carcinoma, cribriform

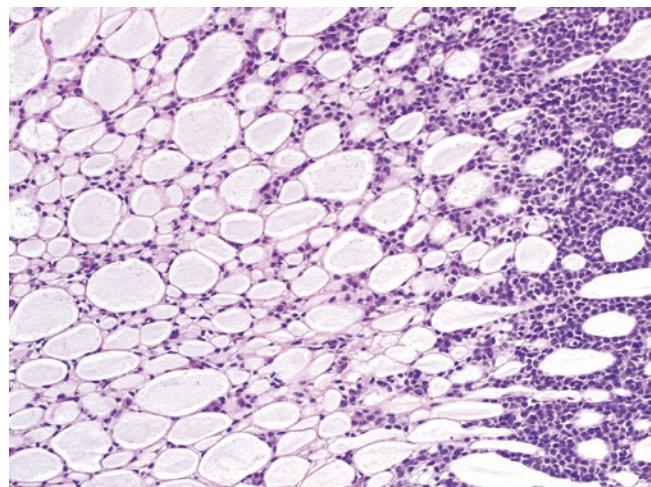


Fig. 7.18 (H&E, 200x) Adenoid cystic carcinoma, cribriform

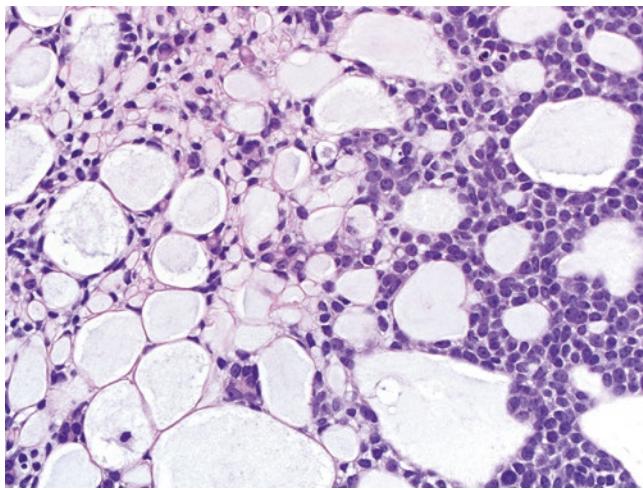


Fig. 7.19 (H&E, 400 \times) Adenoid cystic carcinoma, cribriform

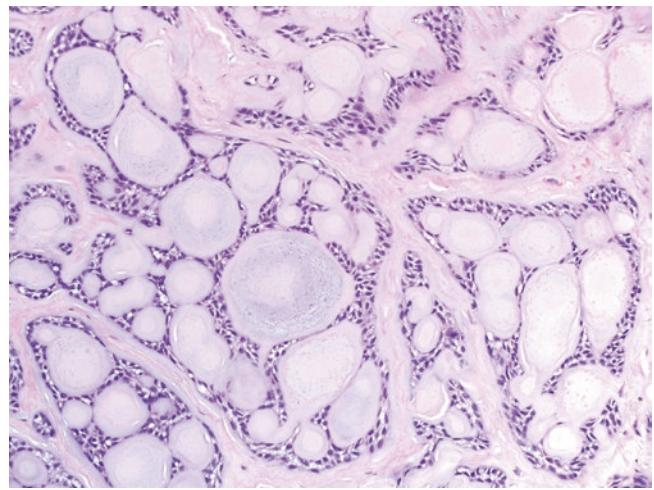


Fig. 7.22 (H&E, 200 \times) Adenoid cystic carcinoma, tubular and cribriform

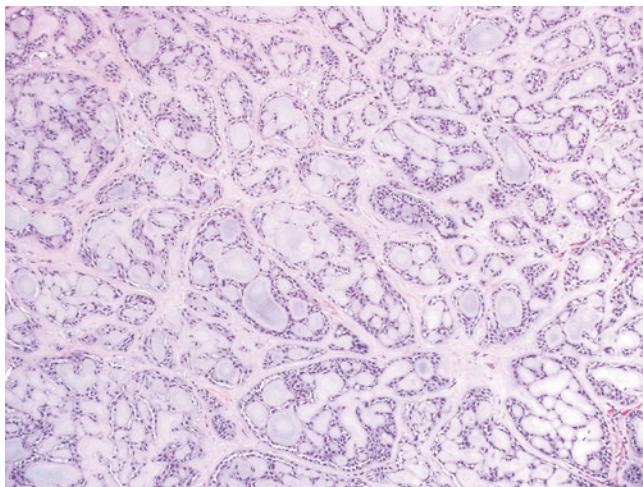


Fig. 7.20 (H&E, 100 \times) Adenoid cystic carcinoma, tubular and cribriform

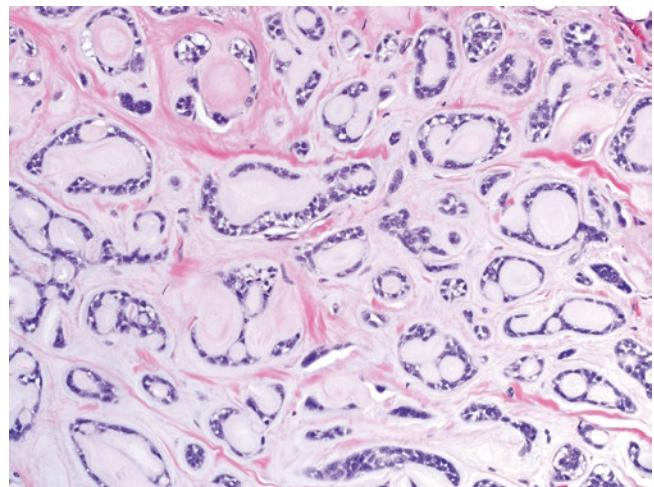


Fig. 7.23 (H&E, 200 \times) Adenoid cystic carcinoma, tubular and cribriform

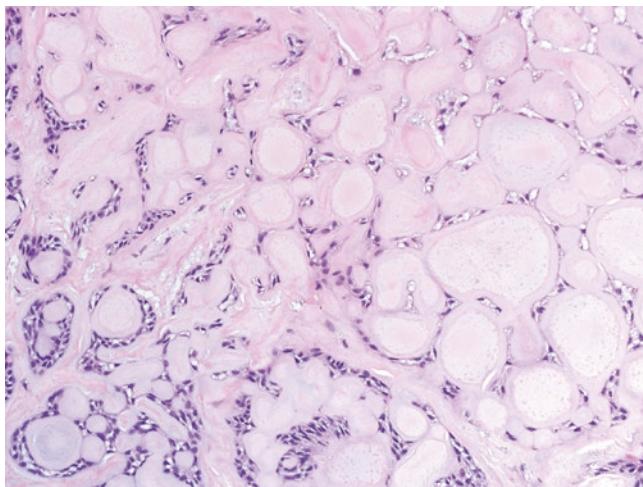


Fig. 7.21 (H&E, 200 \times) Adenoid cystic carcinoma, tubular and cribriform

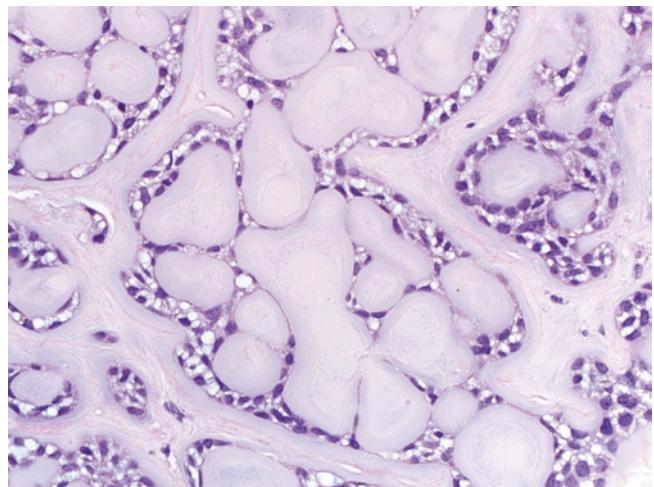


Fig. 7.24 (H&E, 400 \times) Adenoid cystic carcinoma, tubular and cribriform

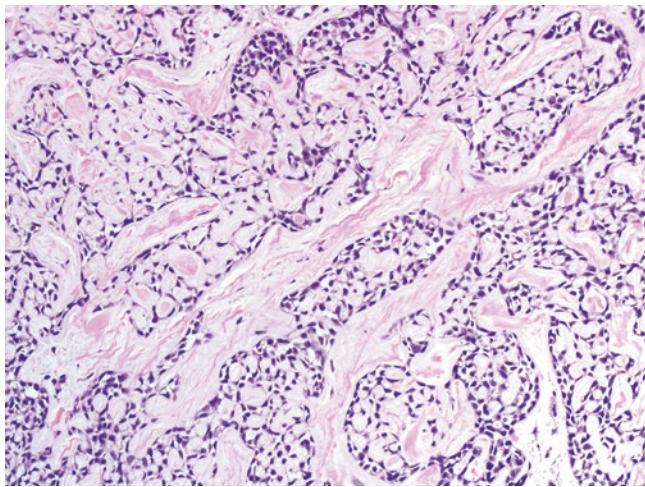


Fig. 7.25 (H&E, 200×) Adenoid cystic carcinoma, hyalinized

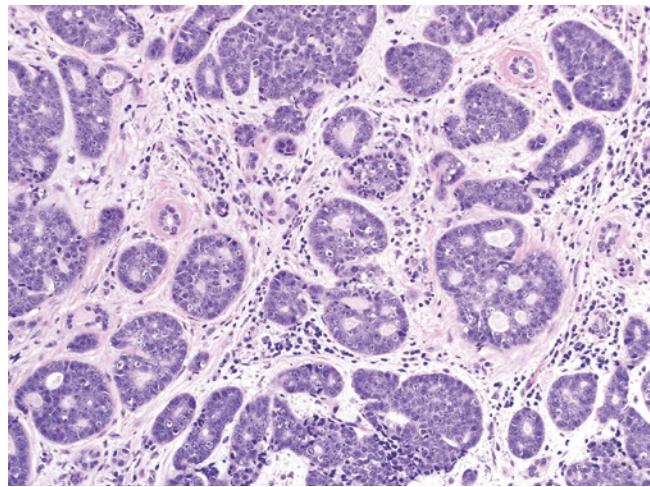


Fig. 7.28 (H&E, 200×) Adenoid cystic carcinoma, high-grade transformation, cytomorphologic atypia

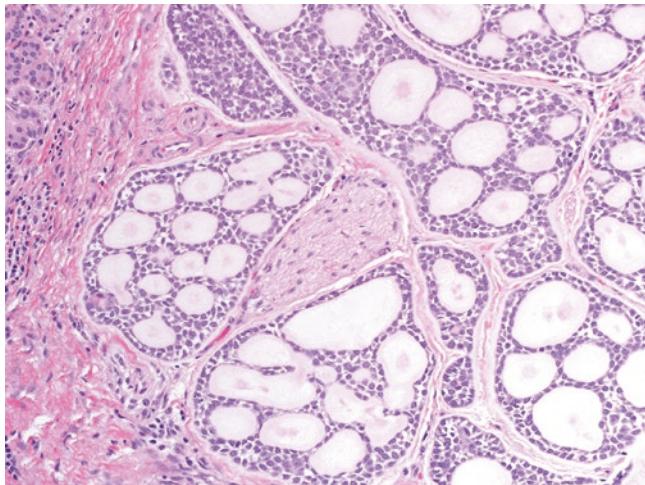


Fig. 7.26 (H&E, 200×) Adenoid cystic carcinoma, perineural invasion

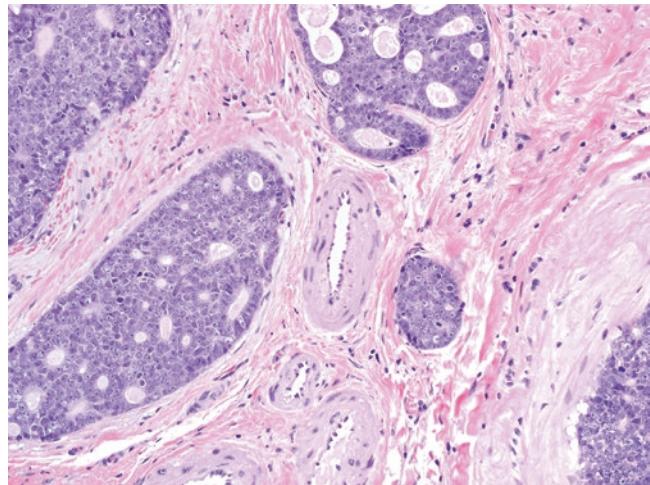


Fig. 7.29 (H&E, 200×) Adenoid cystic carcinoma, high-grade transformation, cytomorphologic atypia

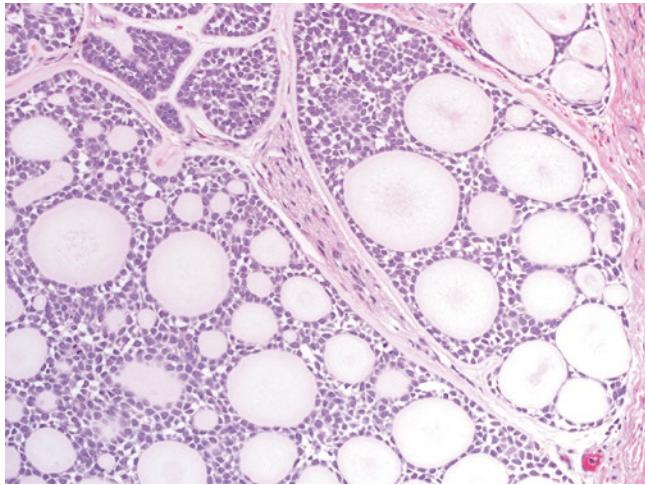


Fig. 7.27 (H&E, 200×) Adenoid cystic carcinoma, perineural invasion

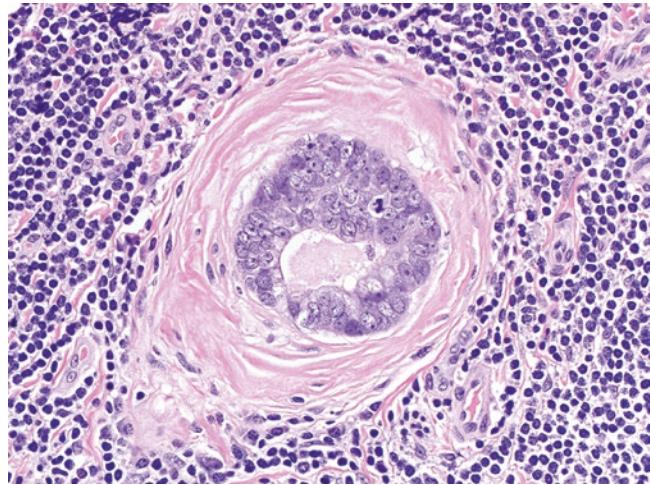


Fig. 7.30 (H&E, 400×) Adenoid cystic carcinoma, high-grade transformation, cytomorphologic atypia

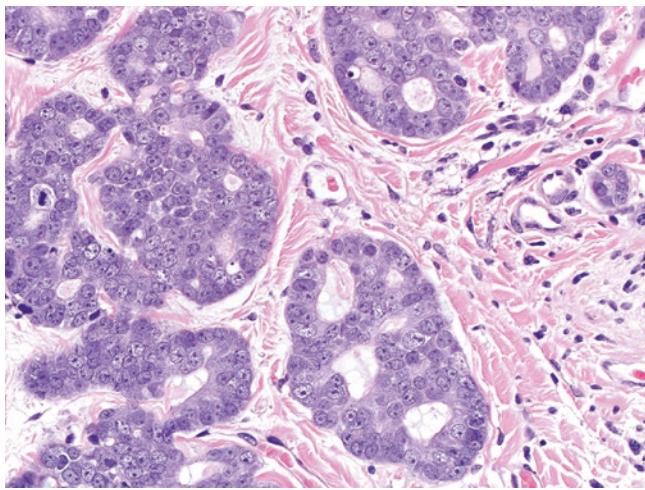


Fig. 7.31 (H&E, 400 \times) Adenoid cystic carcinoma, high-grade transformation, mitotic activity

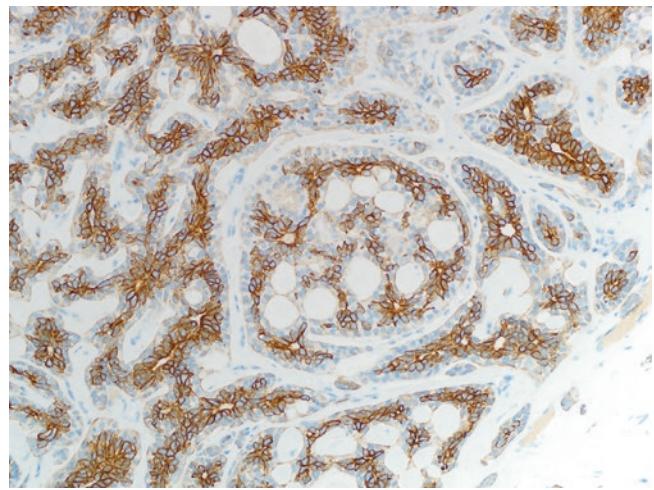


Fig. 7.34 (AE1/AE3, 200 \times) Adenoid cystic carcinoma, ductal immunoreactivity

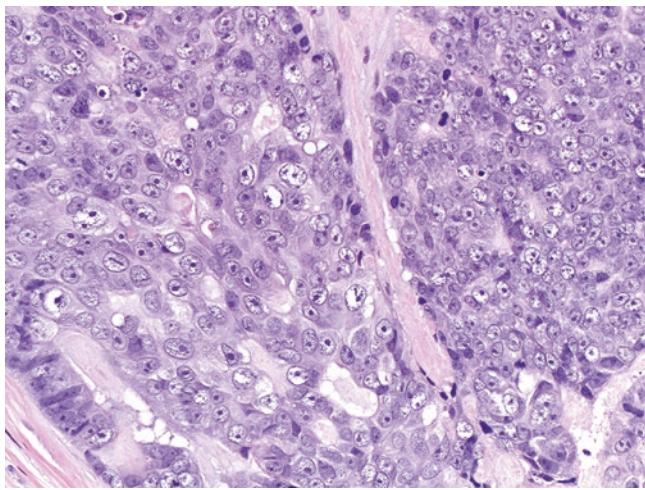


Fig. 7.32 (H&E, 400 \times) Adenoid cystic carcinoma, high-grade transformation, mitotic activity

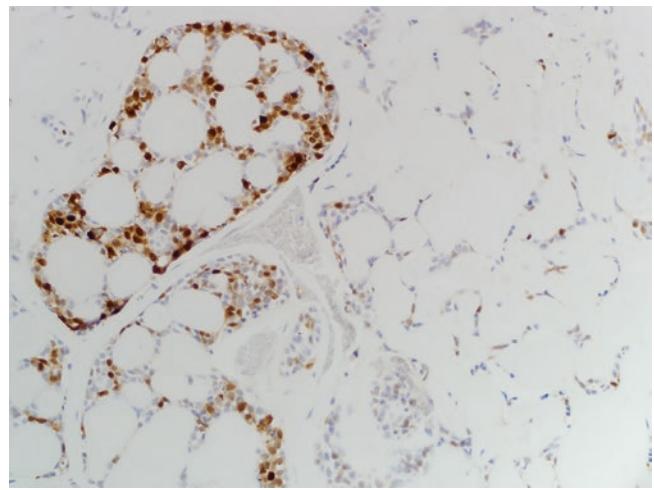


Fig. 7.35 (S-100, 200 \times) Adenoid cystic carcinoma, myoepithelial immunoreactivity

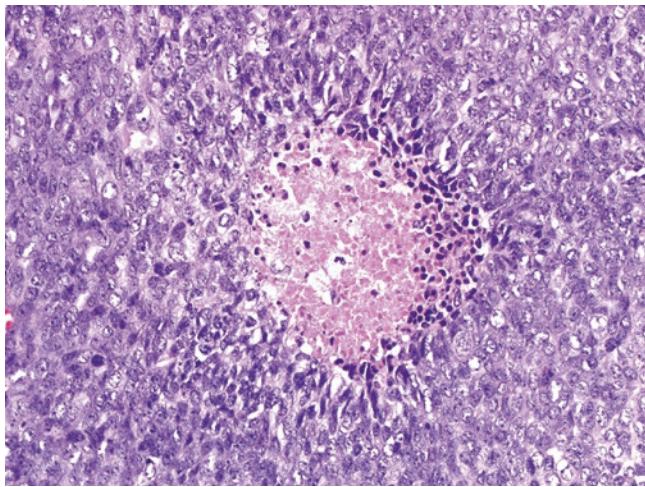


Fig. 7.33 (H&E, 400 \times) Adenoid cystic carcinoma, high-grade transformation, necrosis

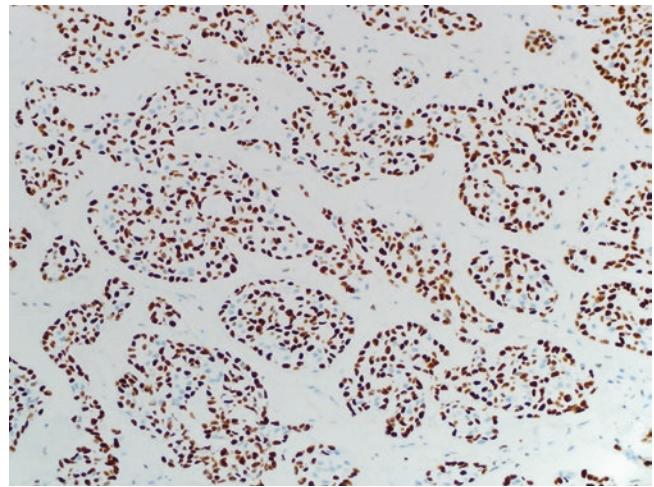


Fig. 7.36 (p63, 200 \times) Adenoid cystic carcinoma, myoepithelial immunoreactivity

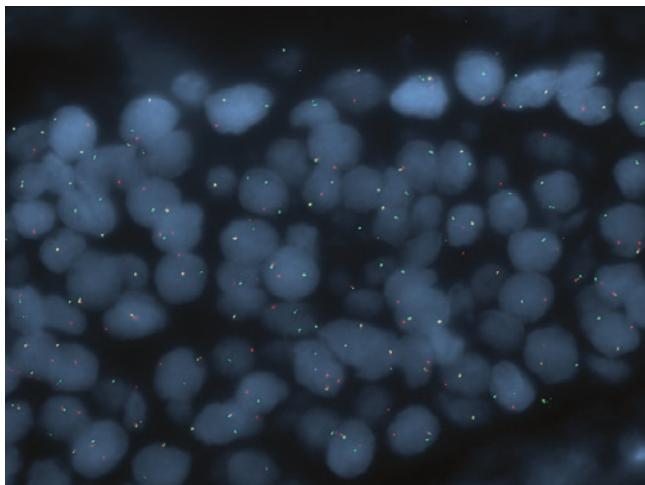


Fig. 7.37 (Fluorescent in situ hybridization, 600 \times) Adenoid cystic carcinoma, *MYB* rearrangement

Suggested Reading

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Basal Cell Adenoma

8

Basal cell adenoma is the benign counterpart of basal cell adenocarcinoma. Basal cell adenoma affects primarily adults and presents at a mean age of approximately 65 years. Women are involved slightly more than men. The majority of cases involve the parotid gland, presenting as single or

multiple masses. Basal cell adenoma may be encapsulated, circumscribed, or multi-nodular, comprised of multiple cell types (ductal, myoepithelial, and basal), and exhibit a variety of architectural patterns (solid, trabecular, tubular, and membranous) (Figs. 8.1–8.28).

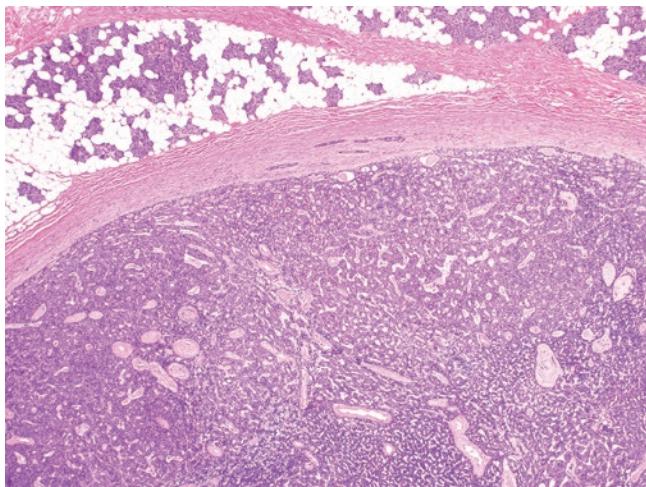


Fig. 8.1 (H&E, 40 \times) Basal cell adenoma, encapsulated

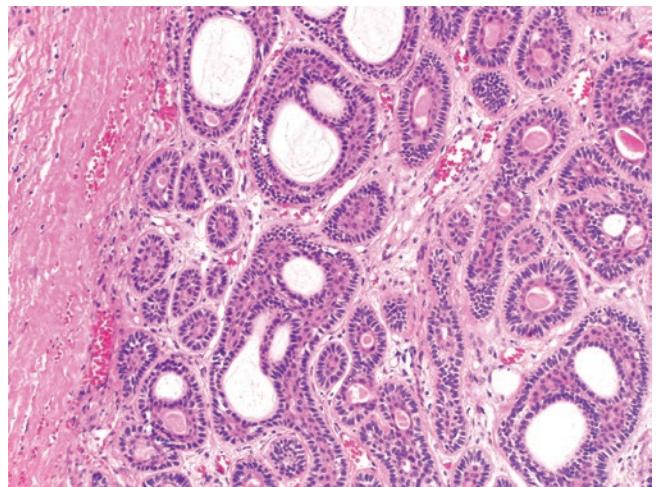


Fig. 8.4 (H&E, 200 \times) Basal cell adenoma, biphasic

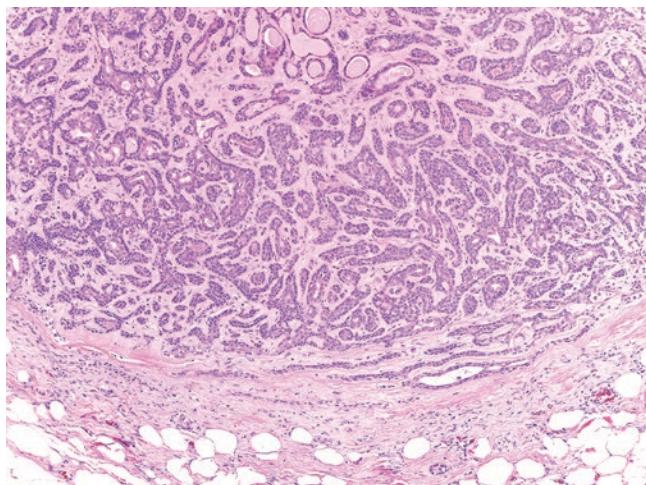


Fig. 8.2 (H&E, 100 \times) Basal cell adenoma, circumscribed

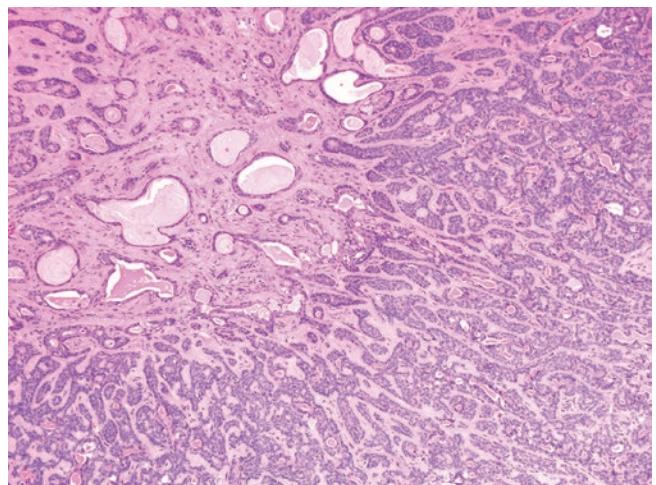


Fig. 8.5 (H&E, 100 \times) Basal cell adenoma, trabecular

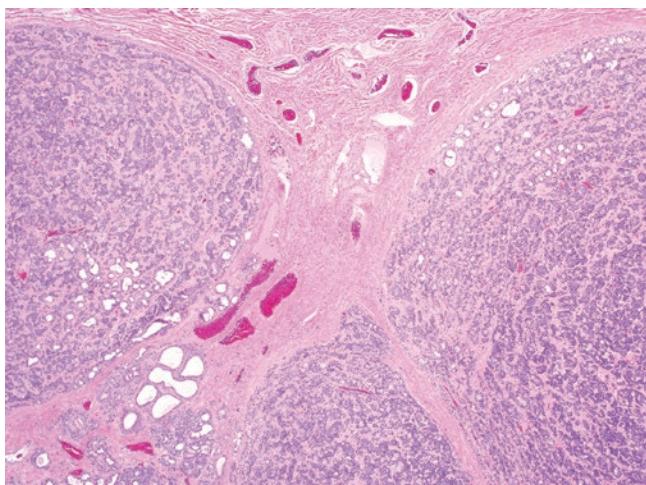


Fig. 8.3 (H&E, 40 \times) Basal cell adenoma, nodular

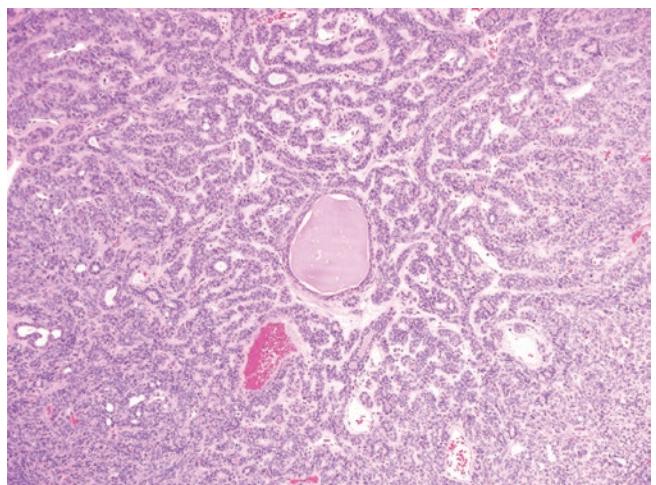


Fig. 8.6 (H&E, 100 \times) Basal cell adenoma, trabecular

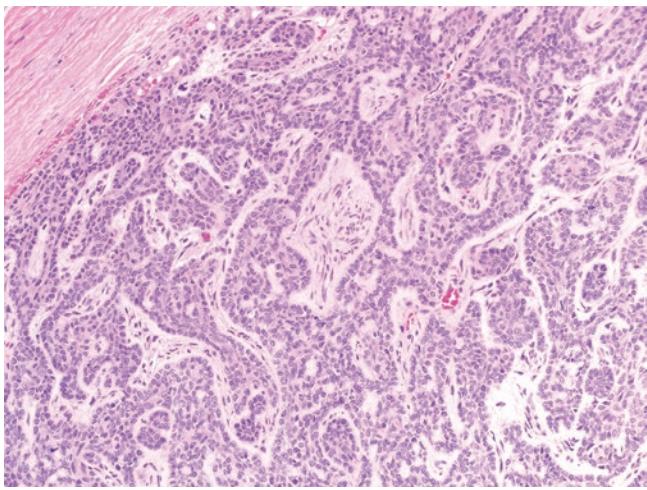


Fig. 8.7 (H&E, 200×) Basal cell adenoma, trabecular

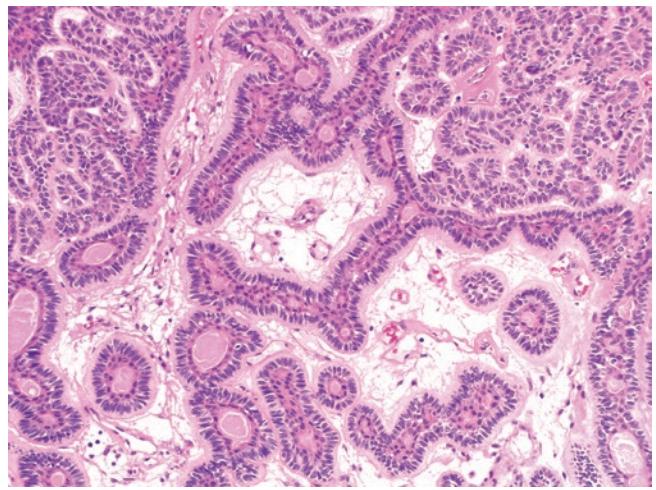


Fig. 8.10 (H&E, 200×) Basal cell adenoma, tubular

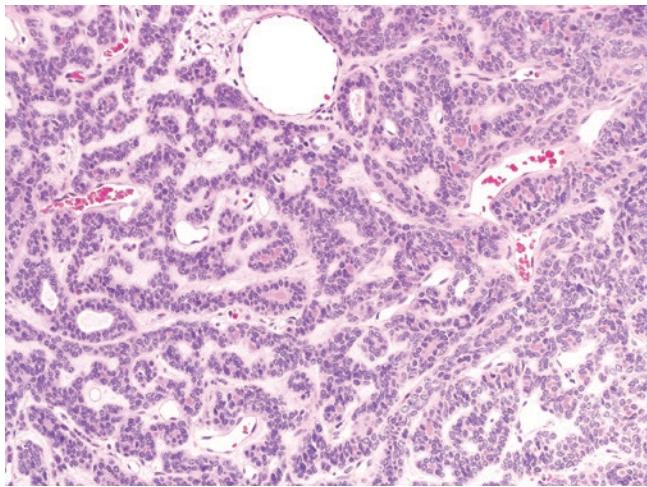


Fig. 8.8 (H&E, 200×) Basal cell adenoma, trabecular

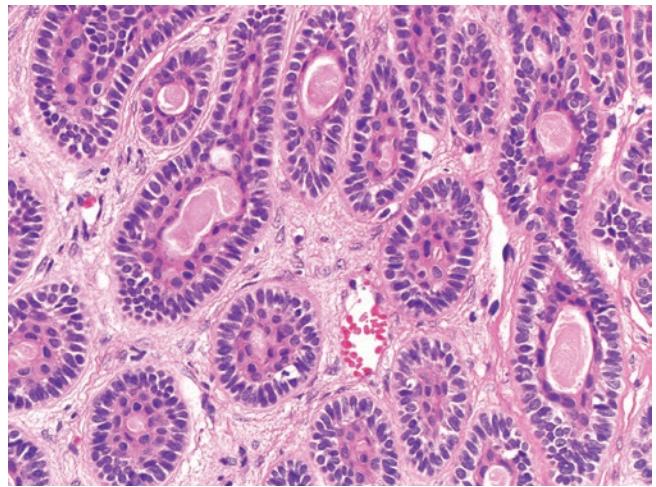


Fig. 8.11 (H&E, 400×) Basal cell adenoma, tubular

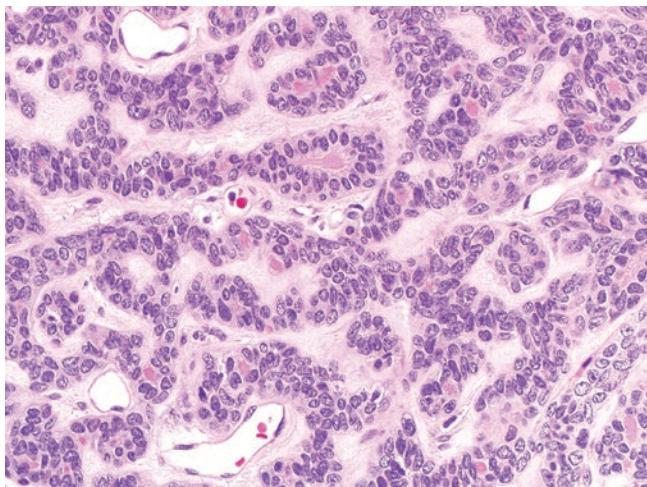


Fig. 8.9 (H&E, 400×) Basal cell adenoma, trabecular

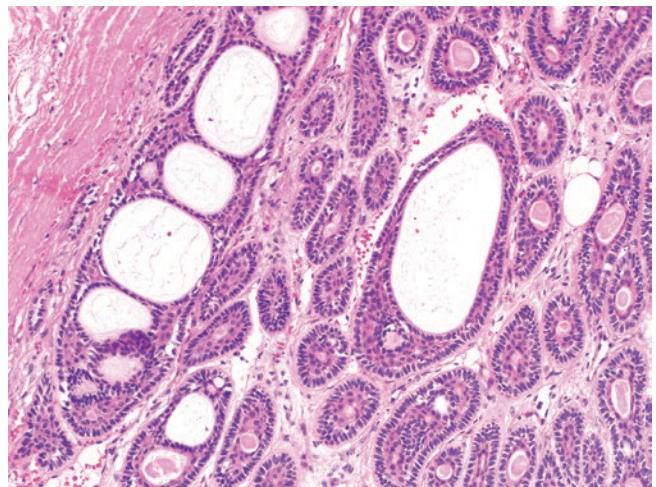


Fig. 8.12 (H&E, 200×) Basal cell adenoma, tubular and cribriform

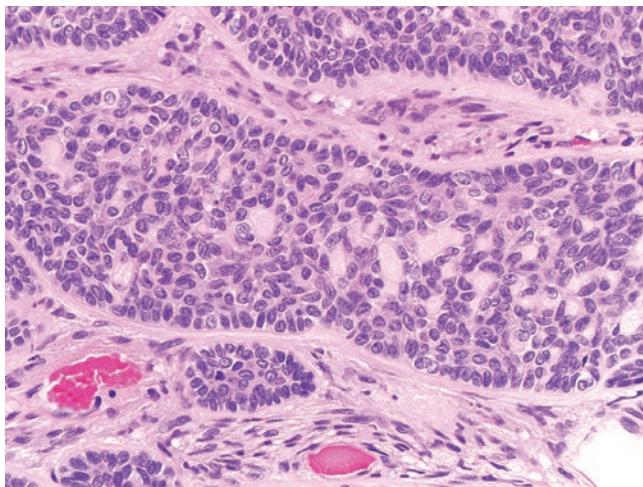


Fig. 8.13 (H&E, 400x) Basal cell adenoma, tubular and cribriform

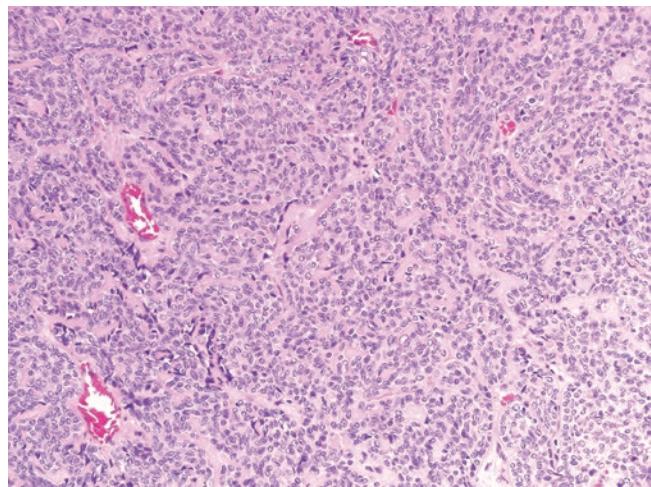


Fig. 8.16 (H&E, 200x) Basal cell adenoma, solid

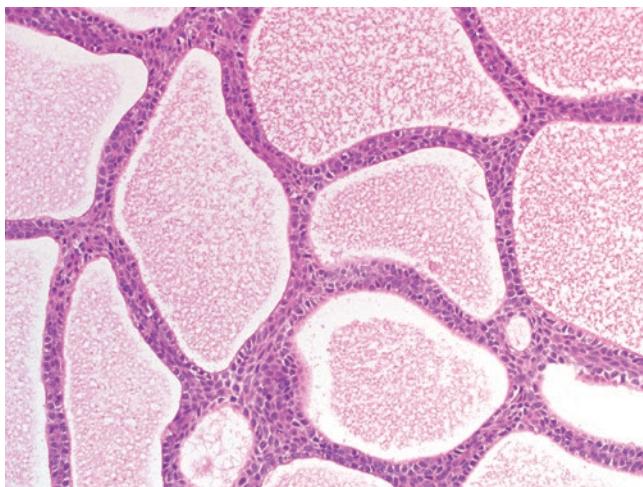


Fig. 8.14 (H&E, 200x) Basal cell adenoma, tubular and cystic

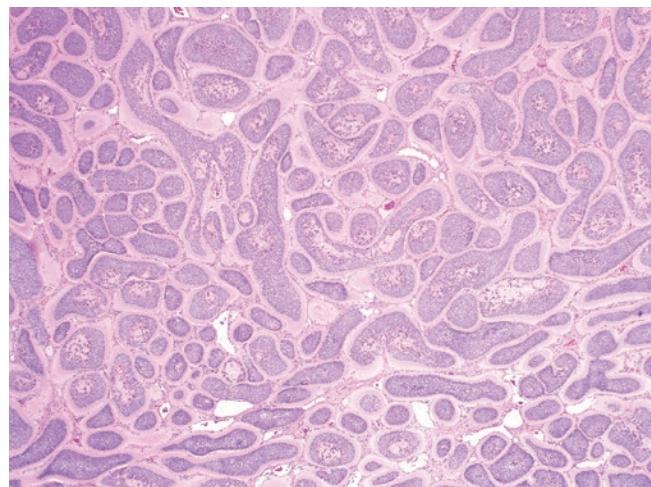


Fig. 8.17 (H&E, 40x) Basal cell adenoma, membranous

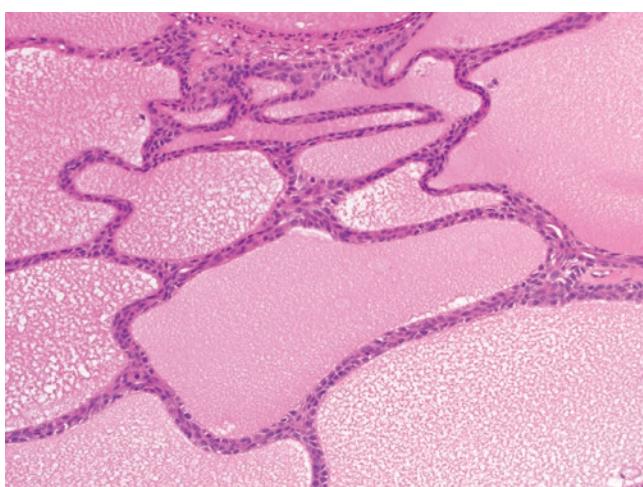


Fig. 8.15 (H&E, 200x) Basal cell adenoma, tubular and cystic

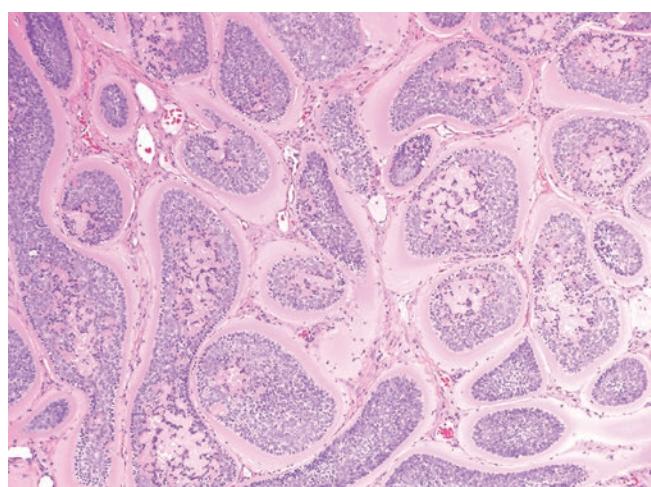


Fig. 8.18 (H&E, 100x) Basal cell adenoma, membranous

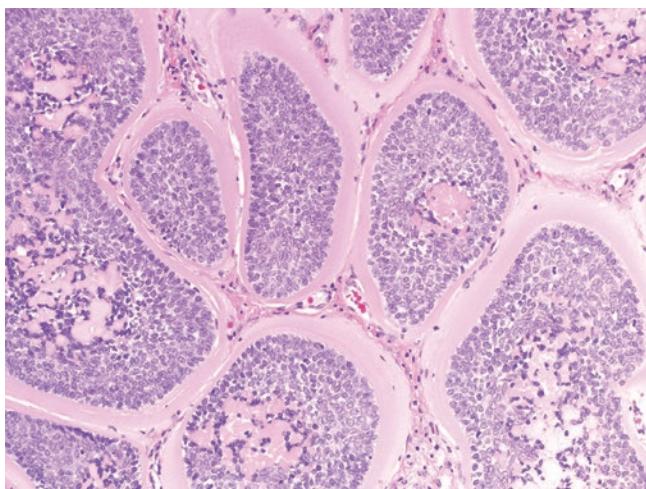


Fig. 8.19 (H&E, 200×) Basal cell adenoma, membranous

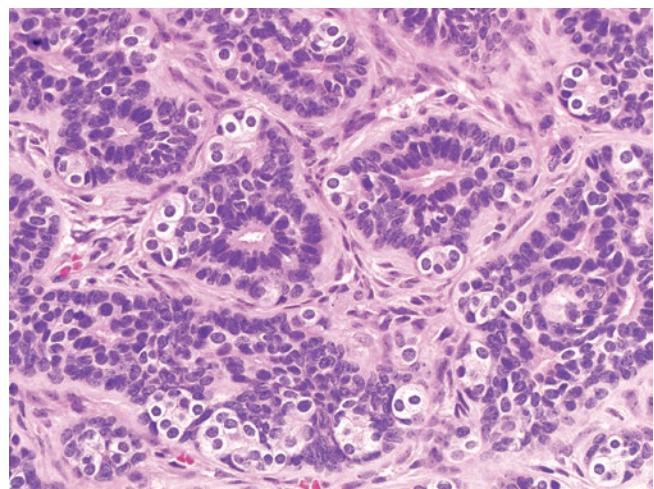


Fig. 8.22 (H&E, 400×) Basal cell adenoma, clear cells

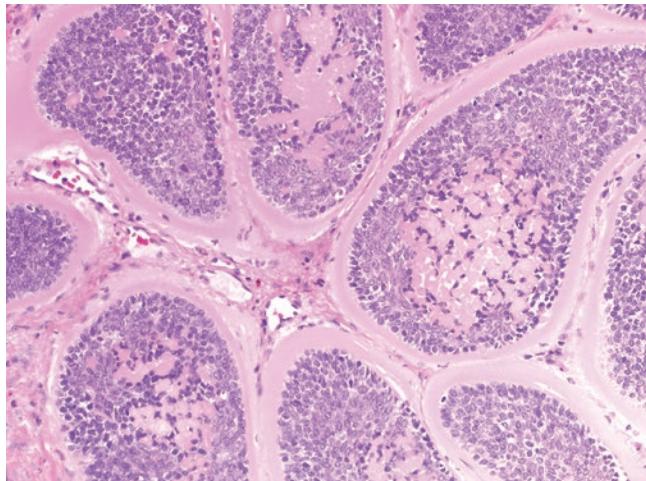


Fig. 8.20 (H&E, 200×) Basal cell adenoma, membranous

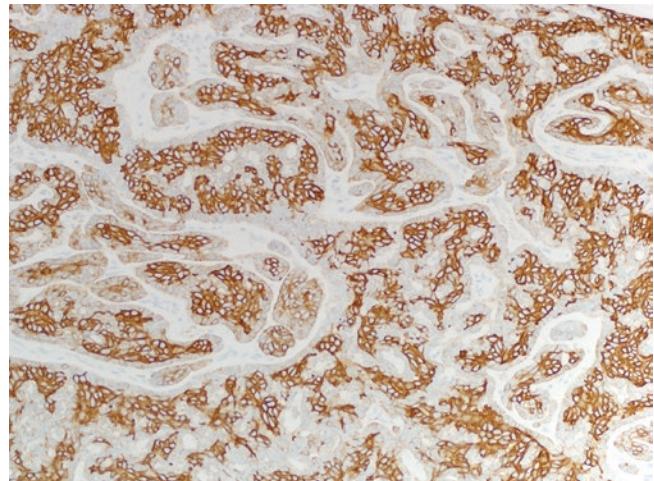


Fig. 8.23 (AE1/AE3, 200×) Basal cell adenoma, ductal immunoreactivity

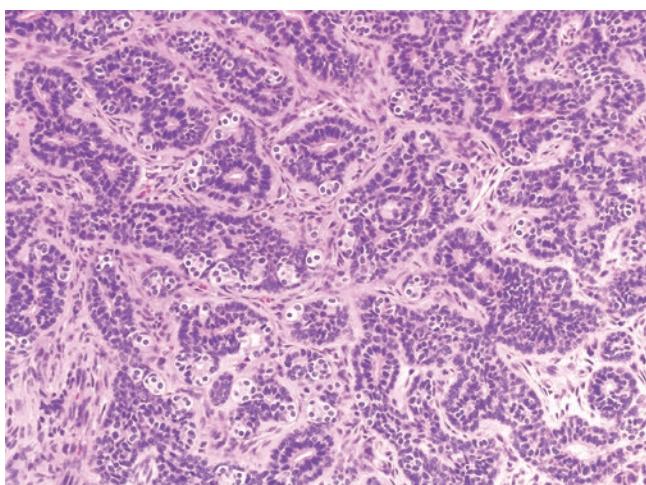


Fig. 8.21 (H&E, 200×) Basal cell adenoma, clear cells

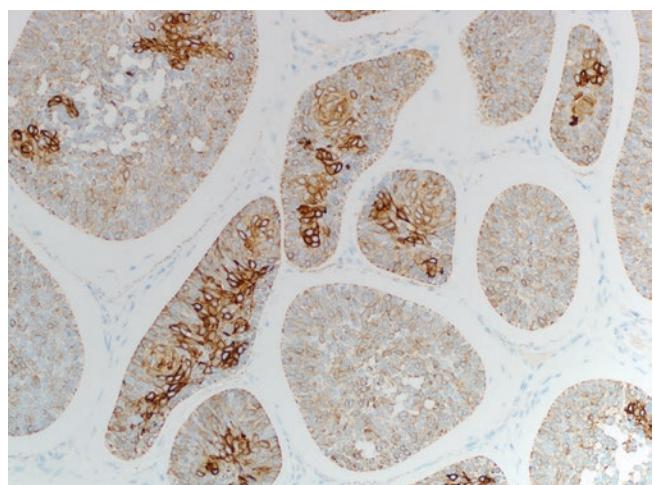


Fig. 8.24 (AE1/AE3, 200×) Basal cell adenoma, ductal immunoreactivity

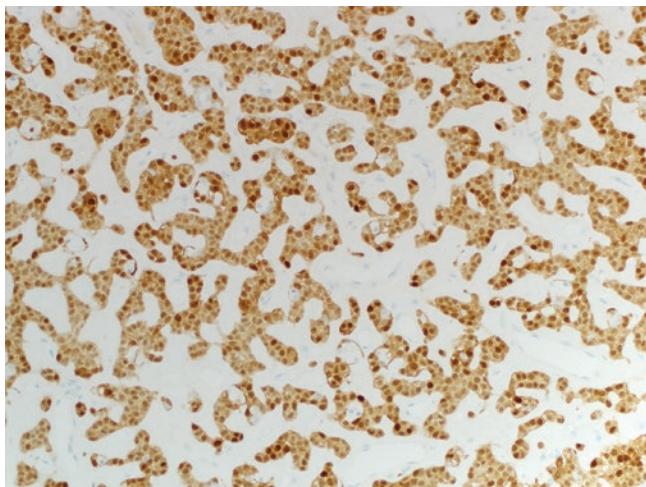


Fig. 8.25 (S-100, 200 \times) Basal cell adenoma, diffuse immunoreactivity

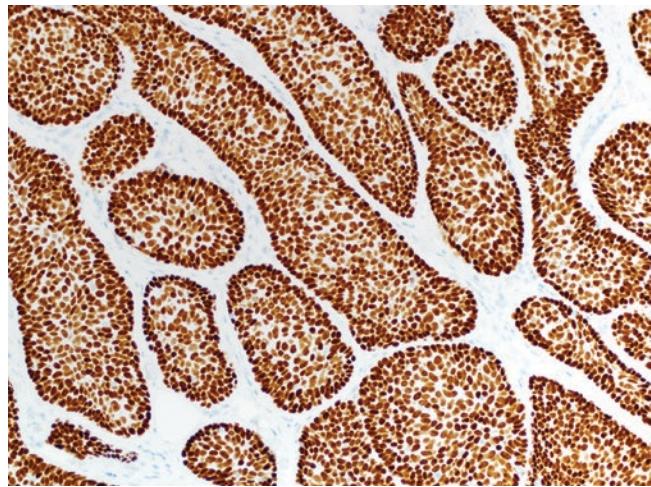


Fig. 8.27 (p63, 200 \times) Basal cell adenoma, diffuse immunoreactivity

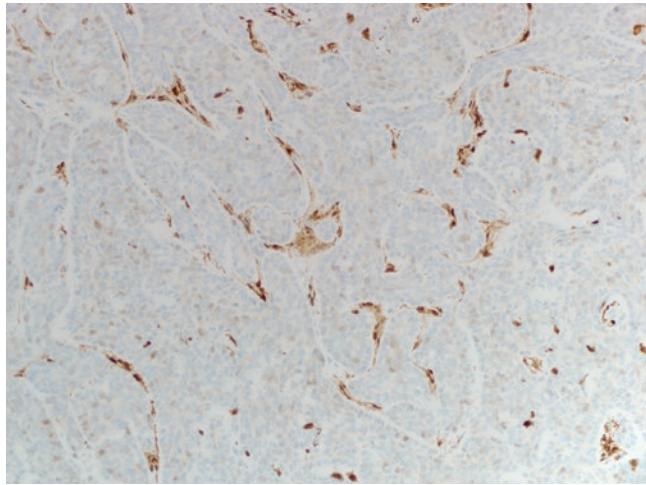


Fig. 8.26 (S-100, 200 \times) Basal cell adenoma, focal immunoreactivity

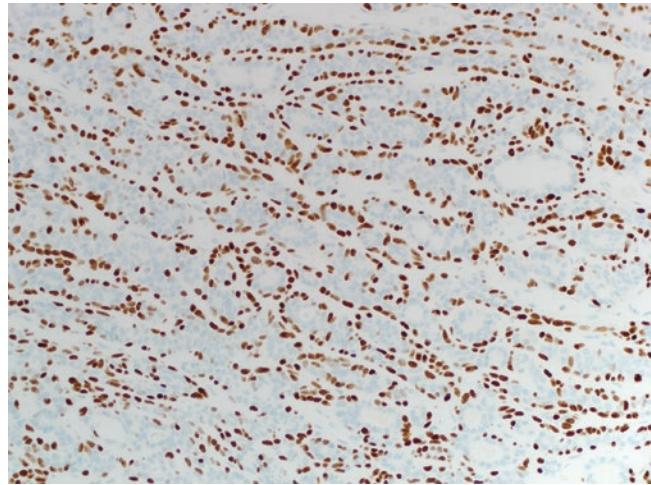


Fig. 8.28 (p63, 200 \times) Basal cell adenoma, basal immunoreactivity

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Basal Cell Adenocarcinoma

9

Basal cell adenocarcinoma is the malignant counterpart of basal cell adenoma. Basal cell adenocarcinoma affects primarily adults and presents at a mean age of approximately 65 years. Women and men are involved with similar frequency. The majority of cases involve the parotid gland,

presenting as single or multiple masses. Basal cell adenocarcinoma may be circumscribed or infiltrative, comprised of multiple cell types (ductal, myoepithelial, and basal), and may exhibit a variety of architectural patterns (solid, trabecular, tubular, and membranous) (Figs. 9.1–9.28).

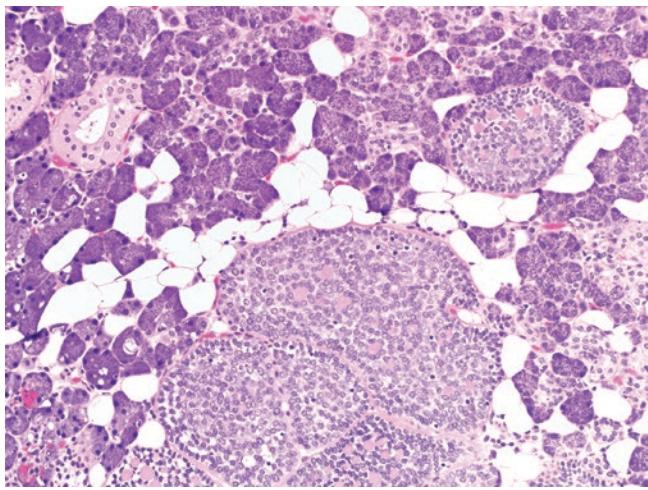


Fig. 9.1 (H&E, 200 \times) Basal cell adenocarcinoma, infiltrative

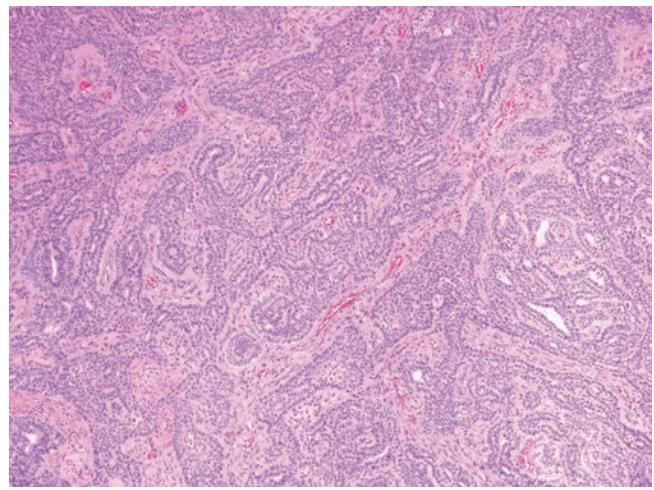


Fig. 9.4 (H&E, 100 \times) Basal cell adenocarcinoma, trabecular

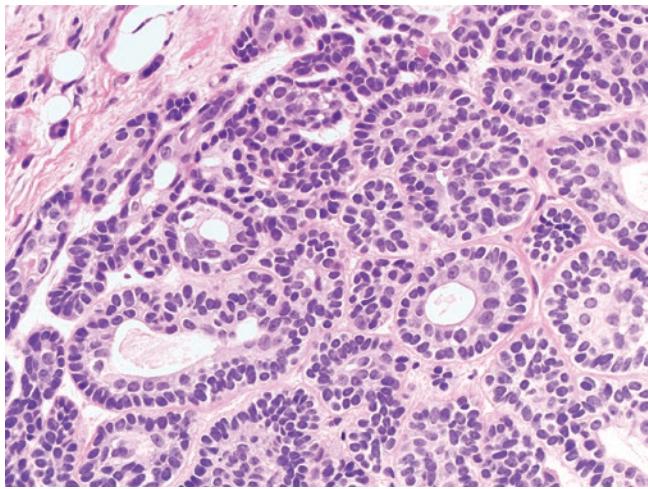


Fig. 9.2 (H&E, 400 \times) Basal cell adenocarcinoma, biphasic

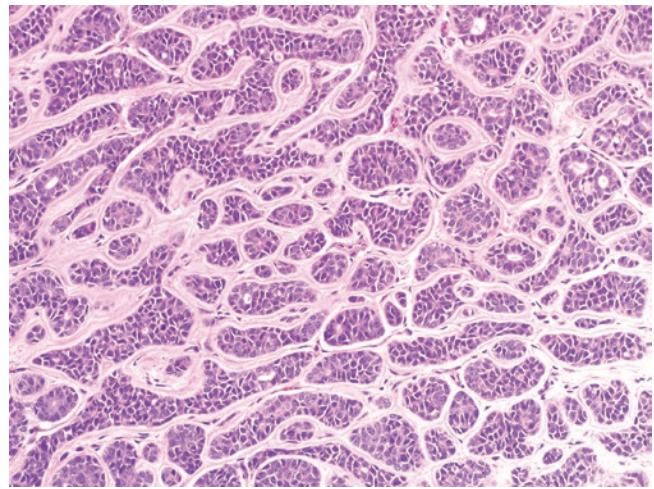


Fig. 9.5 (H&E, 200 \times) Basal cell adenocarcinoma, tubular

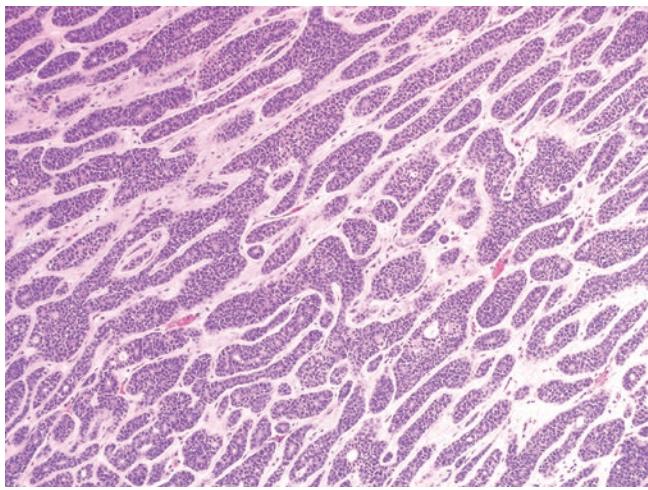


Fig. 9.3 (H&E, 100 \times) Basal cell adenocarcinoma, trabecular

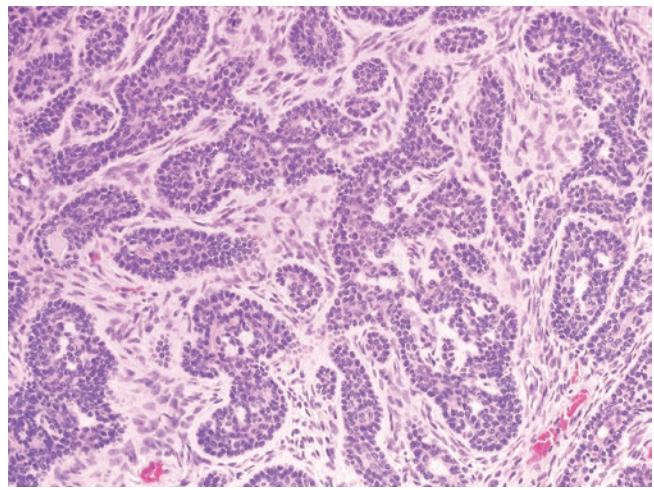


Fig. 9.6 (H&E, 200 \times) Basal cell adenocarcinoma, tubular

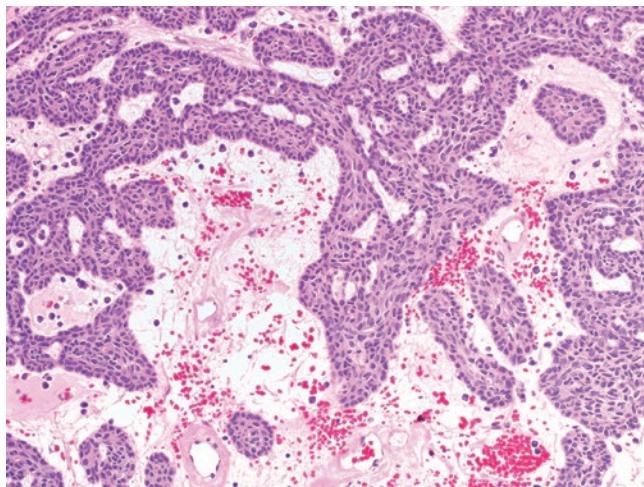


Fig. 9.7 (H&E, 200×) Basal cell adenocarcinoma, tubular

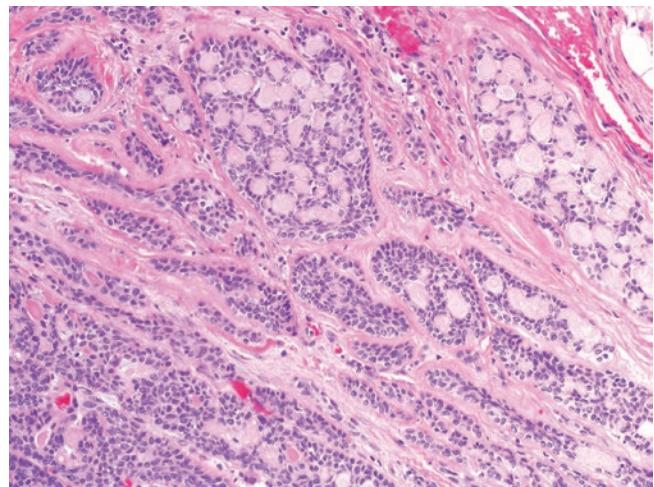


Fig. 9.10 (H&E, 200×) Basal cell adenocarcinoma, tubular and cribriform

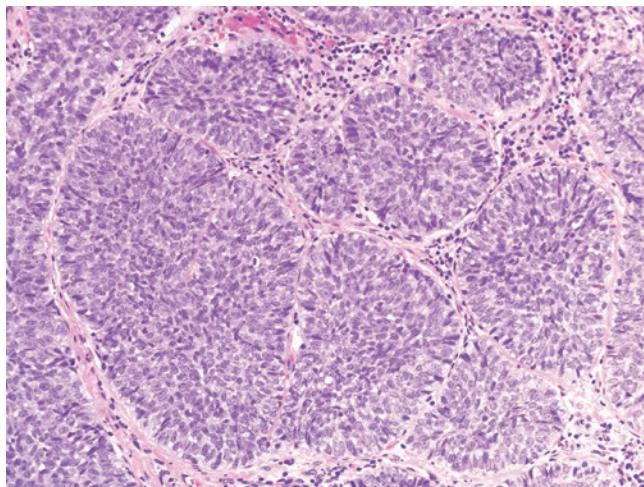


Fig. 9.8 (H&E, 200×) Basal cell adenocarcinoma, solid

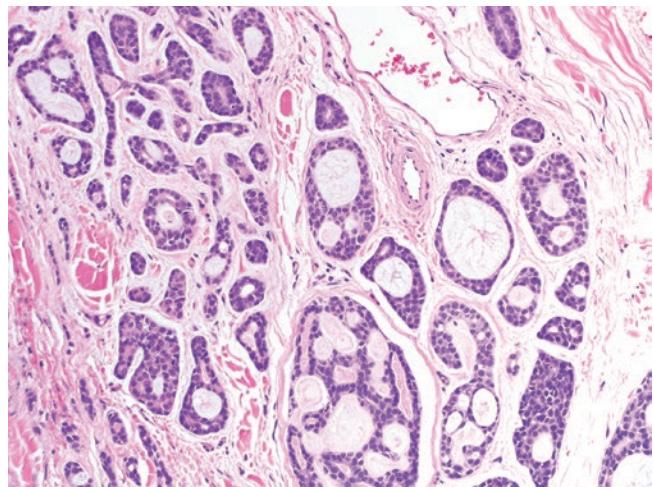


Fig. 9.11 (H&E, 200×) Basal cell adenocarcinoma, tubular and cribriform

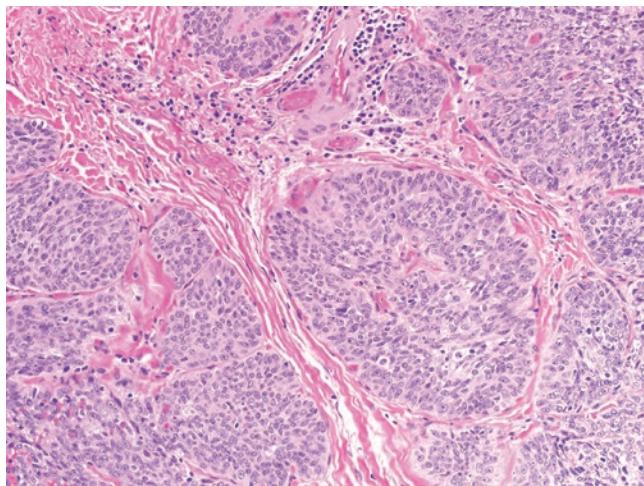


Fig. 9.9 (H&E, 200×) Basal cell adenocarcinoma, solid

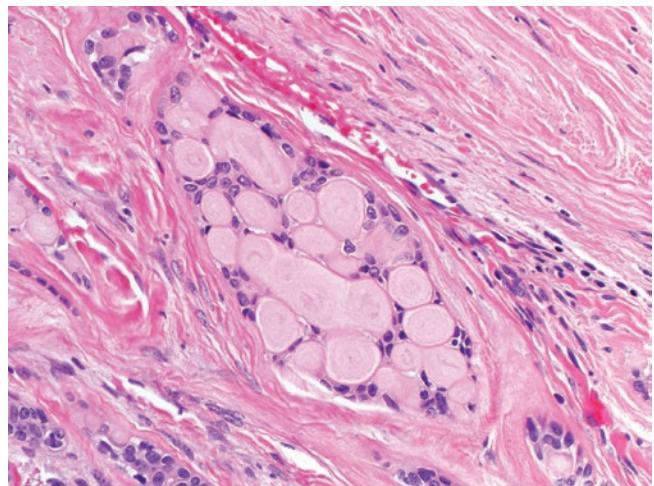


Fig. 9.12 (H&E, 400×) Basal cell adenocarcinoma, tubular and cribriform

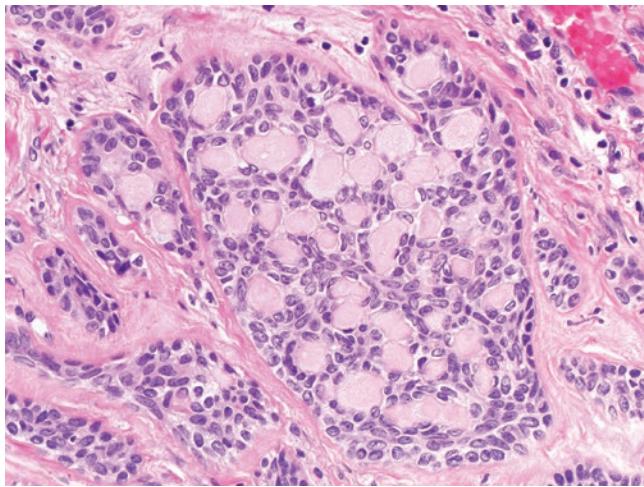


Fig. 9.13 (H&E, 400 \times) Basal cell adenocarcinoma, tubular and cribriform

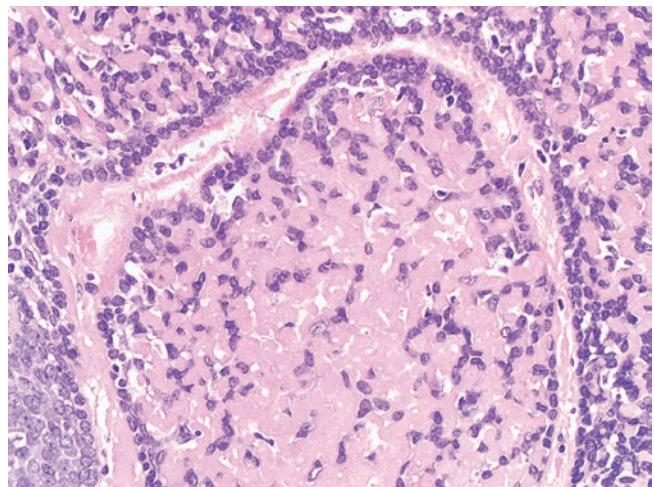


Fig. 9.16 (H&E, 400 \times) Basal cell adenocarcinoma, membranous

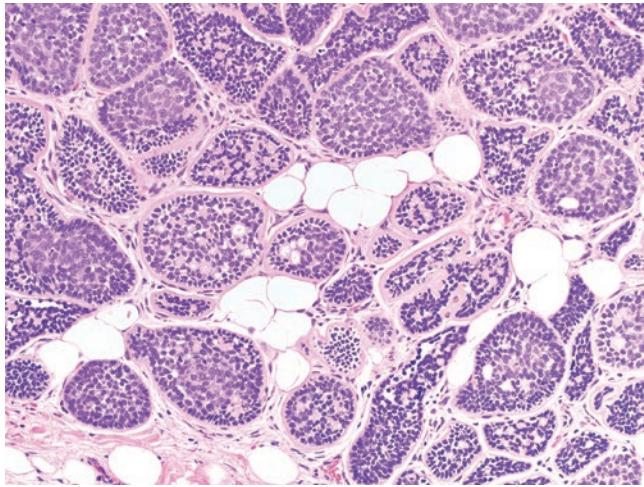


Fig. 9.14 (H&E, 200 \times) Basal cell adenocarcinoma, solid and cribriform

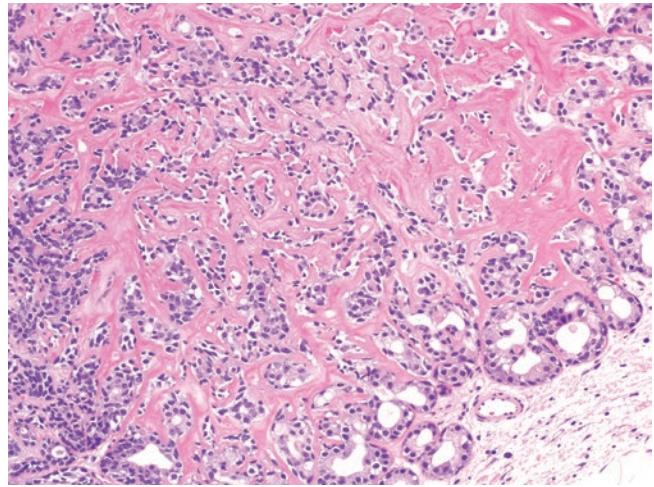


Fig. 9.17 (H&E, 200 \times) Basal cell adenocarcinoma, hyalinized

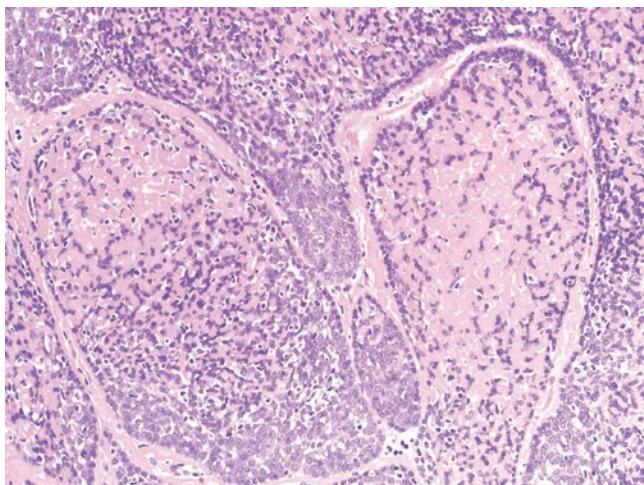


Fig. 9.15 (H&E, 200 \times) Basal cell adenocarcinoma, membranous

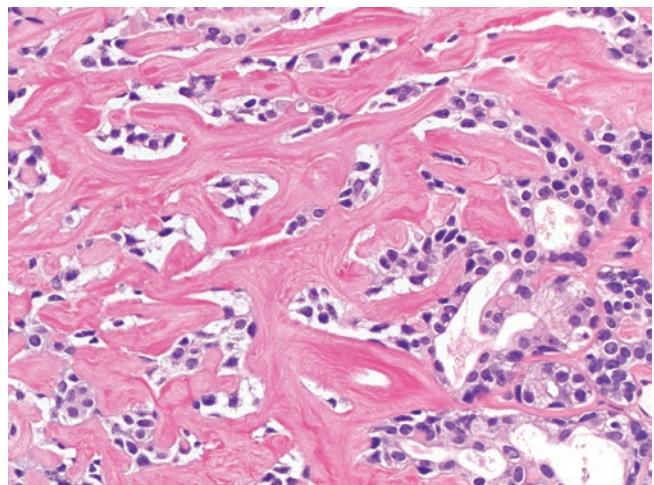


Fig. 9.18 (H&E, 400 \times) Basal cell adenocarcinoma, hyalinized

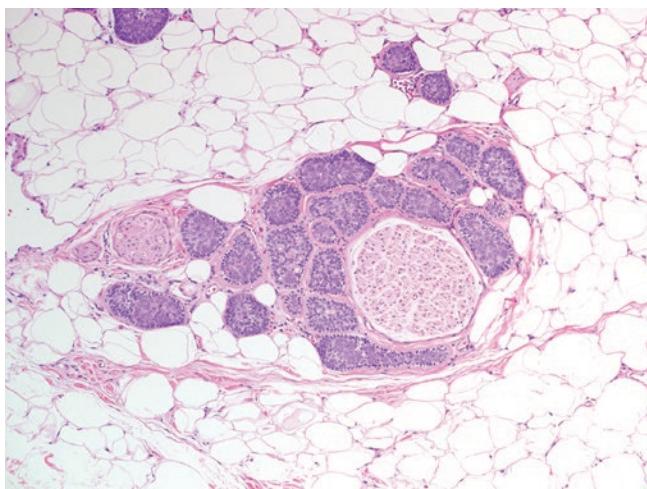


Fig. 9.19 (H&E, 100×) Basal cell adenocarcinoma, perineural invasion

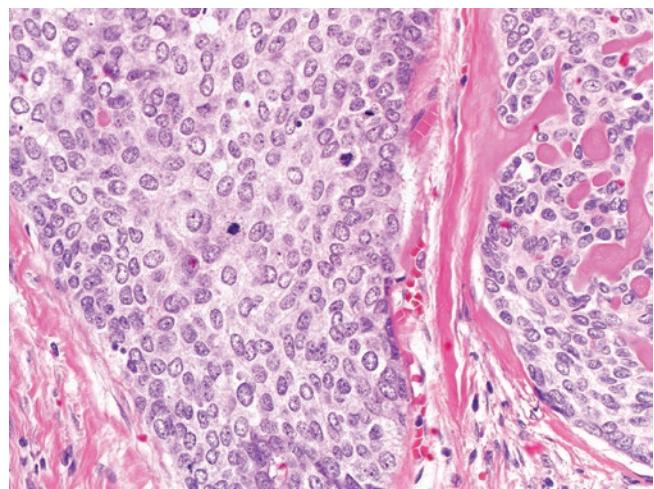


Fig. 9.22 (H&E, 400×) Basal cell adenocarcinoma, high-grade transformation, mitotic activity

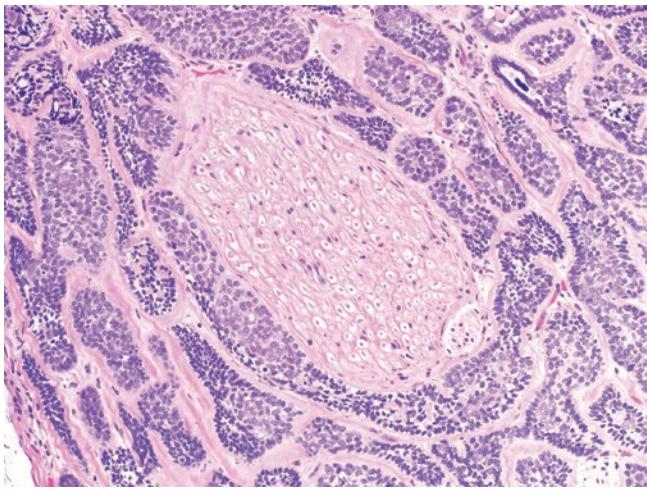


Fig. 9.20 (H&E, 200×) Basal cell adenocarcinoma, perineural invasion

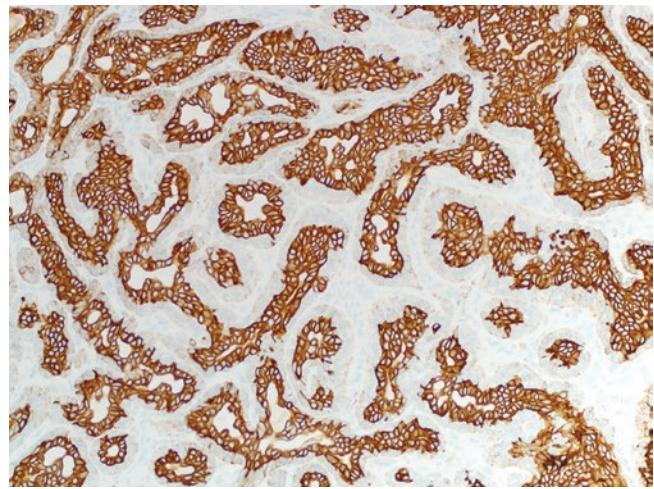


Fig. 9.23 (AE1/AE3, 200×) Basal cell adenocarcinoma, ductal immunoreactivity

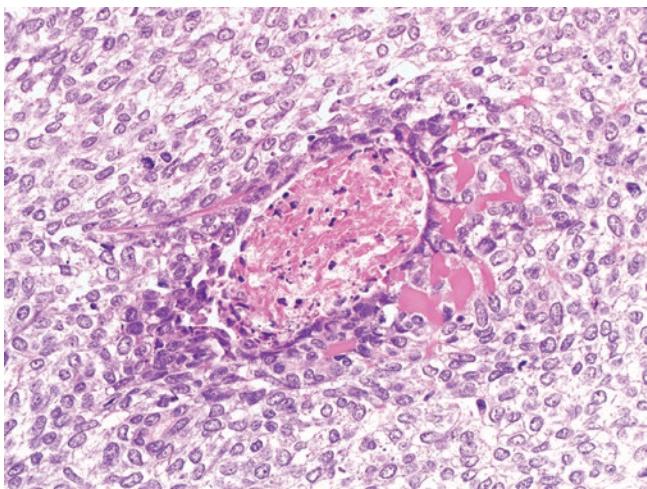


Fig. 9.21 (H&E, 400×) Basal cell adenocarcinoma, high-grade transformation, necrosis

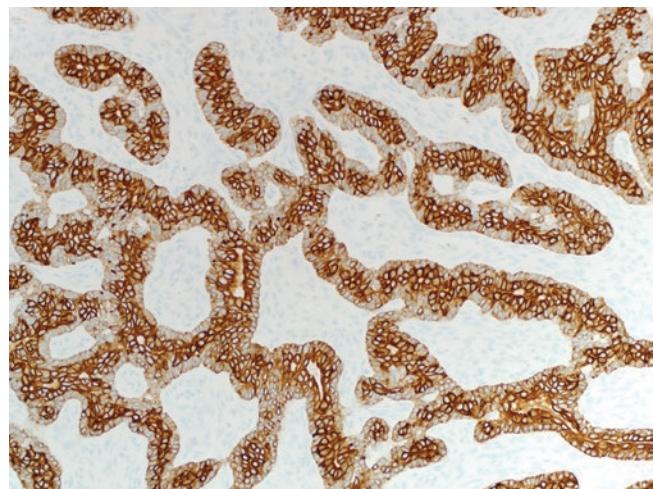


Fig. 9.24 (AE1/AE3, 200×) Basal cell adenocarcinoma, diffuse immunoreactivity

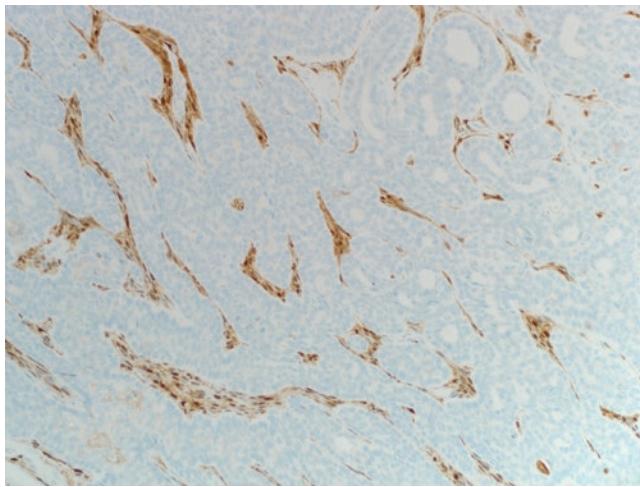


Fig. 9.25 (S-100, 200 \times) Basal cell adenocarcinoma, focal immunoreactivity

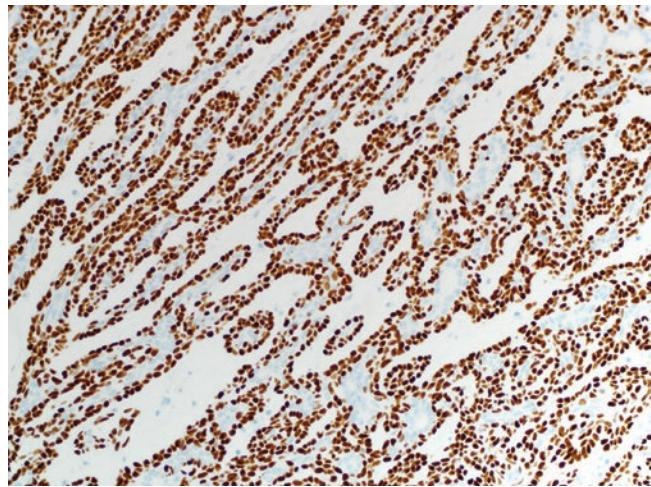


Fig. 9.27 (p63, 200 \times) Basal cell adenocarcinoma, basal immunoreactivity

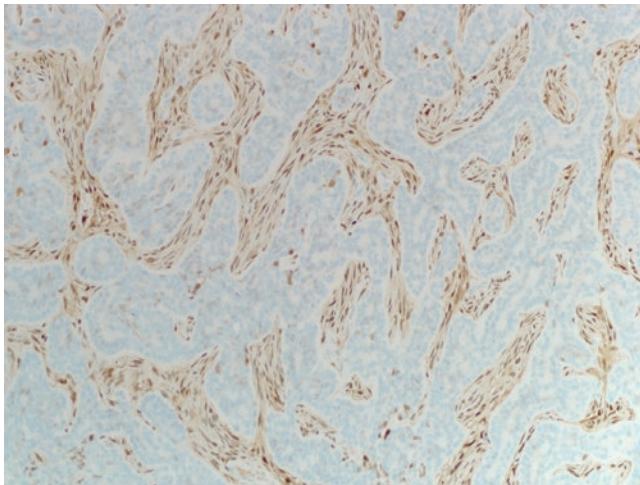


Fig. 9.26 (S-100, 200 \times) Basal cell adenocarcinoma, focal immunoreactivity

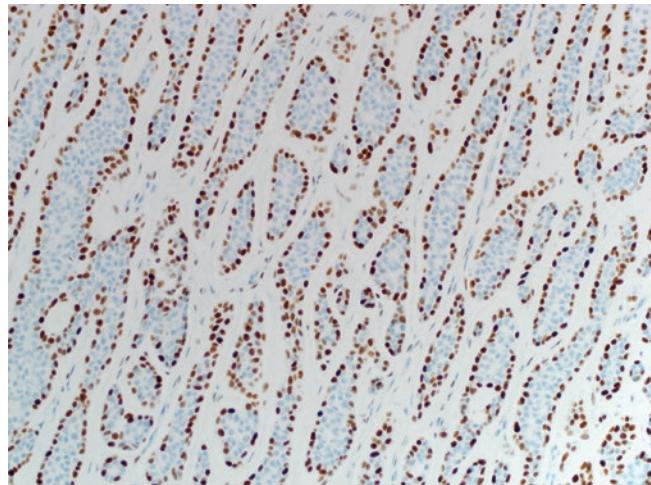


Fig. 9.28 (p63, 200 \times) Basal cell adenocarcinoma, basal immunoreactivity

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Canalicular Adenoma

10

Canalicular adenoma affects primarily adults and presents at a mean age of approximately 60 years. Women are involved less than men. The majority of cases involve the upper lip, presenting as single or multiple masses. Canalicular ade-

noma may be circumscribed or lobulated, comprised of one cell type (ductal), and exhibit a variety of architectural patterns (branching and anastomosing tubules) (Figs. 10.1–10.18).

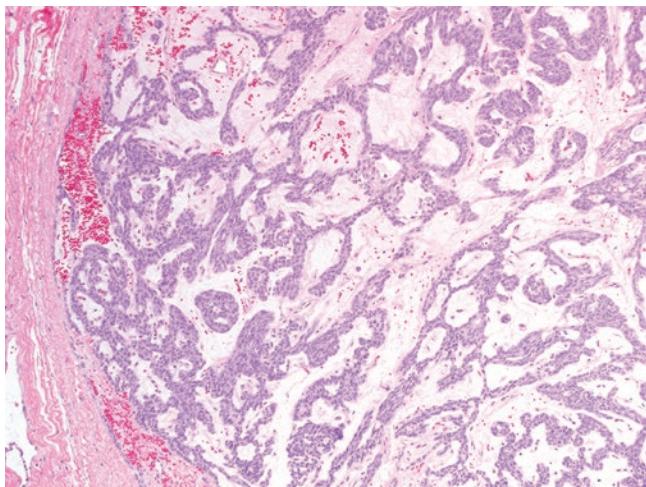


Fig. 10.1 (H&E, 100×) Canalicular adenoma, circumscribed

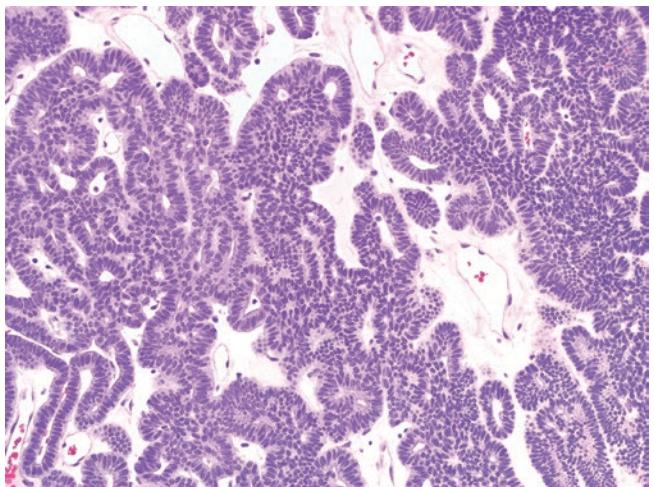


Fig. 10.4 (H&E, 200×) Canalicular adenoma, tubules

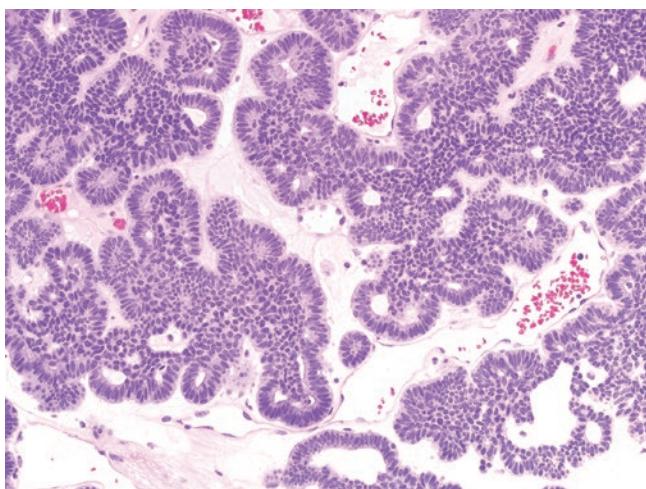


Fig. 10.2 (H&E, 200×) Canalicular adenoma, monophasic

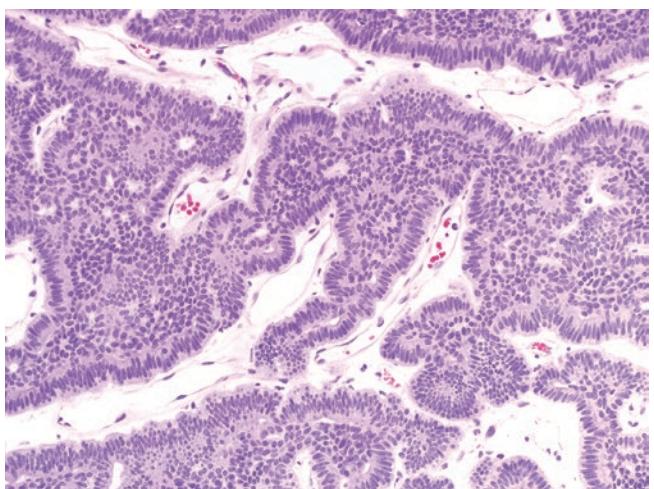


Fig. 10.5 (H&E, 200×) Canalicular adenoma, tubules

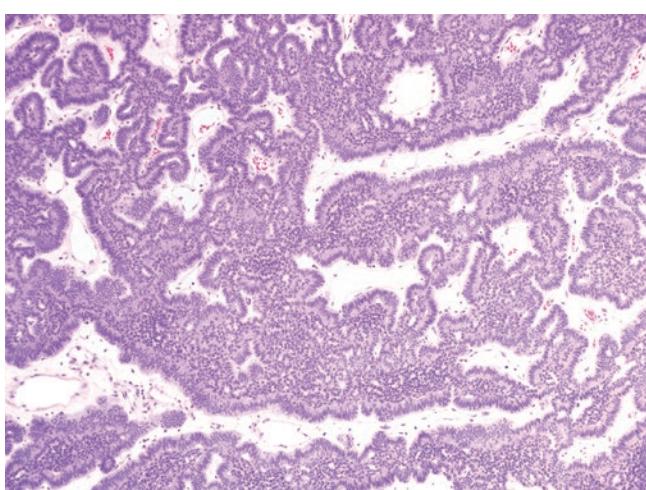


Fig. 10.3 (H&E, 100×) Canalicular adenoma, tubules

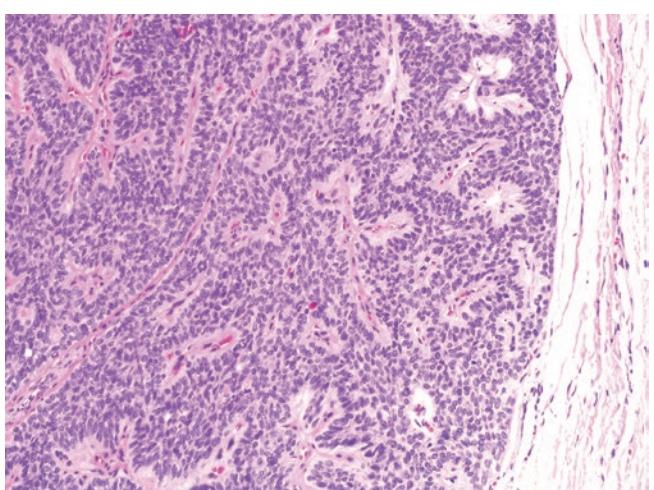


Fig. 10.6 (H&E, 200×) Canalicular adenoma, tubules

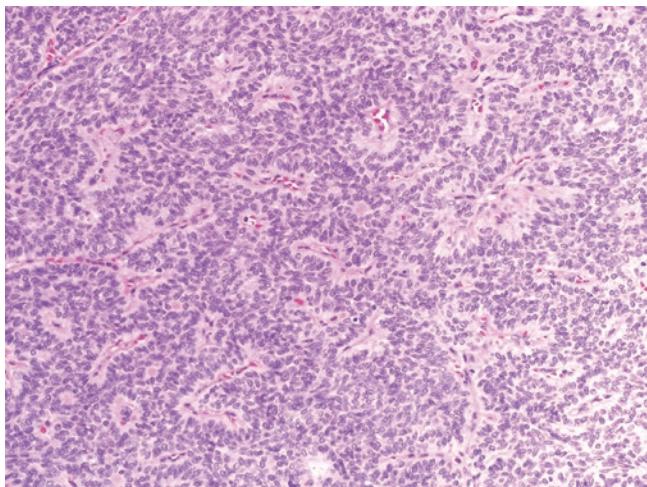


Fig. 10.7 (H&E, 200 \times) Canalicular adenoma, tubules

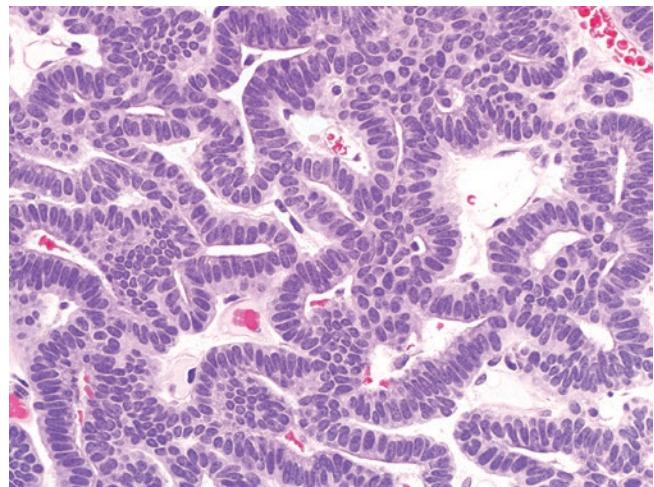


Fig. 10.10 (H&E, 400 \times) Canalicular adenoma, tubules

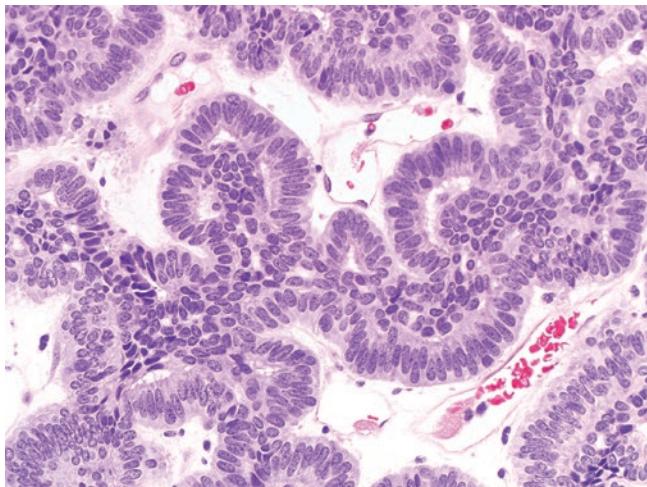


Fig. 10.8 (H&E, 400 \times) Canalicular adenoma, tubules

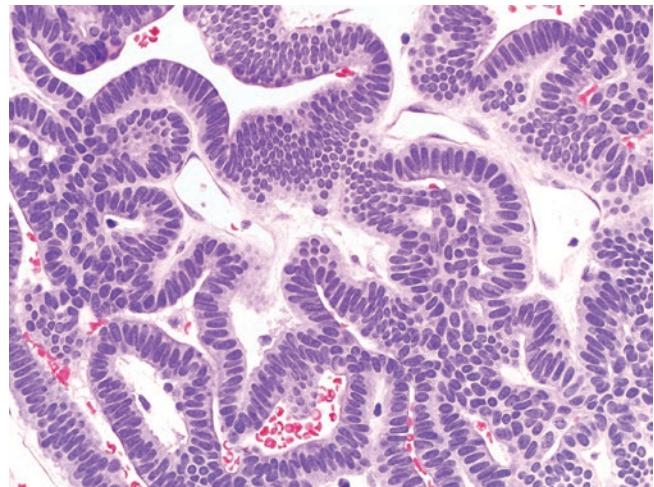


Fig. 10.11 (H&E, 400 \times) Canalicular adenoma, tubules

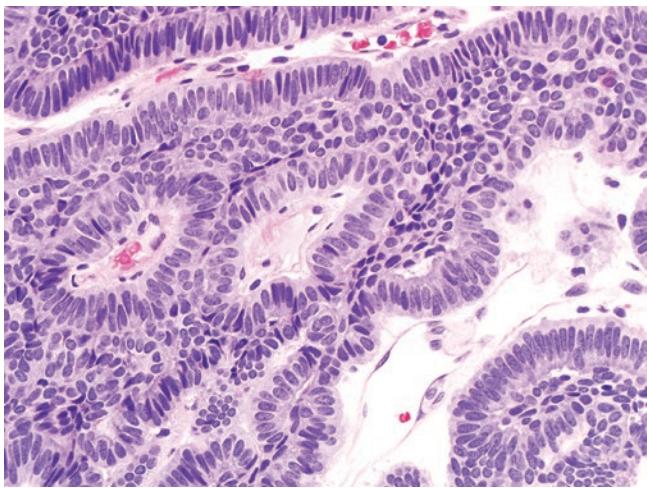


Fig. 10.9 (H&E, 400 \times) Canalicular adenoma, tubules

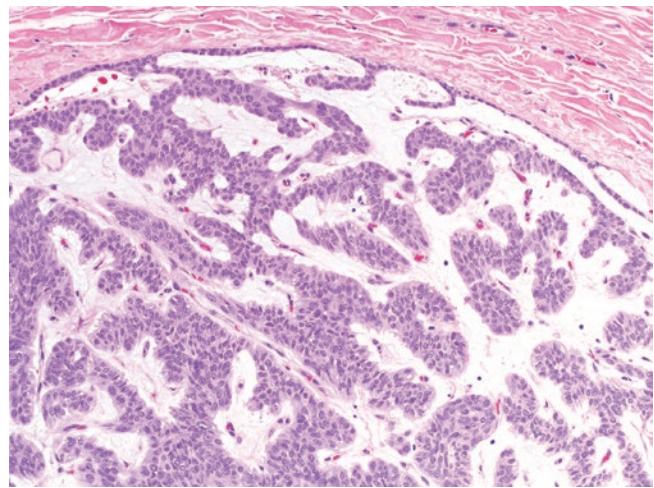


Fig. 10.12 (H&E, 200 \times) Canalicular adenoma, myxoid

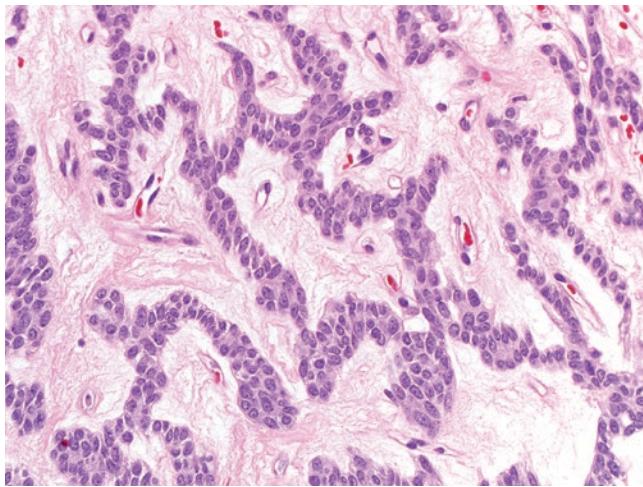


Fig. 10.13 (H&E, 400 \times) Canalicular adenoma, myxoid

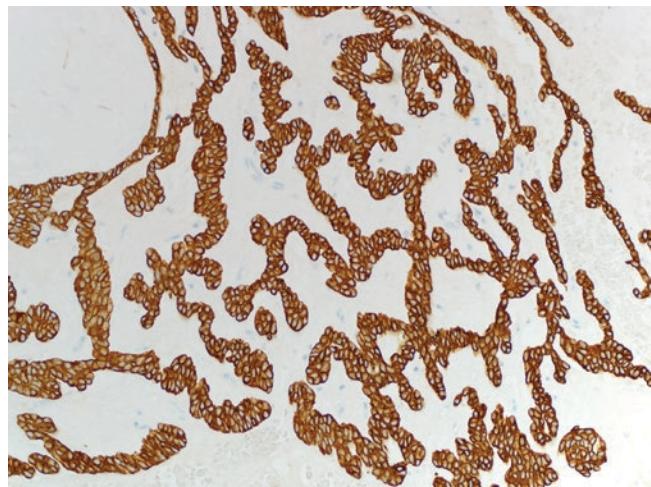


Fig. 10.16 (AE1/AE3, 200 \times) Canalicular adenoma, diffuse immunoreactivity

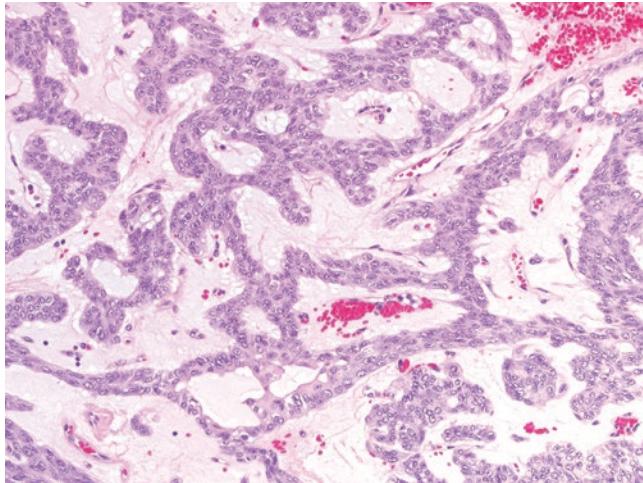


Fig. 10.14 (H&E, 200 \times) Canalicular adenoma, vascular

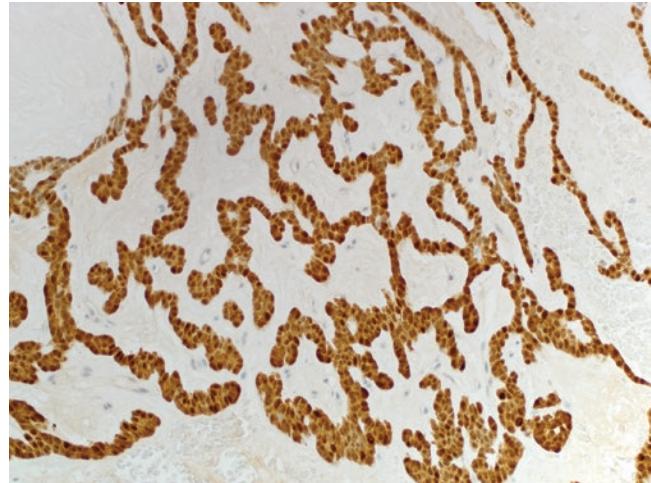


Fig. 10.17 (S-100, 200 \times) Canalicular adenoma, diffuse immunoreactivity

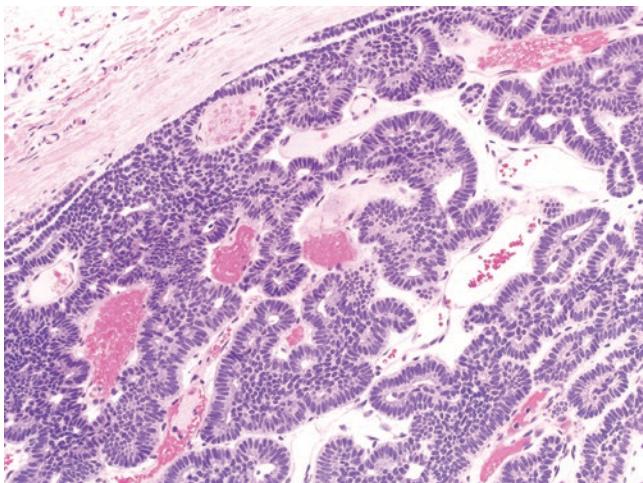


Fig. 10.15 (H&E, 200 \times) Canalicular adenoma, vascular

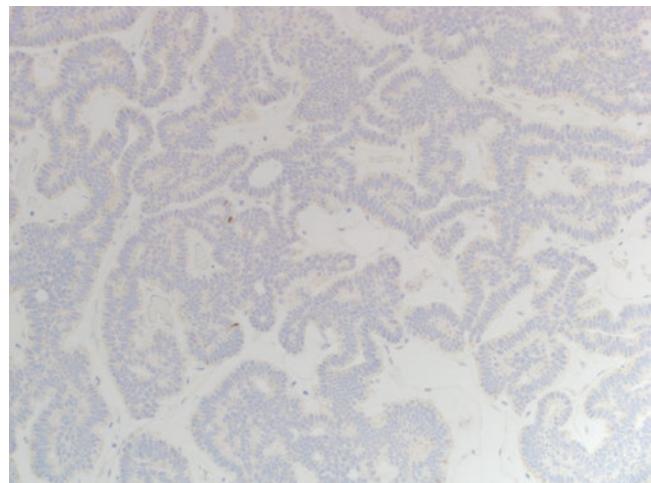


Fig. 10.18 (p63, 200 \times) Canalicular adenoma, rare immunoreactivity

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Carcinosarcoma

11

Carcinosarcoma is an exceedingly rare malignancy that affects adults and presents at a mean age of approximately 60 years. Women are involved less than men. The majority of cases involve major salivary glands, presenting as single or

multiple masses. Most cases of carcinosarcoma behave as high-grade malignancies. Carcinosarcoma may be circumscribed or infiltrative and comprised of malignant epithelial and mesenchymal elements (Figs. 11.1–11.18).

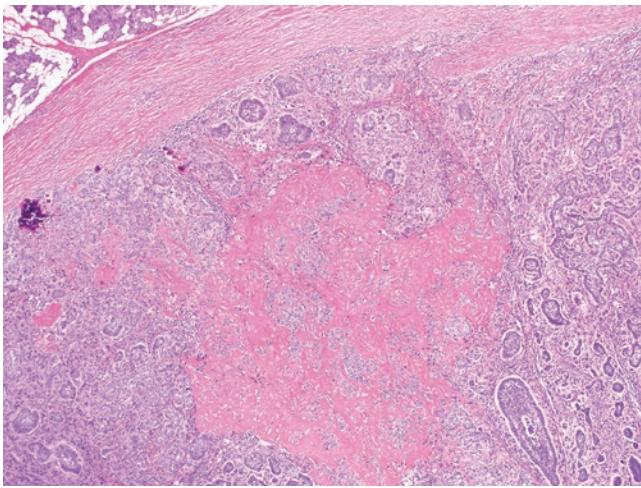


Fig. 11.1 (H&E, 40 \times) Carcinosarcoma, circumscribed

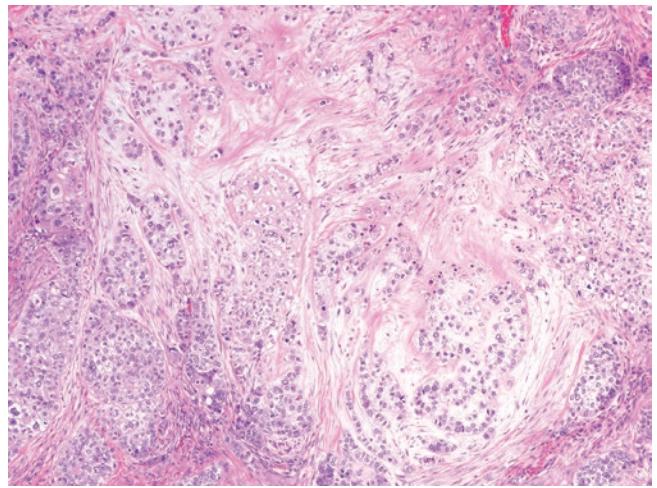


Fig. 11.4 (H&E, 100 \times) Carcinosarcoma, malignant epithelial and mesenchymal elements

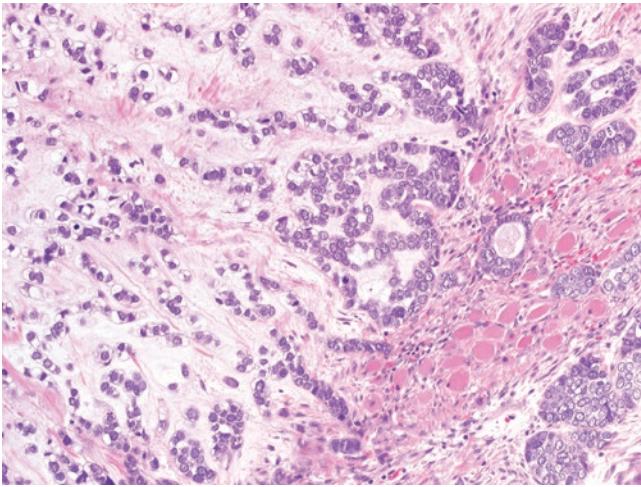


Fig. 11.2 (H&E, 200 \times) Carcinosarcoma, infiltrative

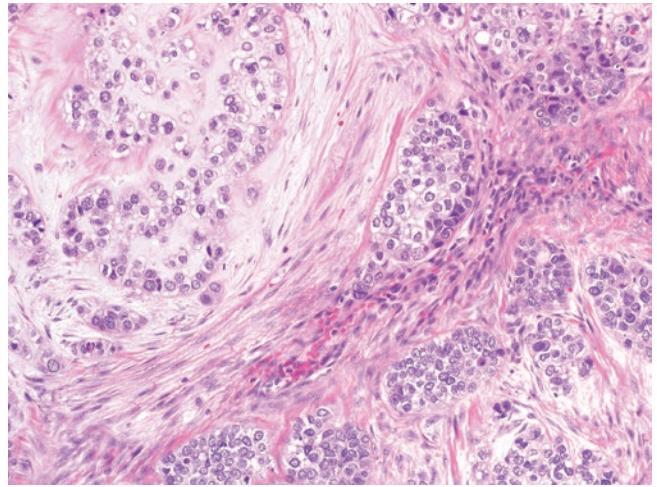


Fig. 11.5 (H&E, 200 \times) Carcinosarcoma, malignant epithelial and mesenchymal elements

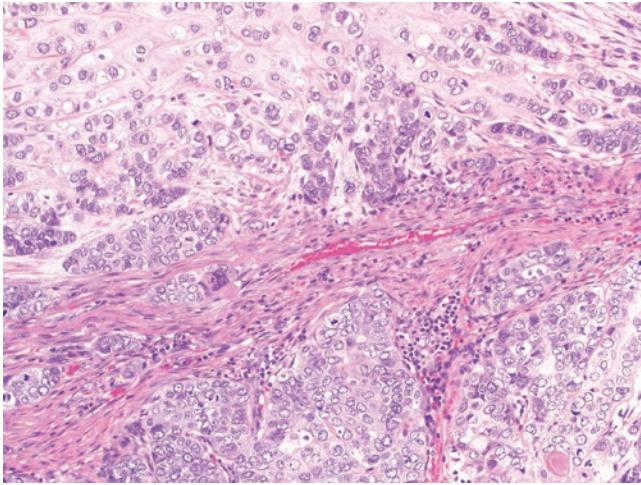


Fig. 11.3 (H&E, 200 \times) Carcinosarcoma, biphasic

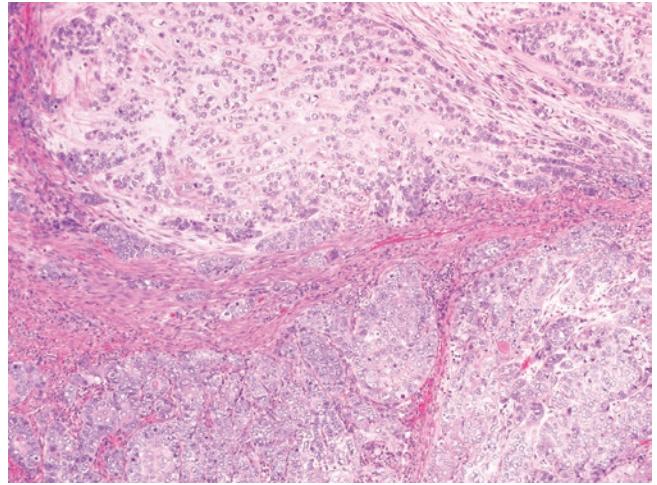


Fig. 11.6 (H&E, 100 \times) Carcinosarcoma, malignant epithelial and mesenchymal elements

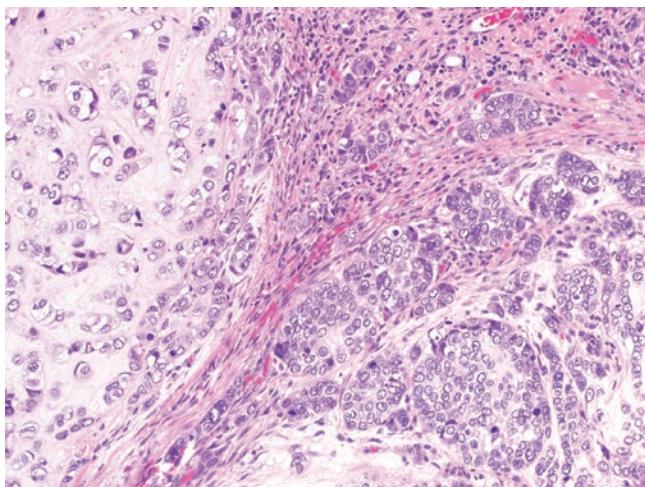


Fig. 11.7 (H&E, 200×) Carcinosarcoma, malignant epithelial and mesenchymal elements

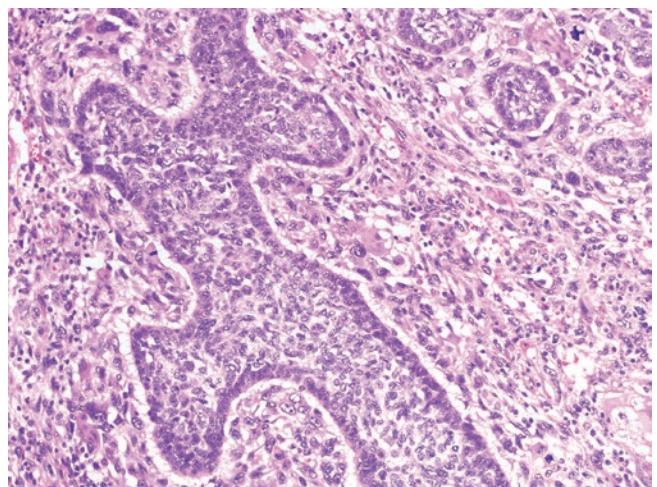


Fig. 11.10 (H&E, 200×) Carcinosarcoma, cytomorphologic atypia

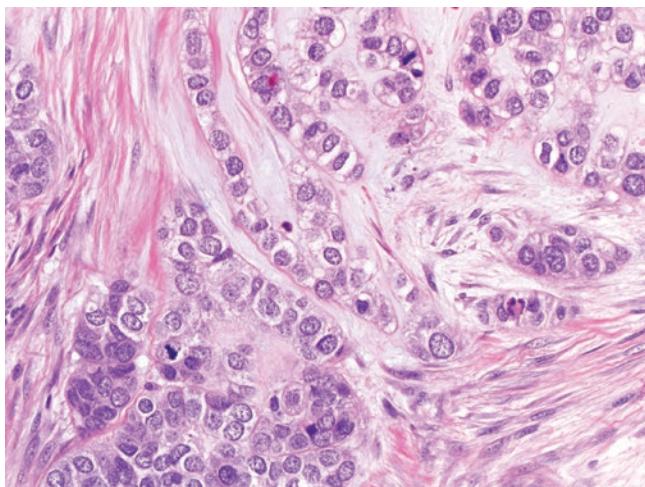


Fig. 11.8 (H&E, 400×) Carcinosarcoma, malignant epithelial and mesenchymal elements

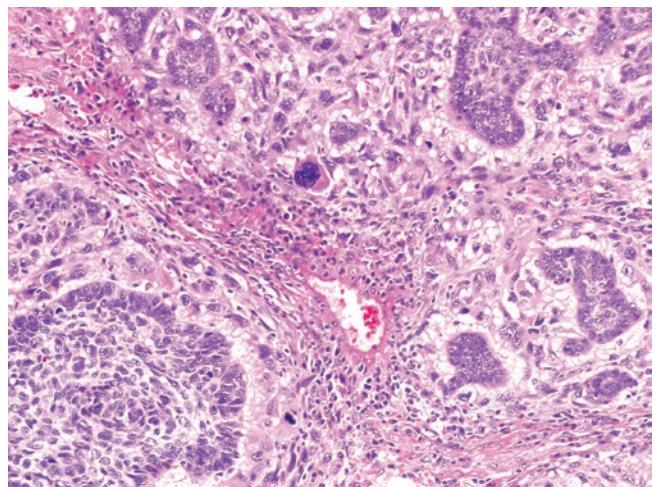


Fig. 11.11 (H&E, 400×) Carcinosarcoma, cytomorphologic atypia

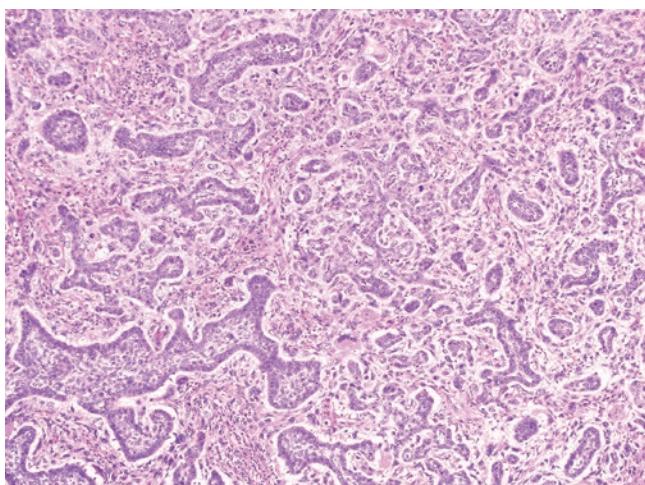


Fig. 11.9 (H&E, 100×) Carcinosarcoma, malignant epithelial and mesenchymal elements

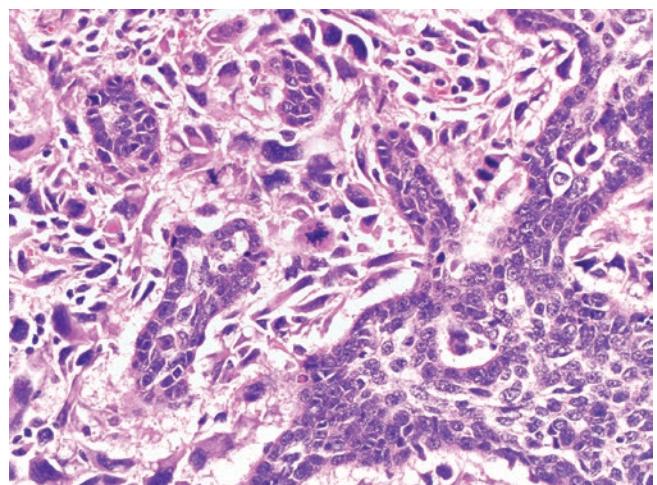


Fig. 11.12 (H&E, 400×) Carcinosarcoma, mitotic activity

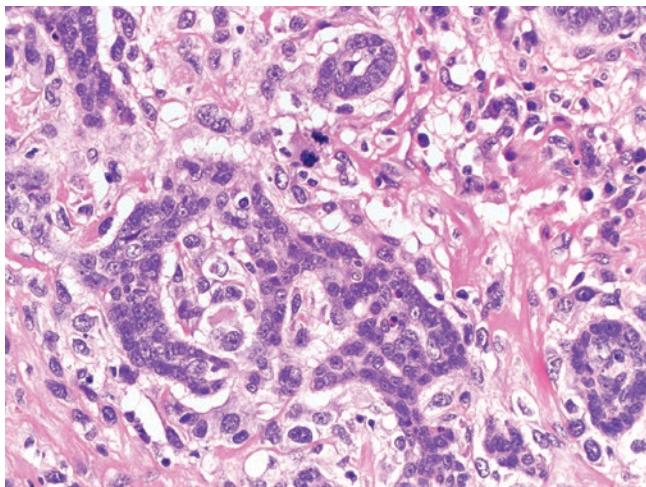


Fig. 11.13 (H&E, 400x) Carcinosarcoma, mitotic activity

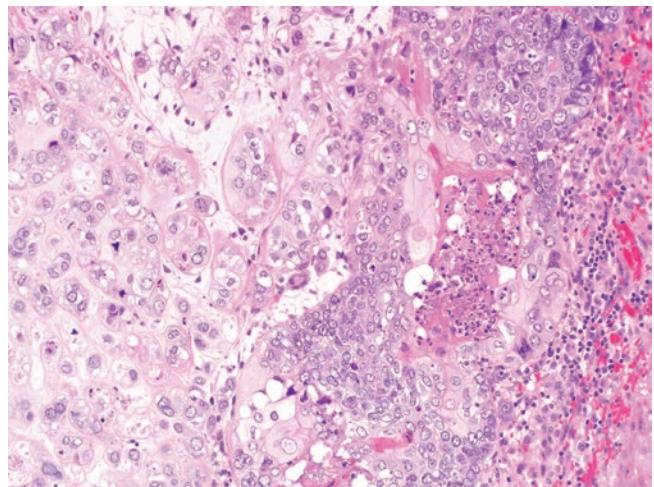


Fig. 11.16 (H&E, 200x) Carcinosarcoma, necrosis

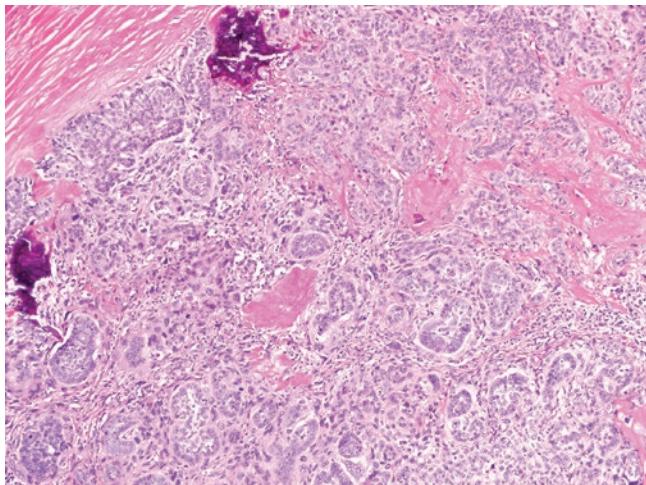


Fig. 11.14 (H&E, 100x) Carcinosarcoma, microcalcifications

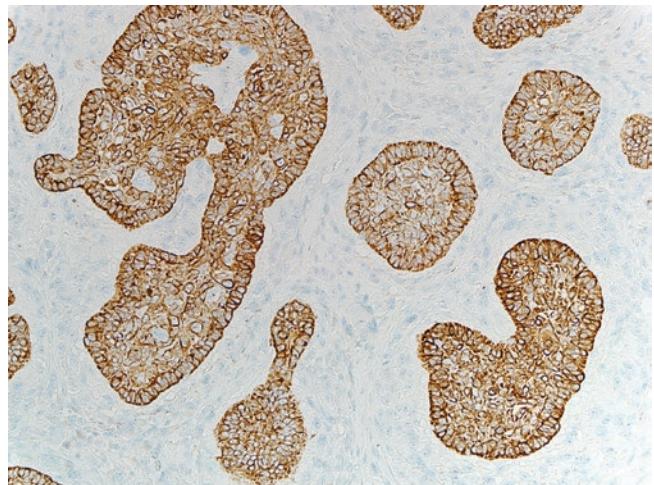


Fig. 11.17 (AE1/AE3, 200x) Carcinosarcoma, focal immunoreactivity

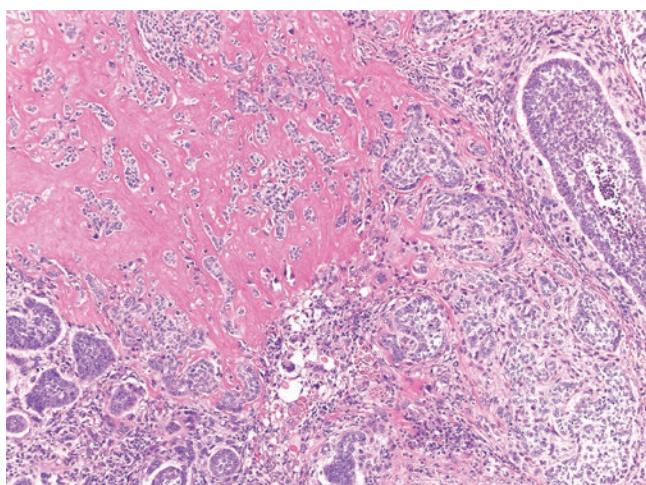


Fig. 11.15 (H&E, 100x) Carcinosarcoma, osteoid

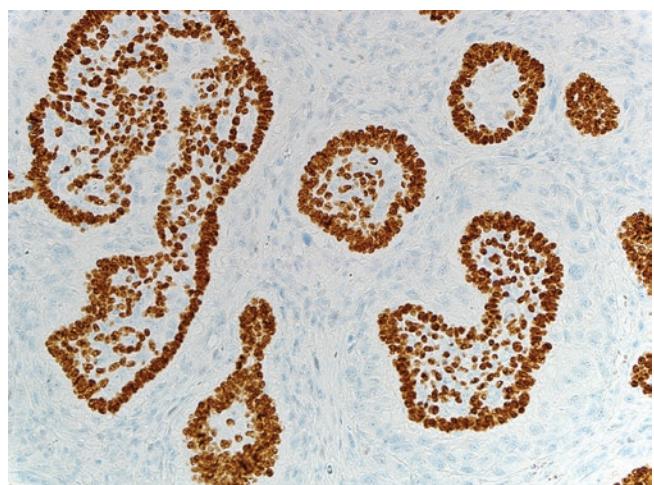


Fig. 11.18 (p63, 200x) Carcinosarcoma, focal immunoreactivity

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Clear Cell Carcinoma

12

Clear cell carcinoma affects primarily adults and presents at a mean age of approximately 60 years. Women are involved more than men. The majority of cases involve minor salivary glands in the oral cavity, presenting as single or multiple masses. Most cases of clear cell carcinoma

behave as low-grade malignancies. Clear cell carcinoma is infiltrative, comprised of one cell type (clear and/or eosinophilic), and may exhibit a variety of architectural patterns (solid, trabecular, and single cells) with or without hyalinized stroma (Figs. 12.1–12.20).

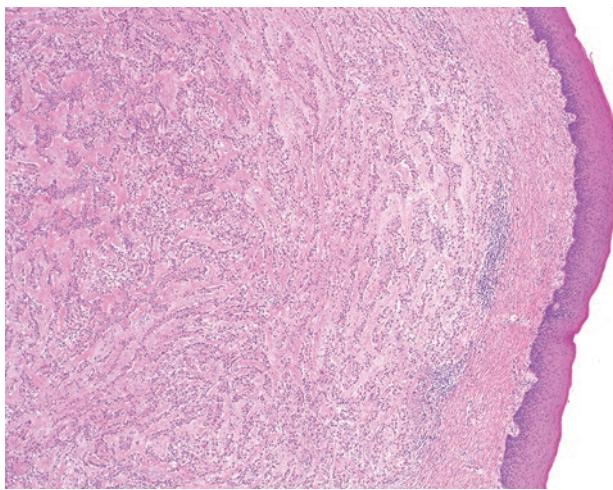


Fig. 12.1 (H&E, 40×) Clear cell carcinoma, circumscribed

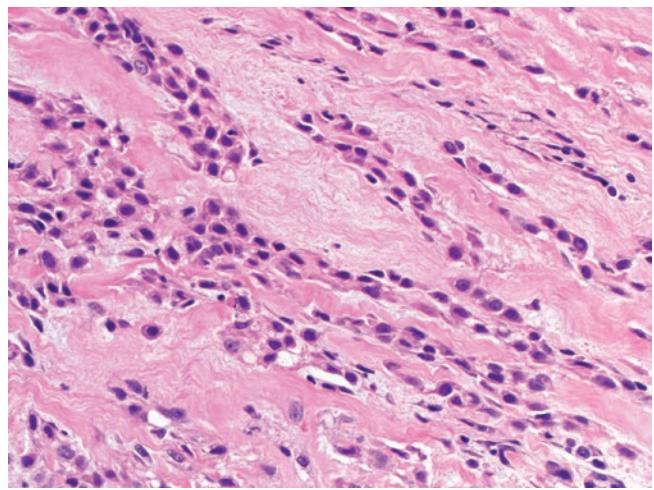


Fig. 12.4 (H&E, 400×) Clear cell carcinoma, eosinophilic

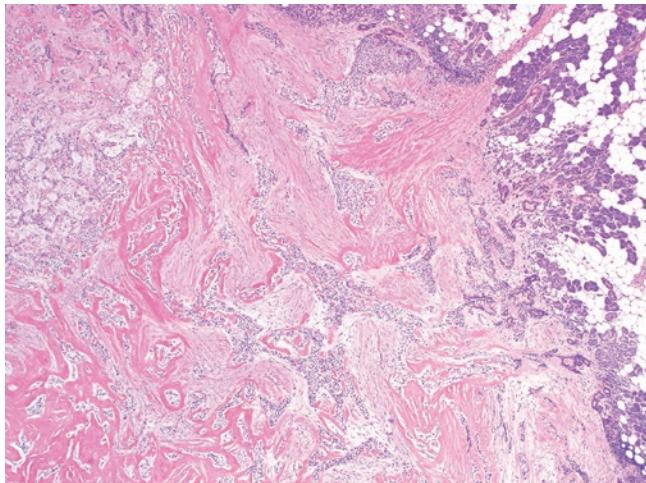


Fig. 12.2 (H&E, 40×) Clear cell carcinoma, infiltrative

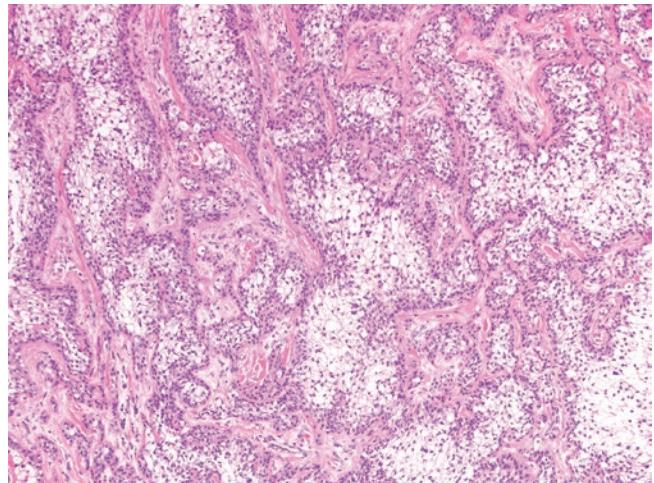


Fig. 12.5 (H&E, 100×) Clear cell carcinoma, eosinophilic and clear

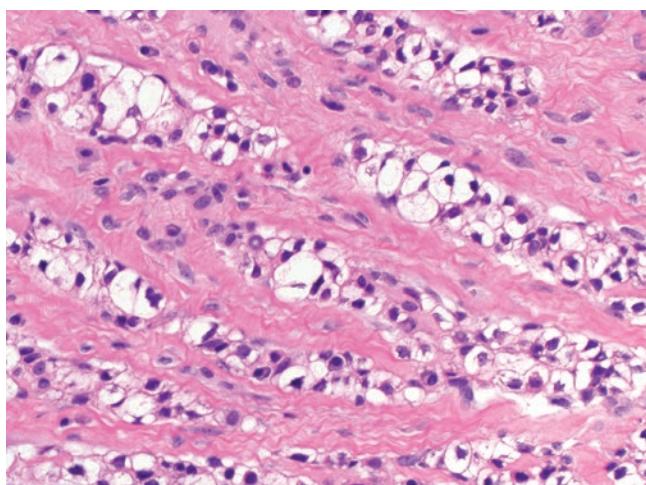


Fig. 12.3 (H&E, 400×) Clear cell carcinoma, monophasic

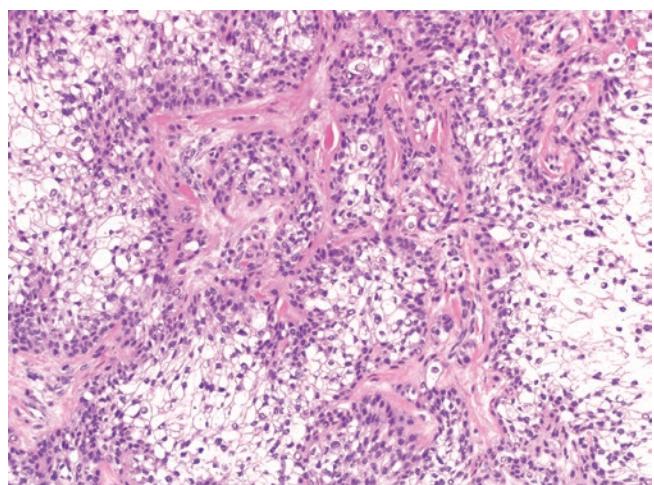


Fig. 12.6 (H&E, 200×) Clear cell carcinoma, eosinophilic and clear

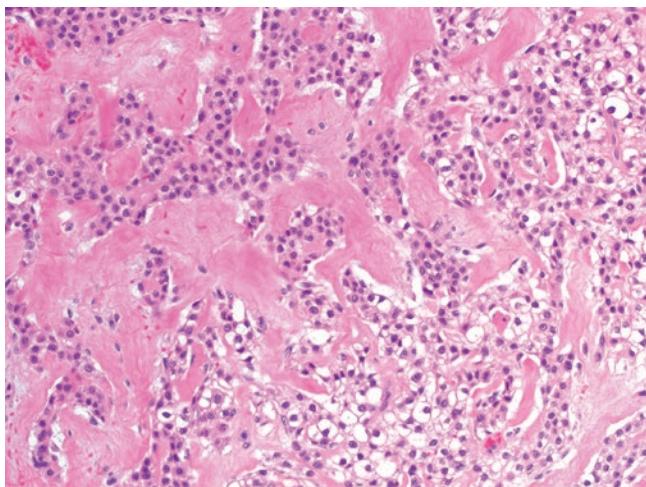


Fig. 12.7 (H&E, 200 \times) Clear cell carcinoma, eosinophilic and clear

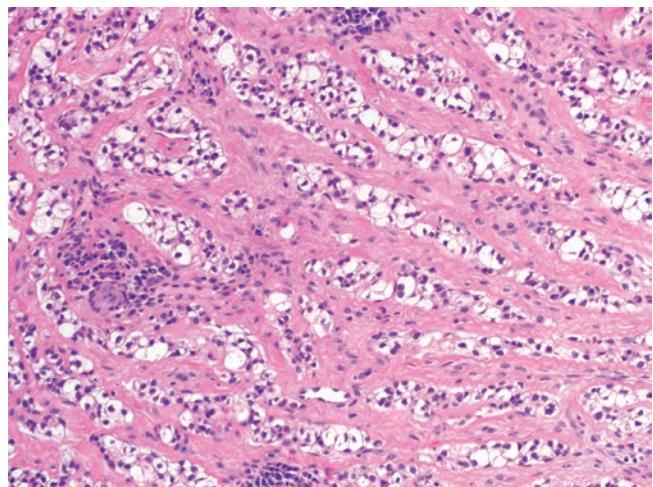


Fig. 12.10 (H&E, 200 \times) Clear cell carcinoma, clear

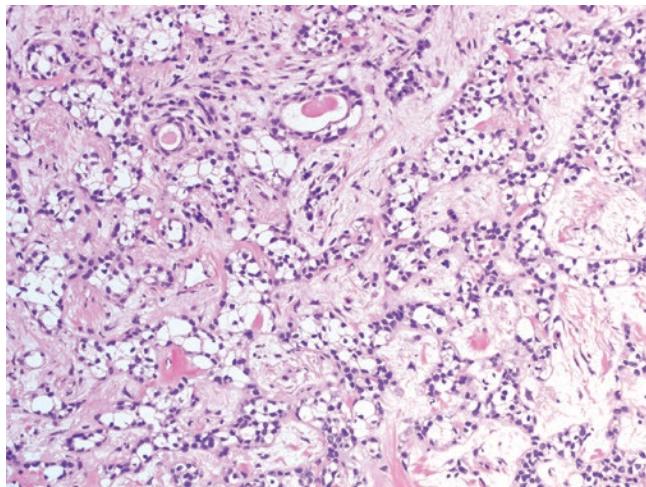


Fig. 12.8 (H&E, 200 \times) Clear cell carcinoma, clear

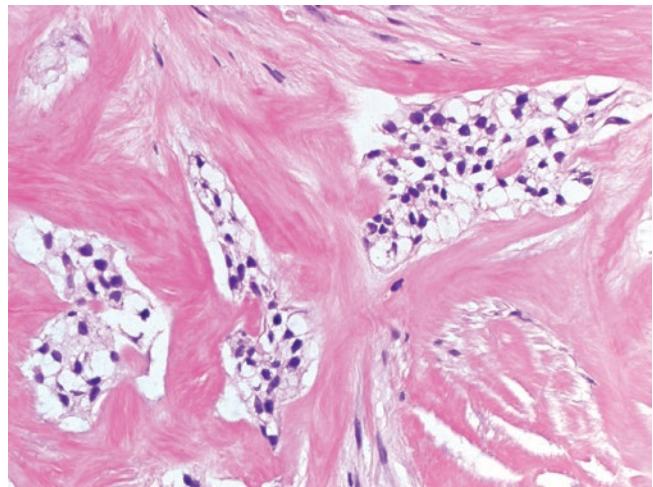


Fig. 12.11 (H&E, 400 \times) Clear cell carcinoma, clear

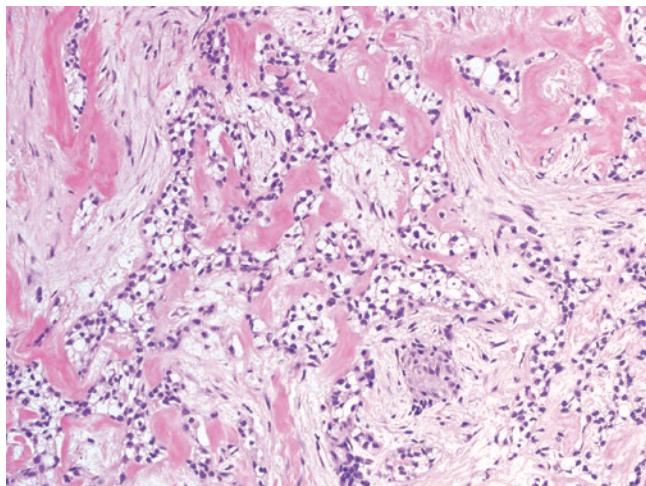


Fig. 12.9 (H&E, 200 \times) Clear cell carcinoma, clear

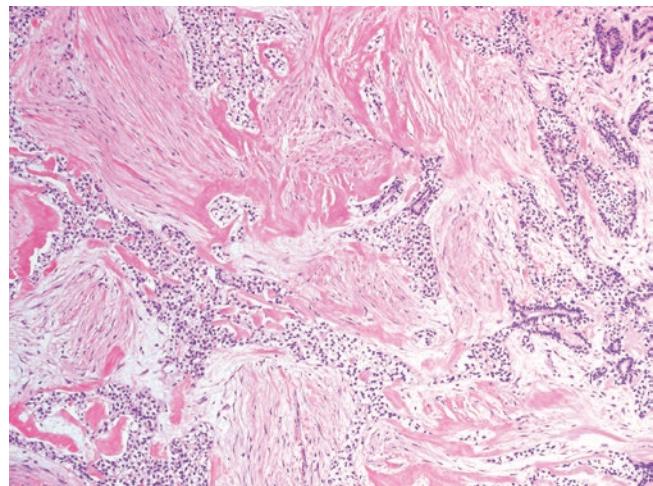


Fig. 12.12 (H&E, 100 \times) Clear cell carcinoma, hyalinizing

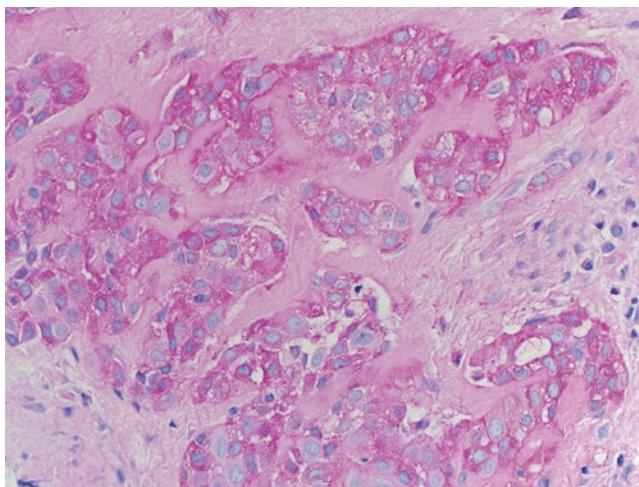


Fig. 12.13 (PAS, 400 \times) Clear cell carcinoma, intracytoplasmic reactivity

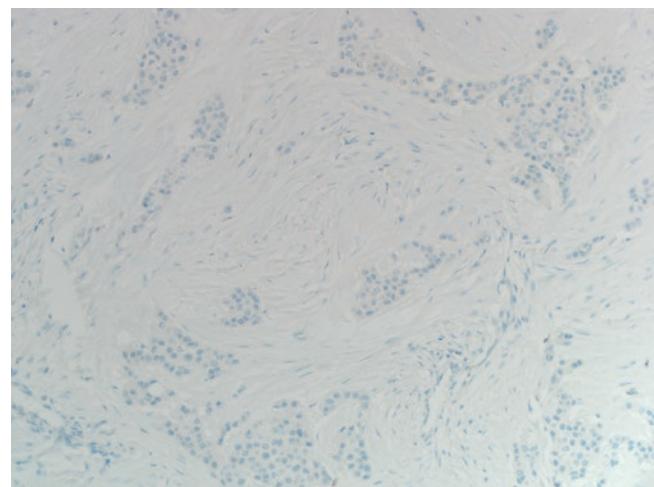


Fig. 12.16 (S-100, 200 \times) Clear cell carcinoma, negative immunoreactivity

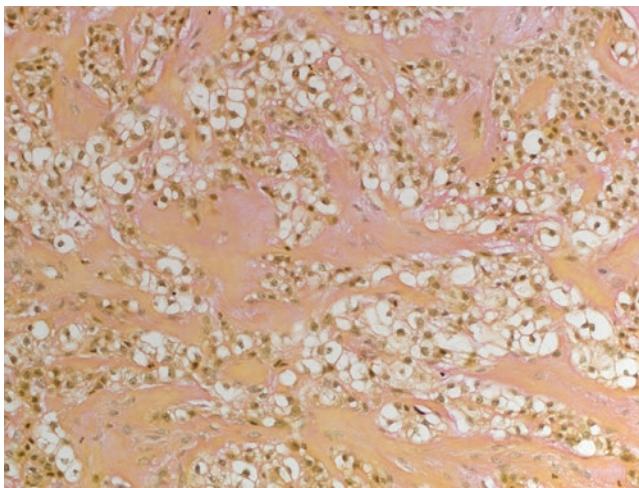


Fig. 12.14 (Mucicarmine, 200 \times) Clear cell carcinoma, negative reactivity

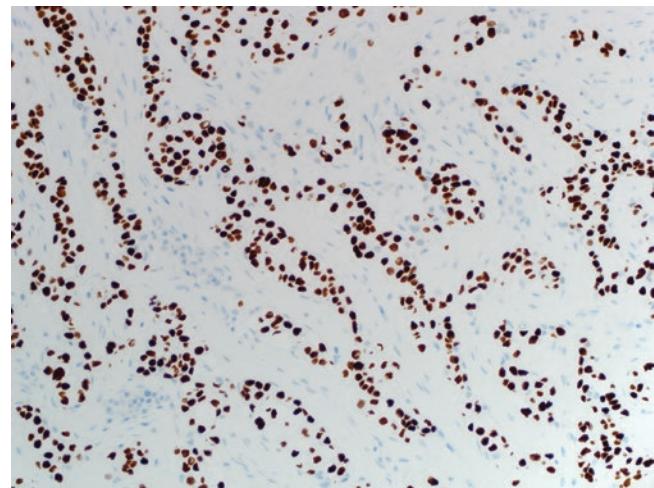


Fig. 12.17 (p63, 200 \times) Clear cell carcinoma, diffuse immunoreactivity

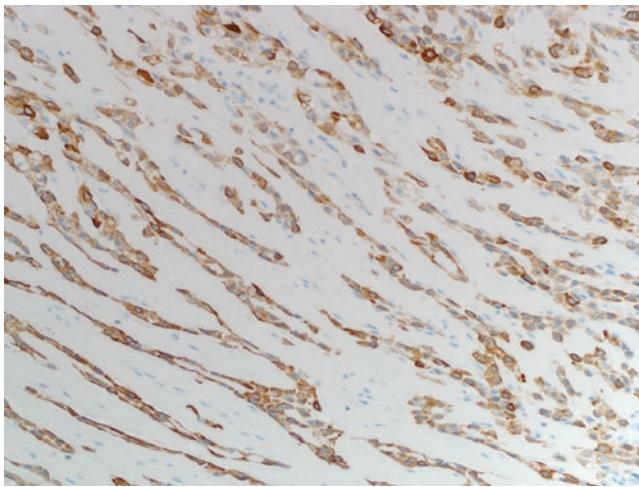


Fig. 12.15 (AE1/AE3, 200 \times) Clear cell carcinoma, diffuse immunoreactivity

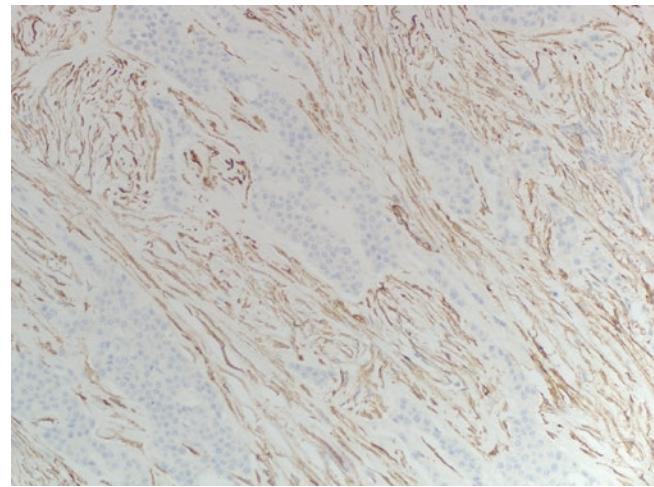


Fig. 12.18 (SMA, 200 \times) Clear cell carcinoma, negative immunoreactivity

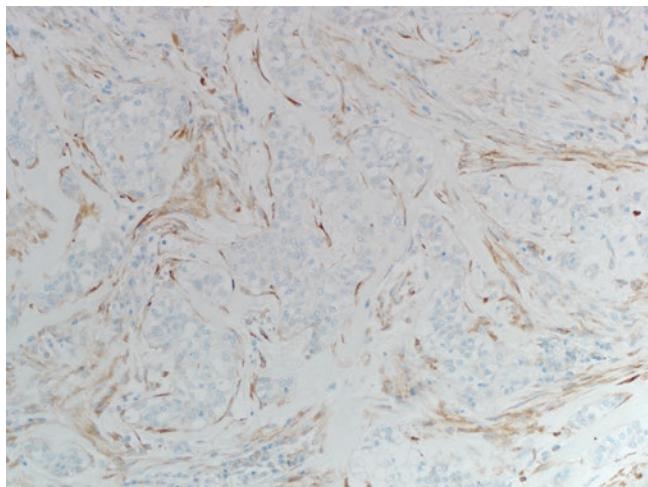


Fig. 12.19 (Calponin, 200×) Clear cell carcinoma, negative immunoreactivity

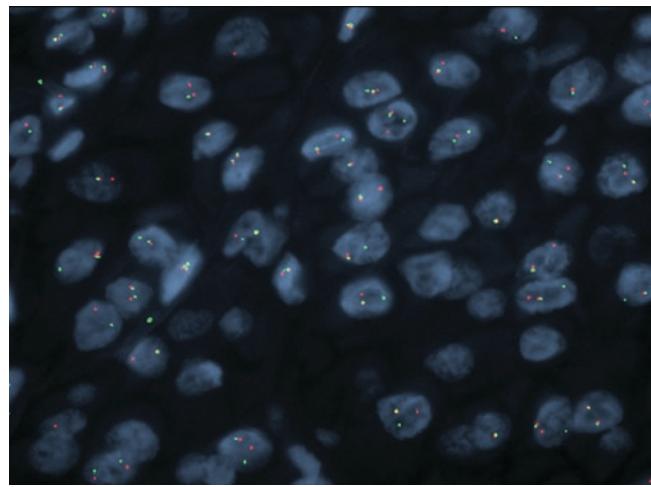


Fig. 12.20 (Fluorescent in situ hybridization, 600×) Clear cell carcinoma, *EWSR1* rearrangement

Suggested Reading

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Epithelial-Myoepithelial Carcinoma

13

Epithelial-myoepithelial carcinoma affects children and adults and presents at a mean age of approximately 60 years. Women are involved slightly more than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of epithelial-myoepithelial carcinoma behave as low to intermediate grade malignancies; however, a subset of cases with high-grade transforma-

tion (necrosis, elevated mitotic activity, and cytomorphologic atypia) are predisposed to recurrence, lymph node involvement, and distant metastasis. Epithelial-myoepithelial carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (ductal and myoepithelial), and exhibit a variety of architectural patterns (tubular, cystic, and solid) (Figs. 13.1–13.36).

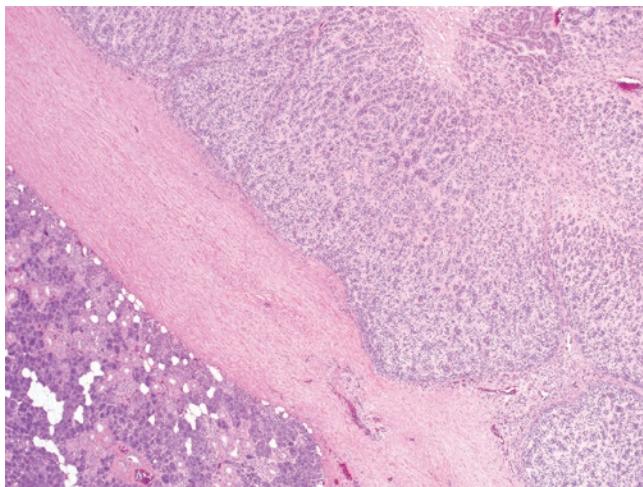


Fig. 13.1 (H&E, $40\times$) Epithelial-myoepithelial carcinoma, encapsulated

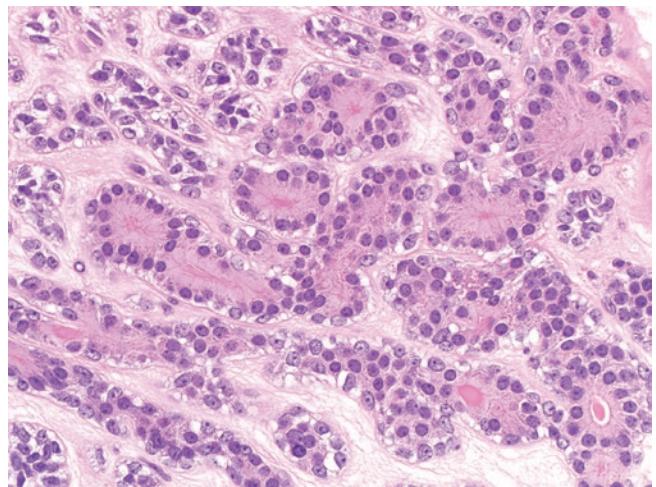


Fig. 13.4 (H&E, $400\times$) Epithelial-myoepithelial carcinoma, biphasic

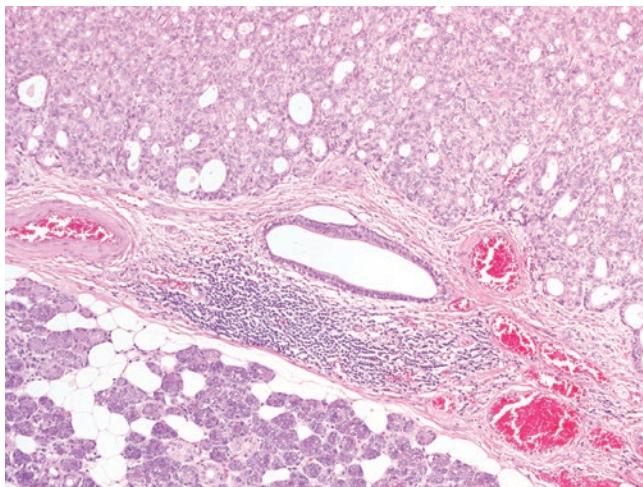


Fig. 13.2 (H&E, $100\times$) Epithelial-myoepithelial carcinoma, circumscribed

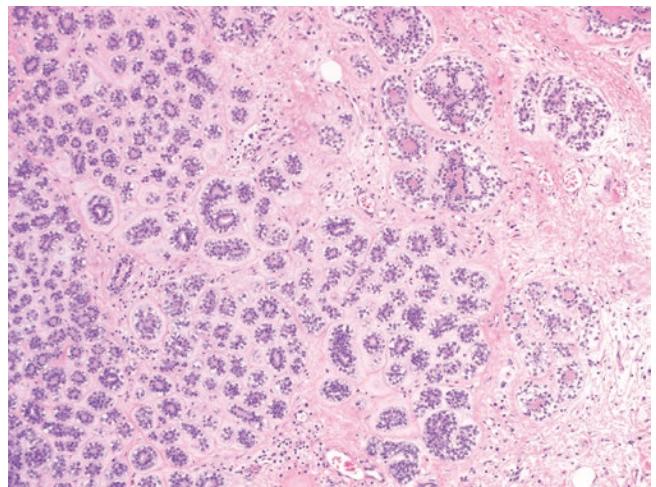


Fig. 13.5 (H&E, $100\times$) Epithelial-myoepithelial carcinoma, tubular

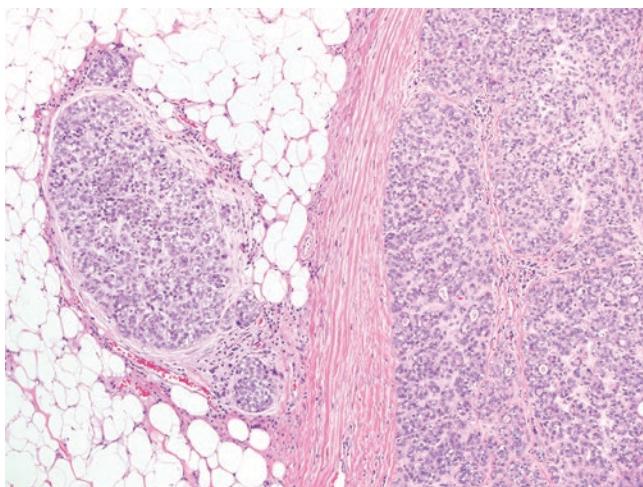


Fig. 13.3 (H&E, $100\times$) Epithelial-myoepithelial carcinoma, infiltrative

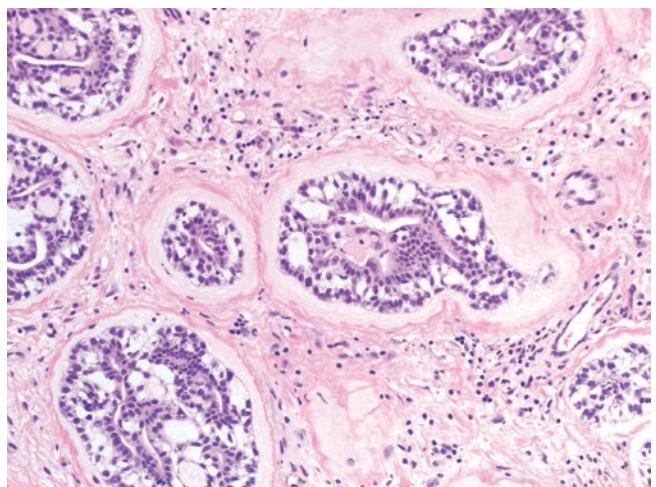


Fig. 13.6 (H&E, $200\times$) Epithelial-myoepithelial carcinoma, tubular

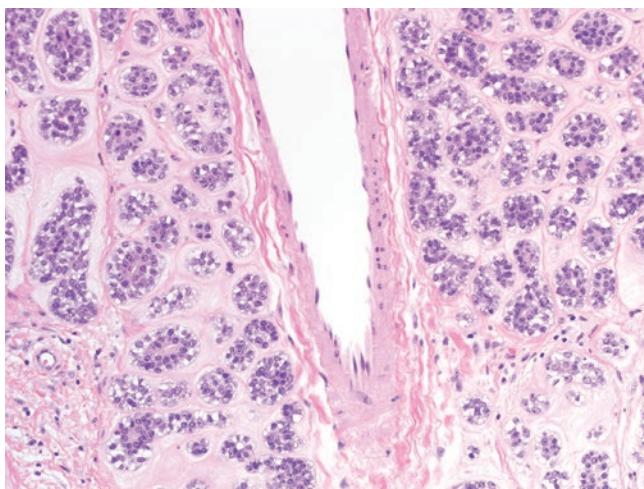


Fig. 13.7 (H&E, 200×) Epithelial-myoepithelial carcinoma, tubular

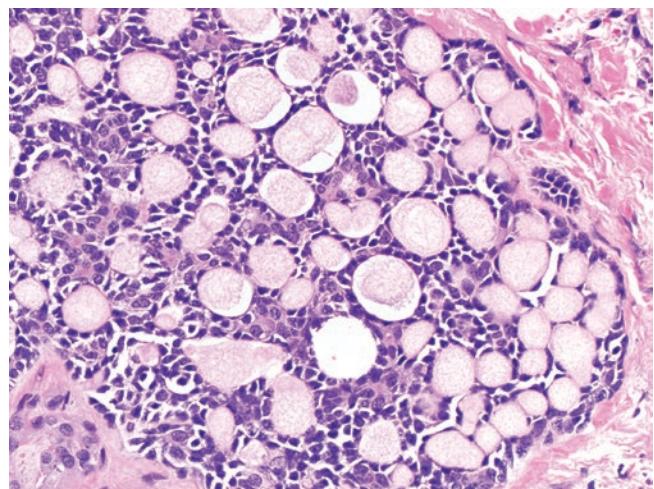


Fig. 13.10 (H&E, 400×) Epithelial-myoepithelial carcinoma, cribriform

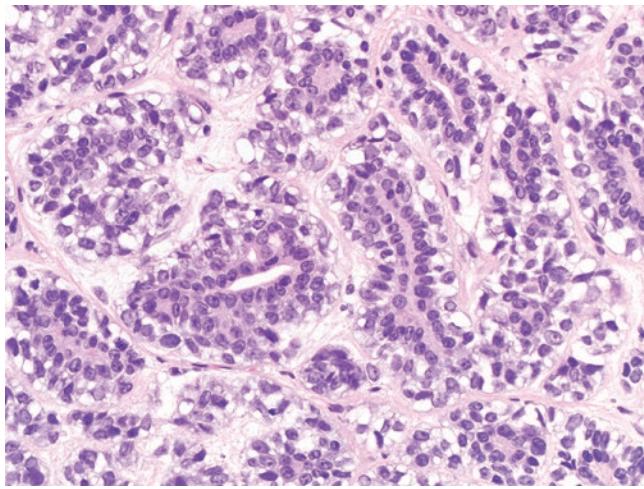


Fig. 13.8 (H&E, 400×) Epithelial-myoepithelial carcinoma, tubular

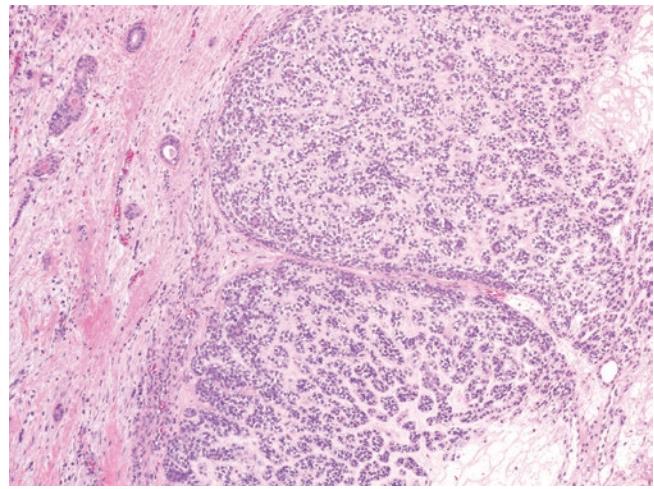


Fig. 13.11 (H&E, 100×) Epithelial-myoepithelial carcinoma, solid

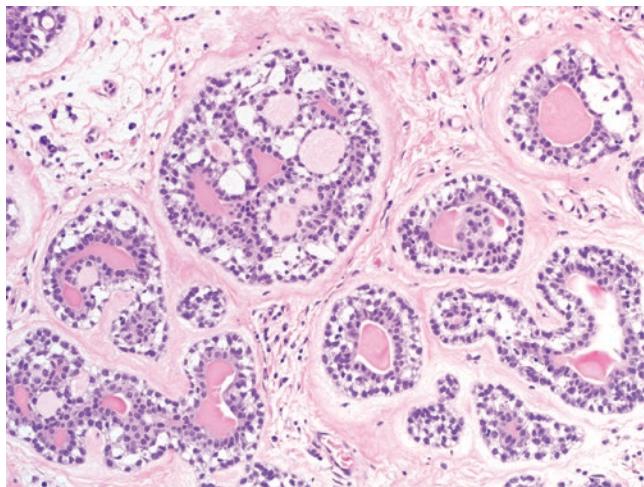


Fig. 13.9 (H&E, 200×) Epithelial-myoepithelial carcinoma, tubular and cribriform

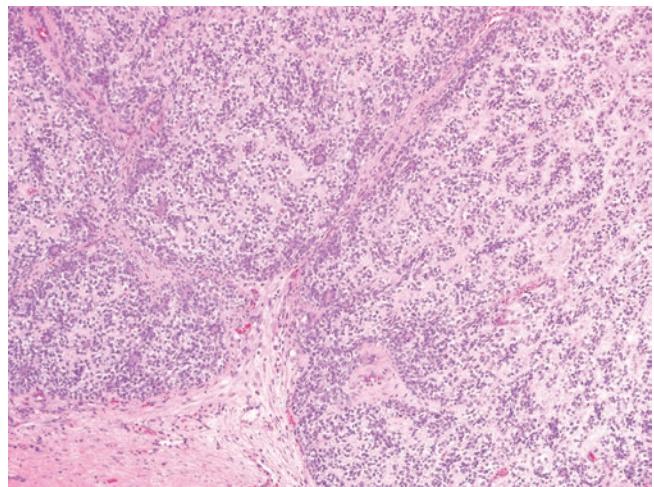


Fig. 13.12 (H&E, 100×) Epithelial-myoepithelial carcinoma, solid

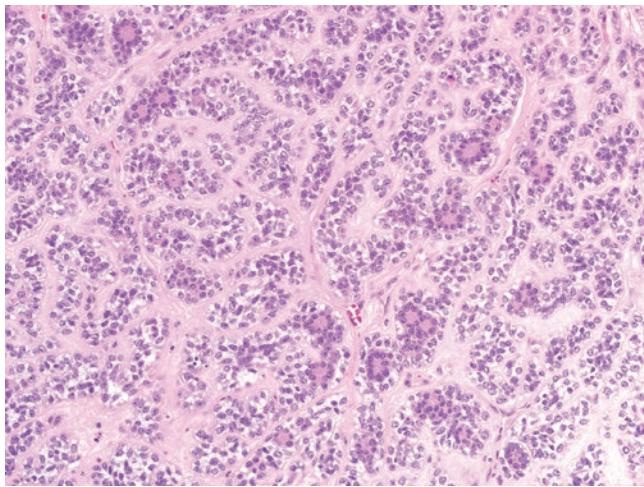


Fig. 13.13 (H&E, 200 \times) Epithelial-myoeplithelial carcinoma, solid

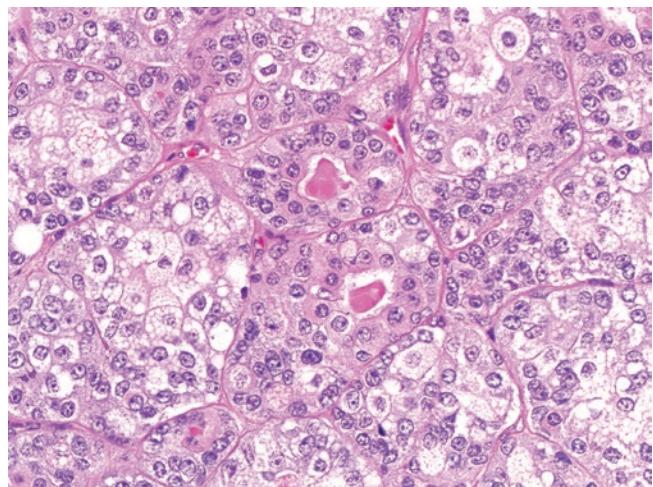


Fig. 13.16 (H&E, 400 \times) Epithelial-myoeplithelial carcinoma, sebaceous

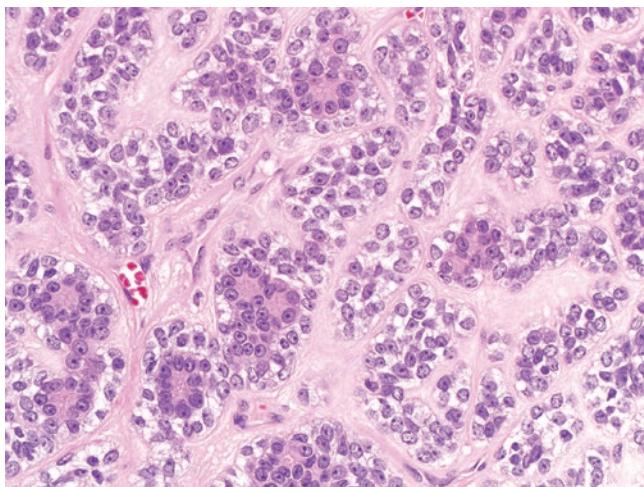


Fig. 13.14 (H&E, 400 \times) Epithelial-myoeplithelial carcinoma, solid

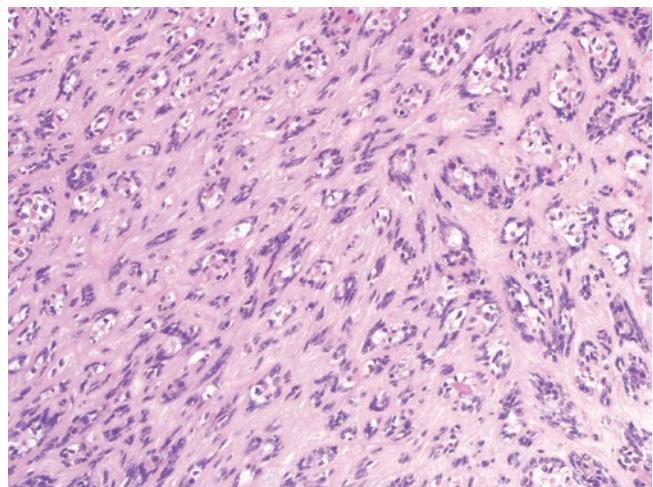


Fig. 13.17 (H&E, 200 \times) Epithelial-myoeplithelial carcinoma, spindled

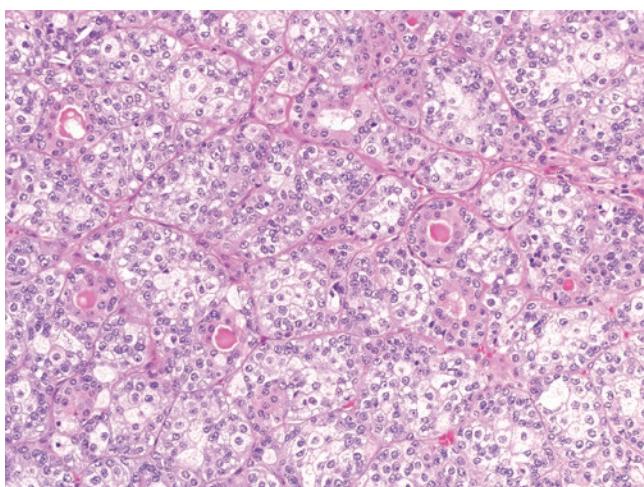


Fig. 13.15 (H&E, 200 \times) Epithelial-myoeplithelial carcinoma, sebaceous

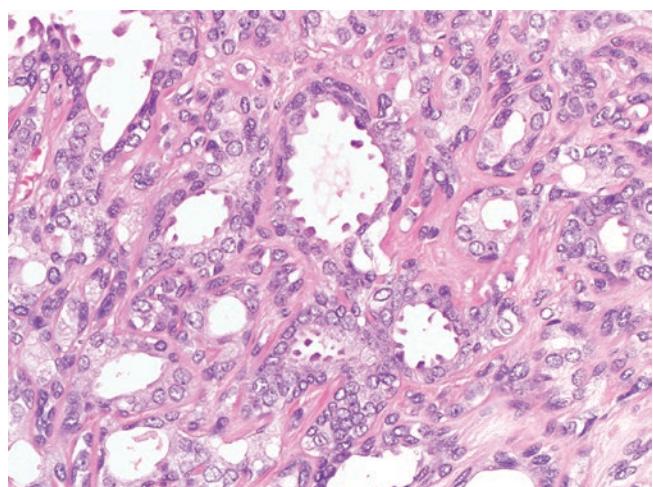


Fig. 13.18 (H&E, 400 \times) Epithelial-myoeplithelial carcinoma, apocrine

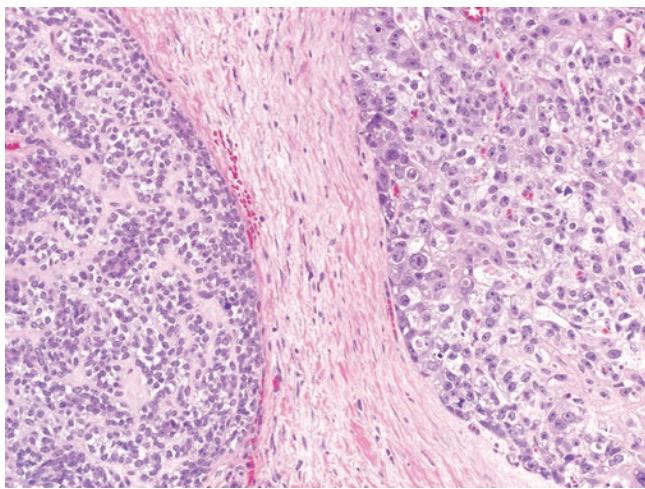


Fig. 13.19 (H&E, 200×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

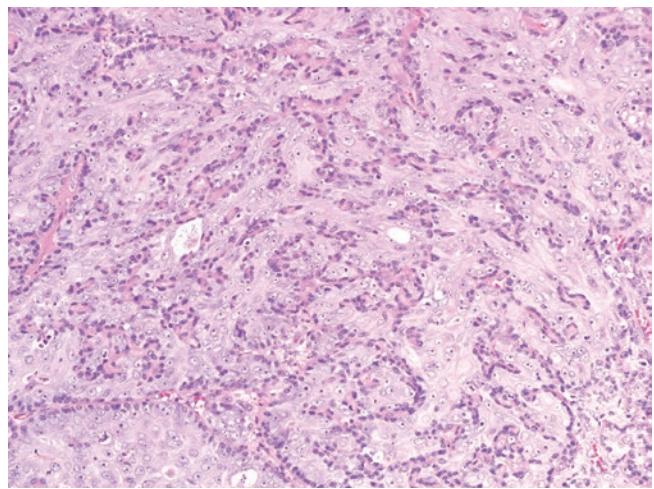


Fig. 13.22 (H&E, 200×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

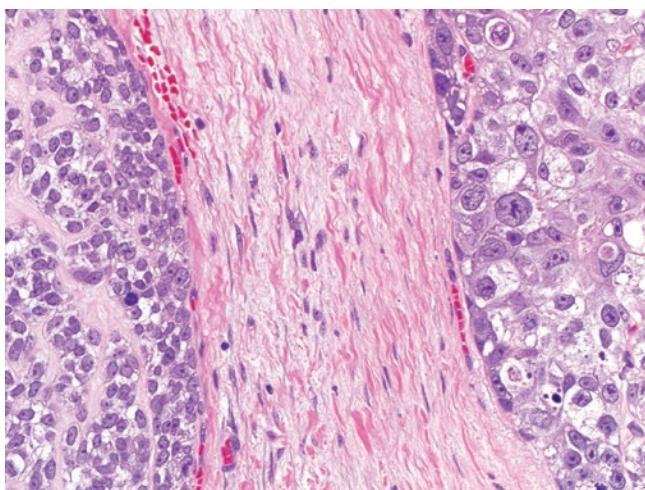


Fig. 13.20 (H&E, 400×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

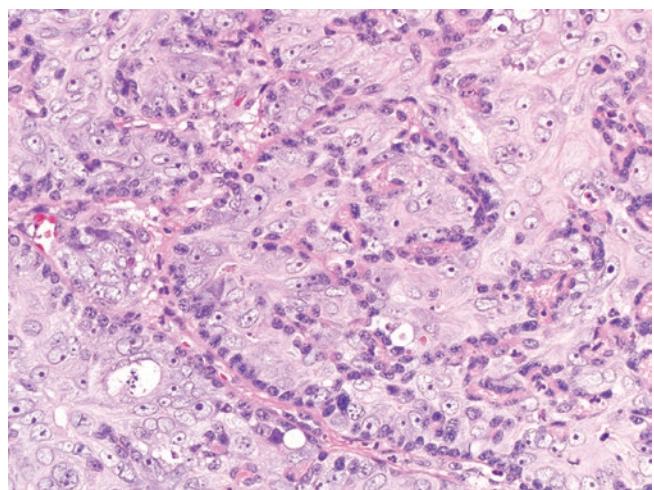


Fig. 13.23 (H&E, 400×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

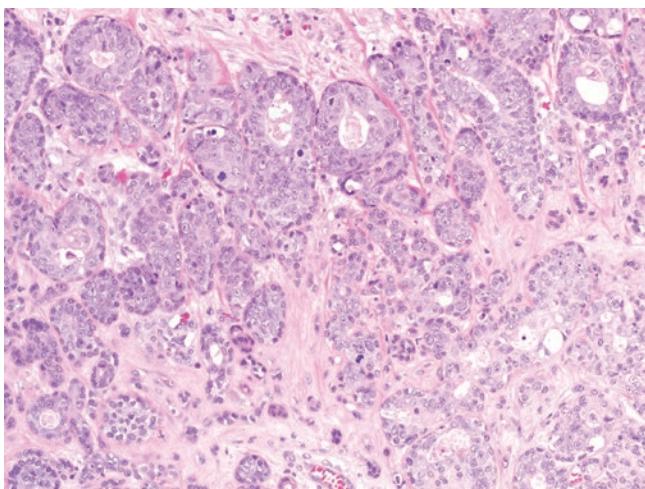


Fig. 13.21 (H&E, 200×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

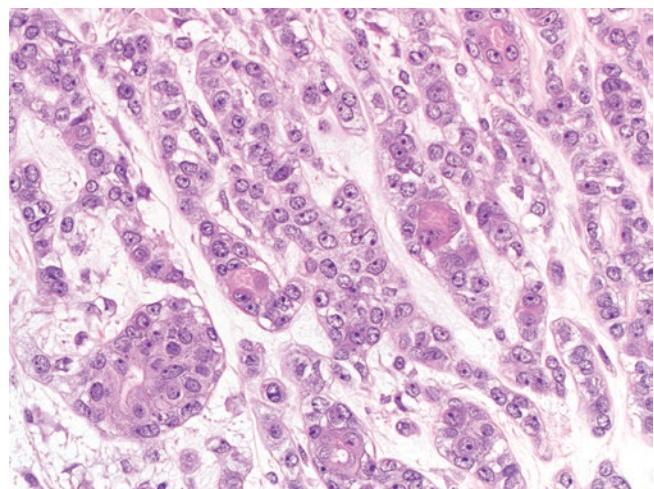


Fig. 13.24 (H&E, 400×) Epithelial-myoepithelial carcinoma, high-grade transformation, cytomorphologic atypia

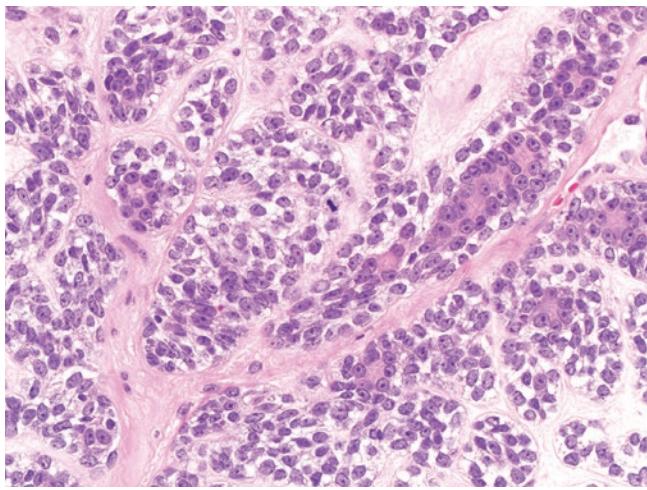


Fig. 13.25 (H&E, 400×) Epithelial-myoepithelial carcinoma, high-grade transformation, mitotic activity

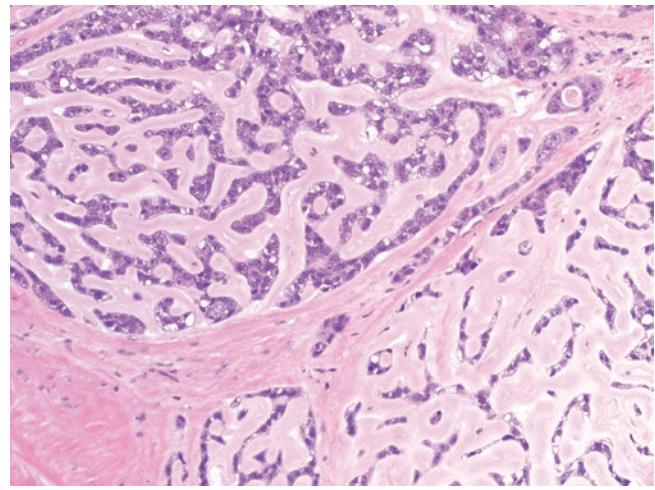


Fig. 13.28 (H&E, 200×) Epithelial-myoepithelial carcinoma, basement membrane-like material

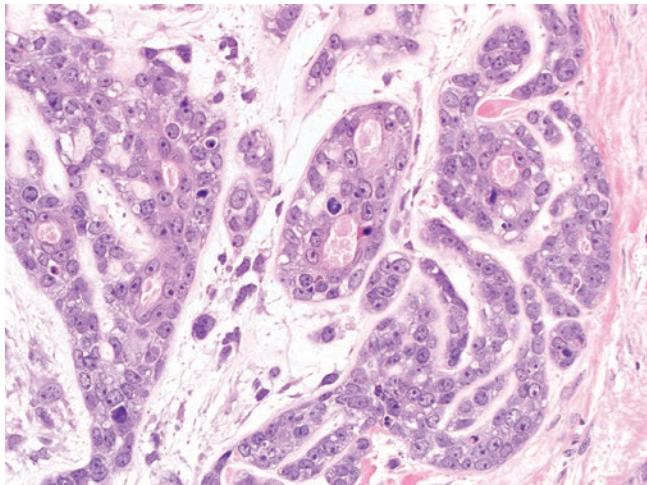


Fig. 13.26 (H&E, 400×) Epithelial-myoepithelial carcinoma, high-grade transformation, mitotic activity

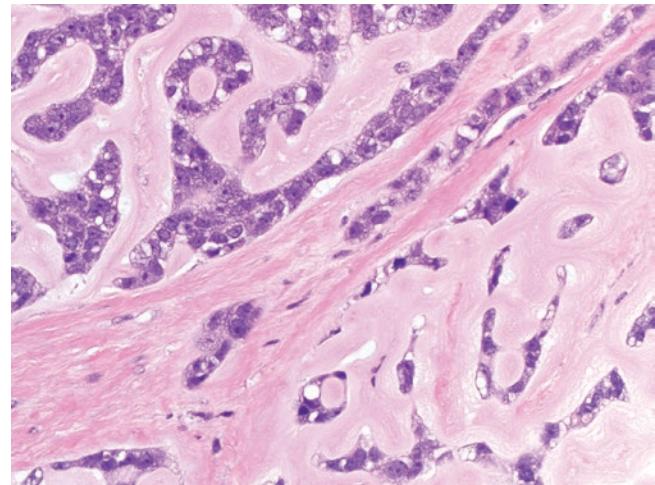


Fig. 13.29 (H&E, 400×) Epithelial-myoepithelial carcinoma, basement membrane-like material

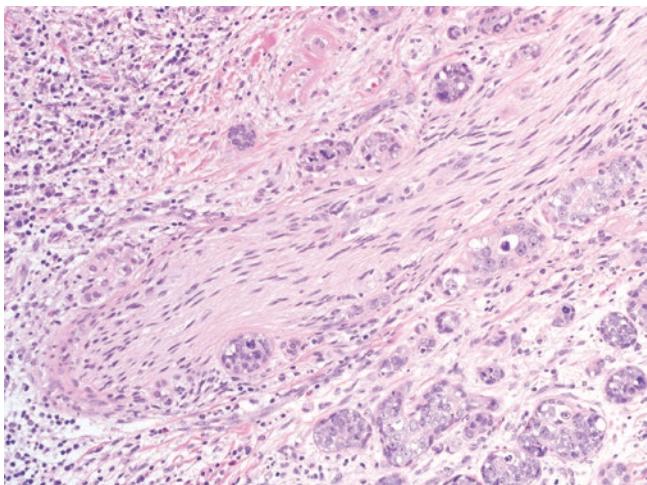


Fig. 13.27 (H&E, 200×) Epithelial-myoepithelial carcinoma, high-grade transformation, perineural invasion

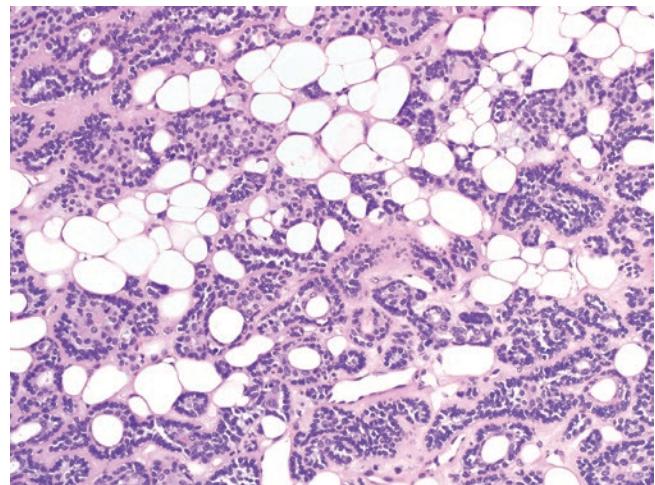


Fig. 13.30 (H&E, 200×) Epithelial-myoepithelial carcinoma, adipocytic metaplasia

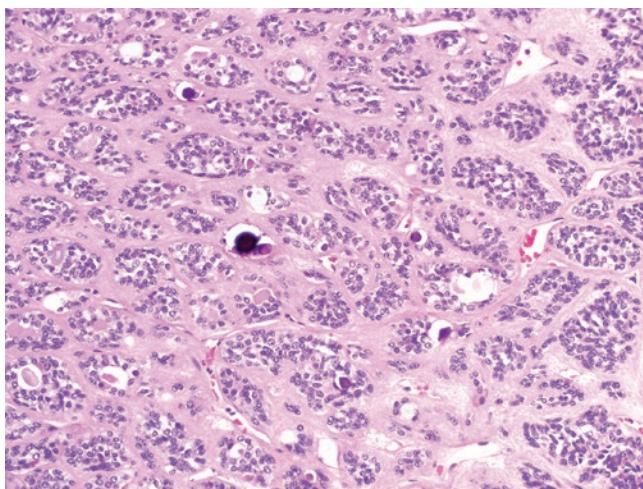


Fig. 13.31 (H&E, 200×) Epithelial-myoepithelial carcinoma, microcalcifications

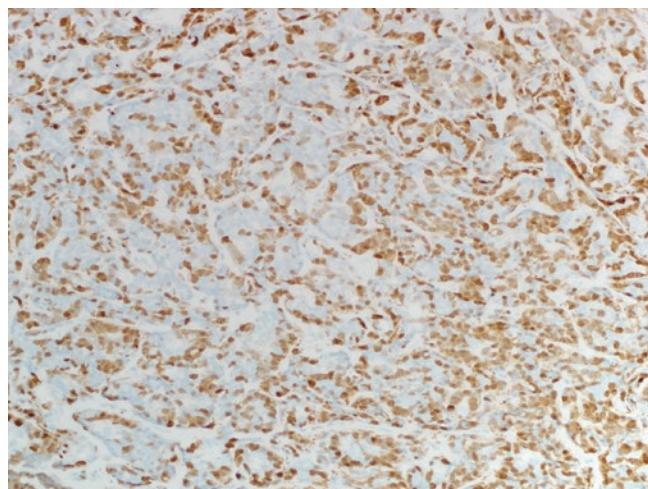


Fig. 13.34 (S-100, 200×) Epithelial-myoepithelial carcinoma, myoepithelial immunoreactivity

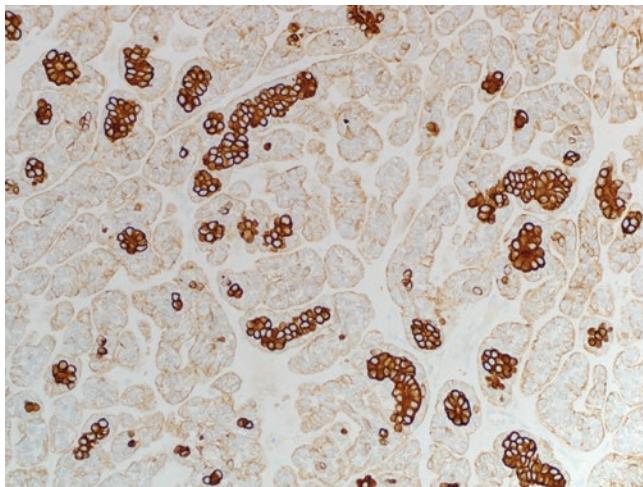


Fig. 13.32 (AE1/AE3, 200×) Epithelial-myoepithelial carcinoma, ductal immunoreactivity

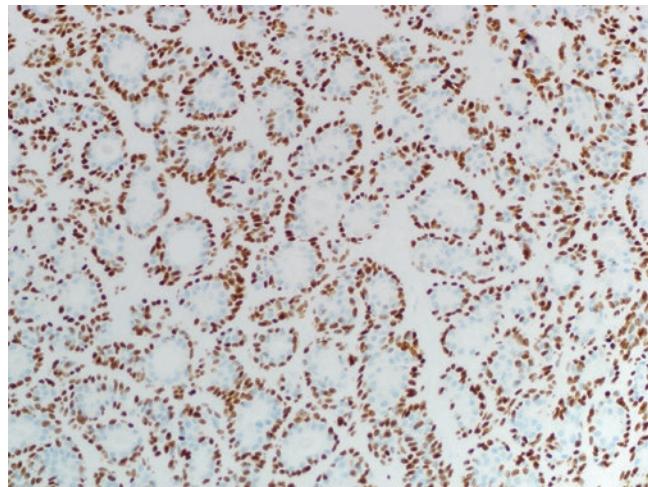


Fig. 13.35 (p63, 200×) Epithelial-myoepithelial carcinoma, myoepithelial immunoreactivity

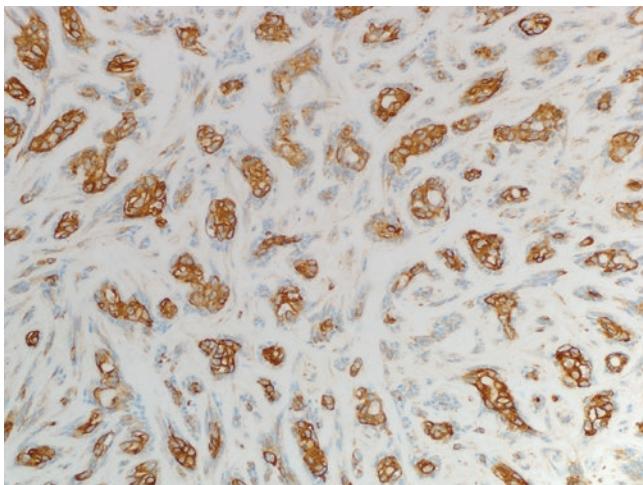


Fig. 13.33 (AE1/AE3, 200×) Epithelial-myoepithelial carcinoma, ductal immunoreactivity

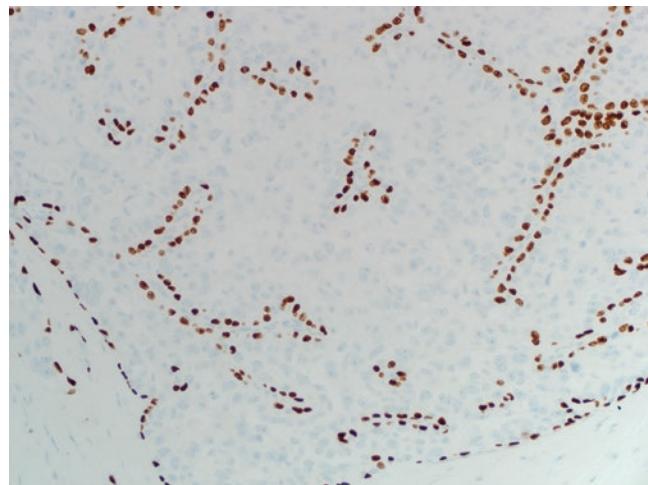


Fig. 13.36 (p63, 200×) Epithelial-myoepithelial carcinoma, myoepithelial immunoreactivity

Suggested Reading

- Alos L, Carrillo R, Ramos J, Baez JM, Mallofie C, Fernandez PL, et al. High-grade carcinoma component in epithelial-myoeplithelial carcinoma of salivary glands clinicopathological, immunohistochemical and flow-cytometric study of three cases. *Virchows Arch.* 1999;434(4):291–9.
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Intraductal Carcinoma

14

Intraductal carcinoma affects children and adults. The majority of cases involve major salivary glands, presenting as single or multiple masses. Most cases of intraductal carcinoma behave as low to intermediate-grade malignancies.

Intraductal carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (ductal and myoepithelial), and exhibit a variety of architectural patterns (cribriform and papillary) (Figs. 14.1–14.30).

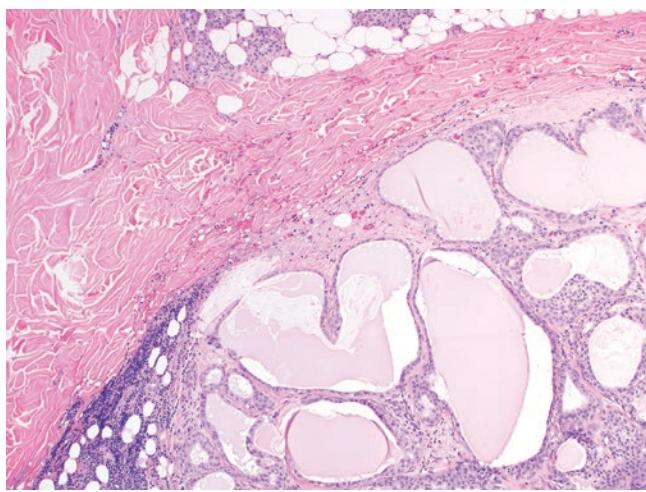


Fig. 14.1 (H&E, 100×) Intraductal carcinoma, circumscribed

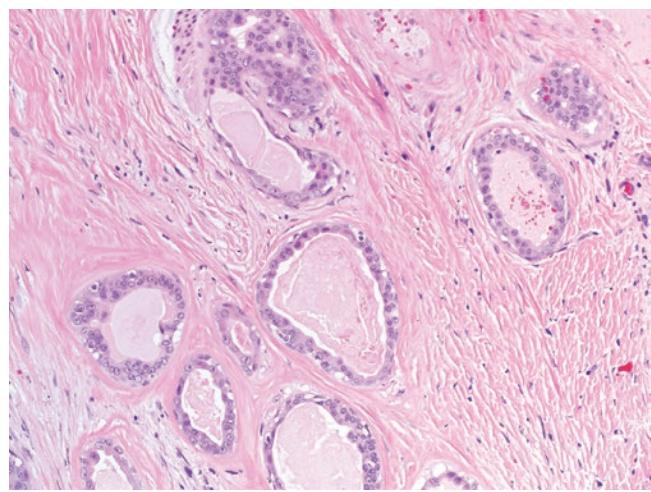


Fig. 14.4 (H&E, 200×) Intraductal carcinoma, cribriform

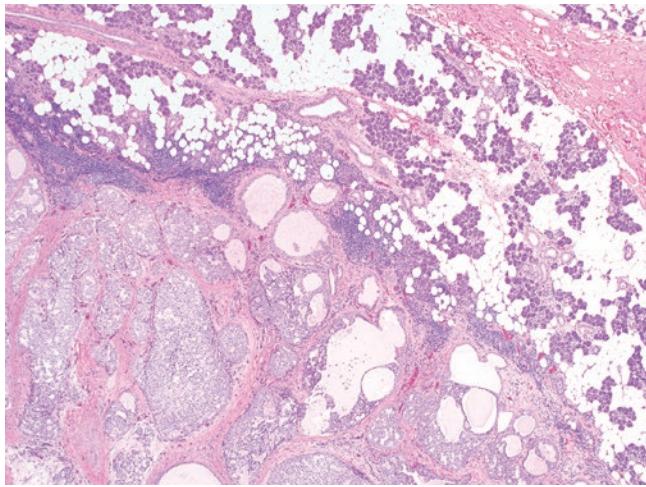


Fig. 14.2 (H&E, 40×) Intraductal carcinoma, infiltrative

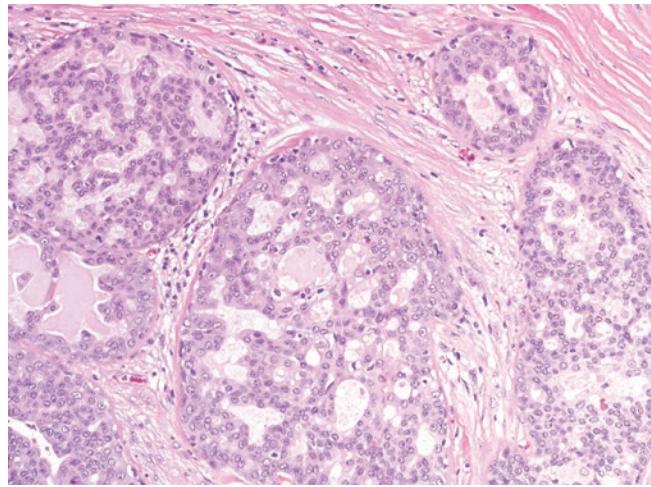


Fig. 14.5 (H&E, 200×) Intraductal carcinoma, cribriform

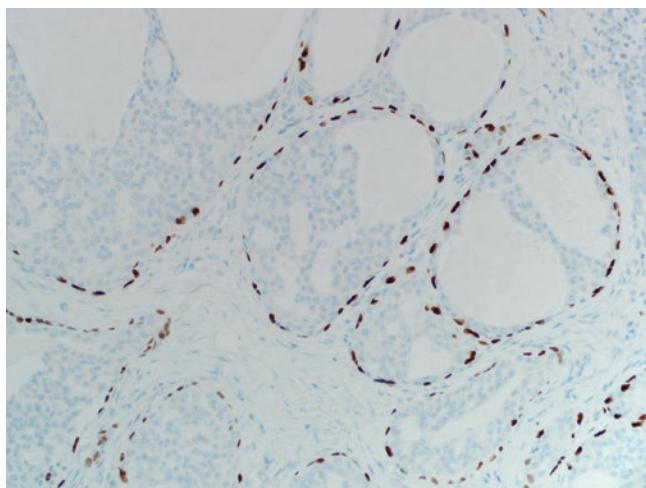


Fig. 14.3 (p63, 200×) Intraductal carcinoma, biphasic

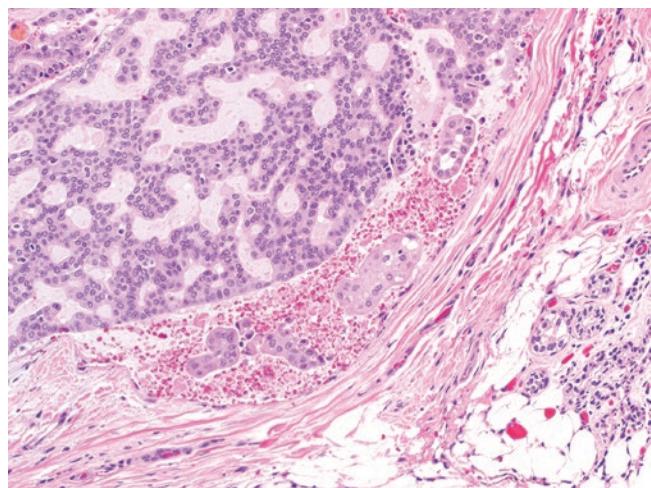


Fig. 14.6 (H&E, 200×) Intraductal carcinoma, cribriform

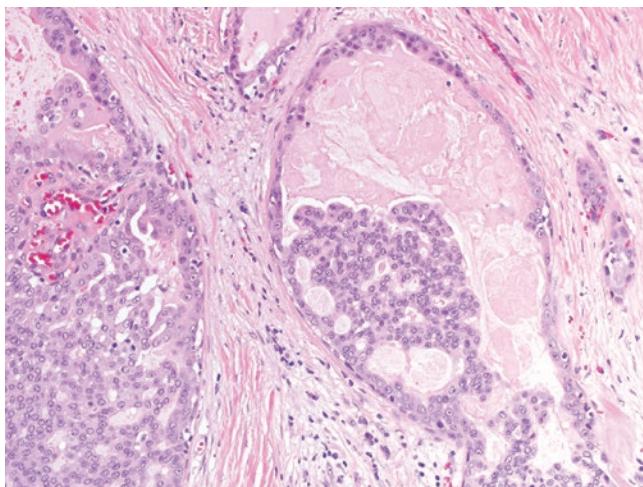


Fig. 14.7 (H&E, 200×) Intraductal carcinoma, cribriform

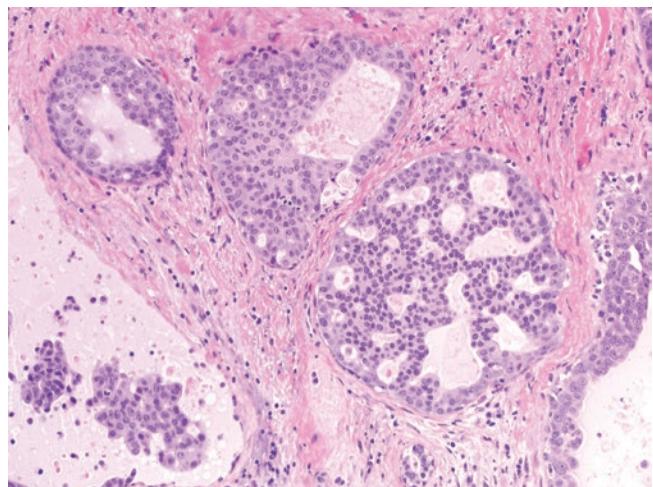


Fig. 14.10 (H&E, 200×) Intraductal carcinoma, cribriform

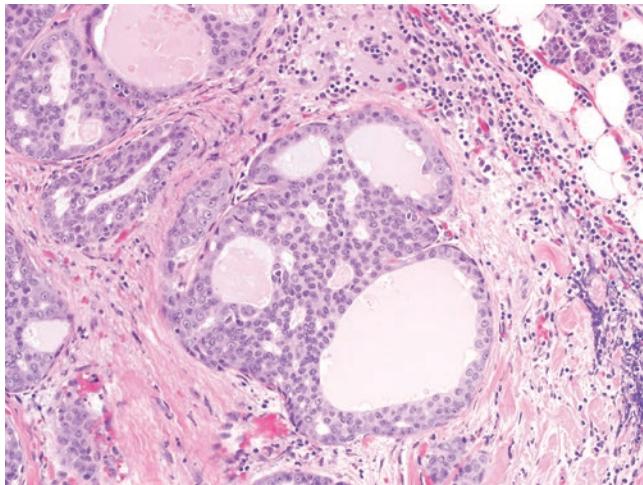


Fig. 14.8 (H&E, 200×) Intraductal carcinoma, cribriform

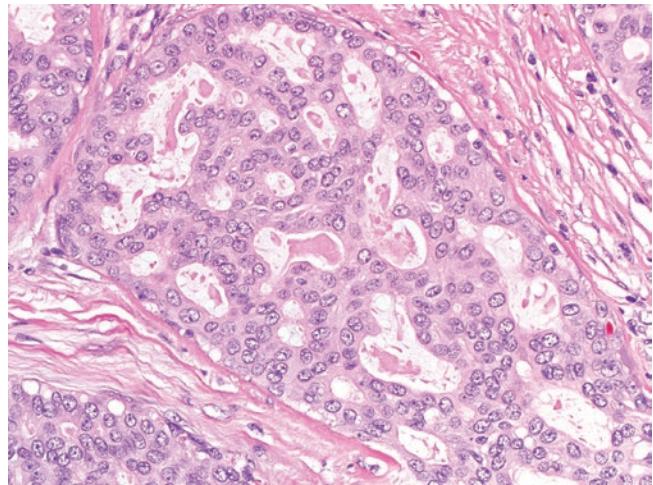


Fig. 14.11 (H&E, 400×) Intraductal carcinoma, cribriform

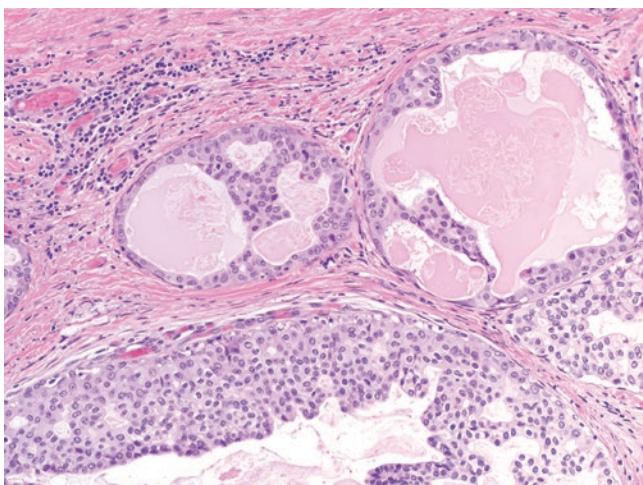


Fig. 14.9 (H&E, 200×) Intraductal carcinoma, cribriform

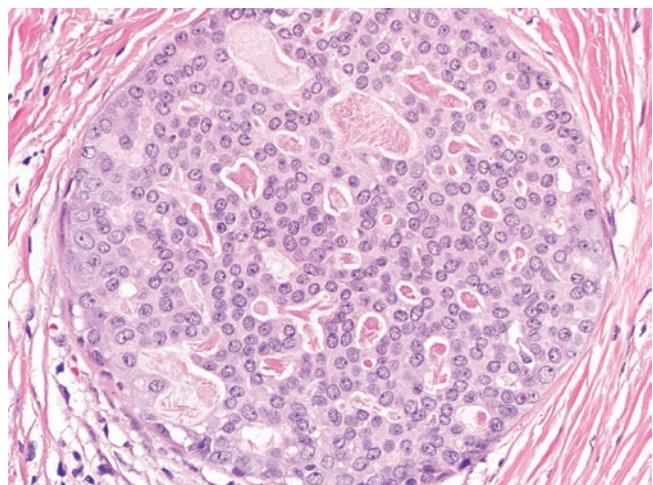


Fig. 14.12 (H&E, 400×) Intraductal carcinoma, cribriform

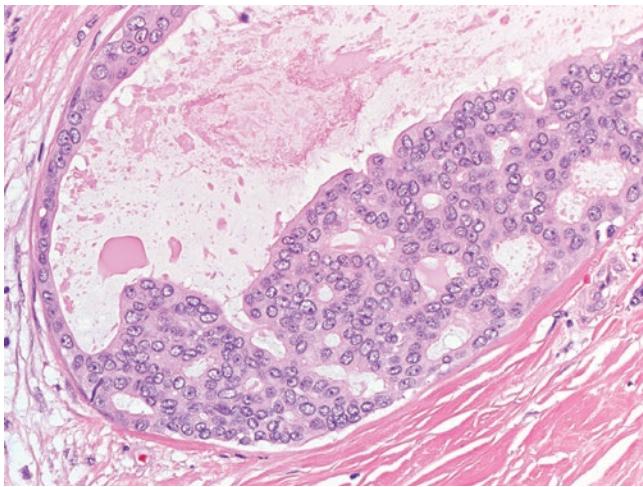


Fig. 14.13 (H&E, 400 \times) Intraductal carcinoma, cribriform

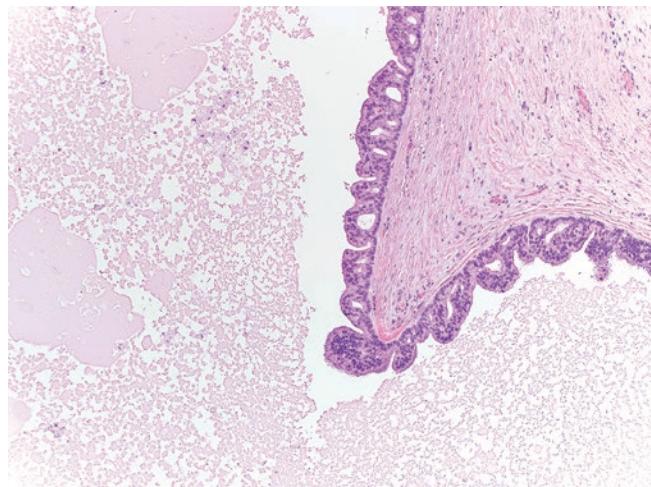


Fig. 14.16 (H&E, 100 \times) Intraductal carcinoma, papillary

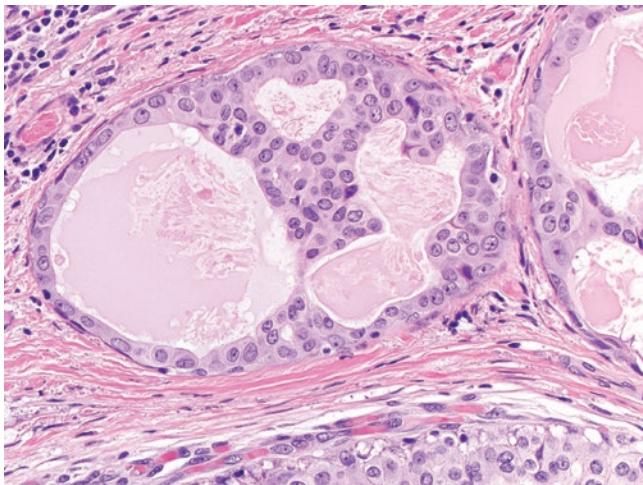


Fig. 14.14 (H&E, 400 \times) Intraductal carcinoma, cribriform

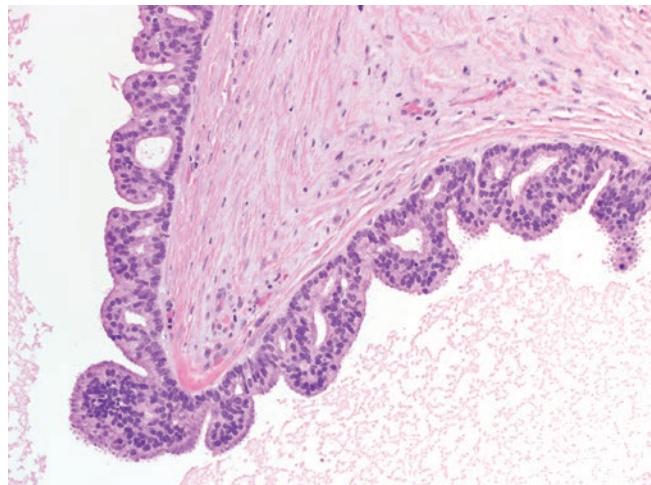


Fig. 14.17 (H&E, 200 \times) Intraductal carcinoma, papillary

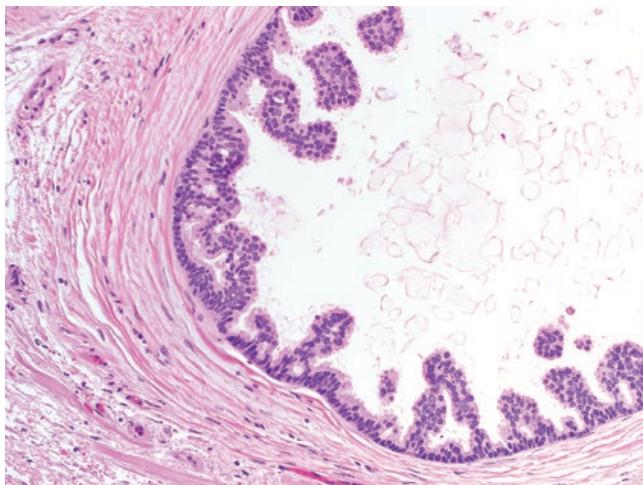


Fig. 14.15 (H&E, 200 \times) Intraductal carcinoma, papillary

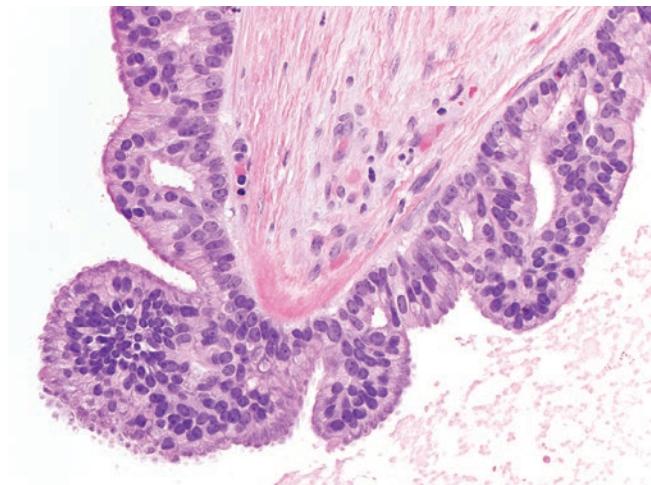


Fig. 14.18 (H&E, 400 \times) Intraductal carcinoma, papillary

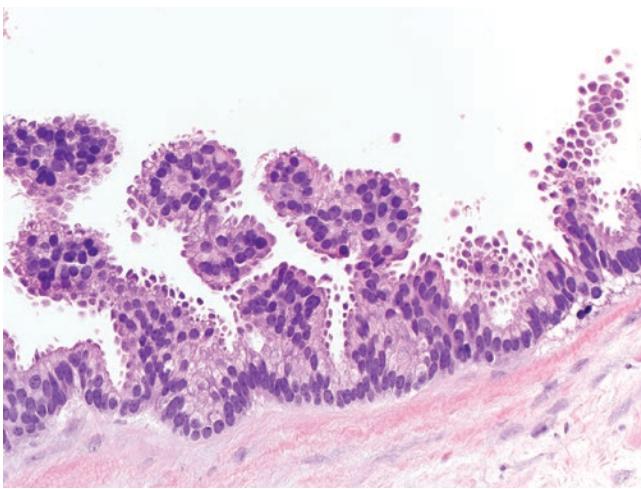


Fig. 14.19 (H&E, 400 \times) Intraductal carcinoma, papillary

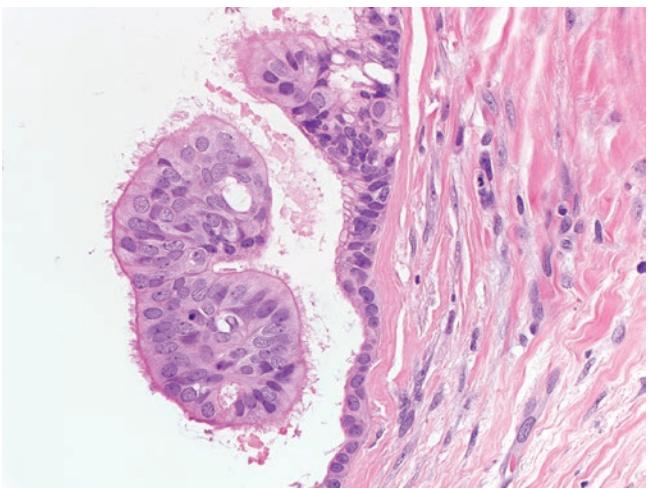


Fig. 14.22 (H&E, 400 \times) Intraductal carcinoma, ciliated

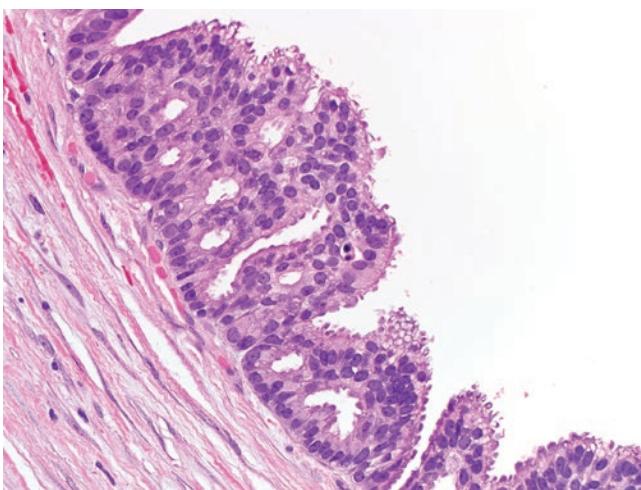


Fig. 14.20 (H&E, 400 \times) Intraductal carcinoma, papillary

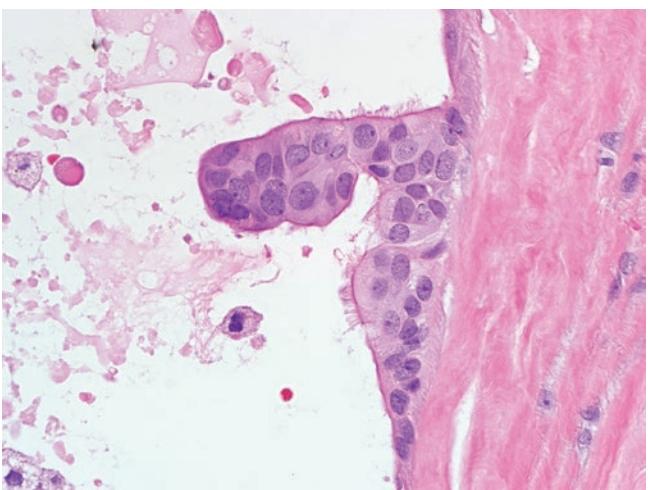


Fig. 14.23 (H&E, 600 \times) Intraductal carcinoma, ciliated

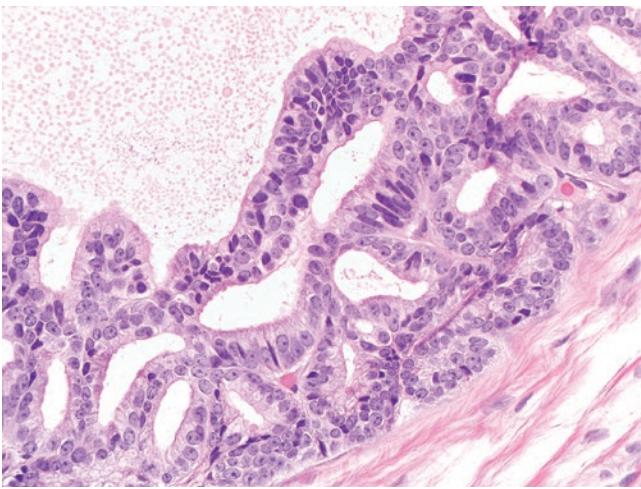


Fig. 14.21 (H&E, 400 \times) Intraductal carcinoma, papillary

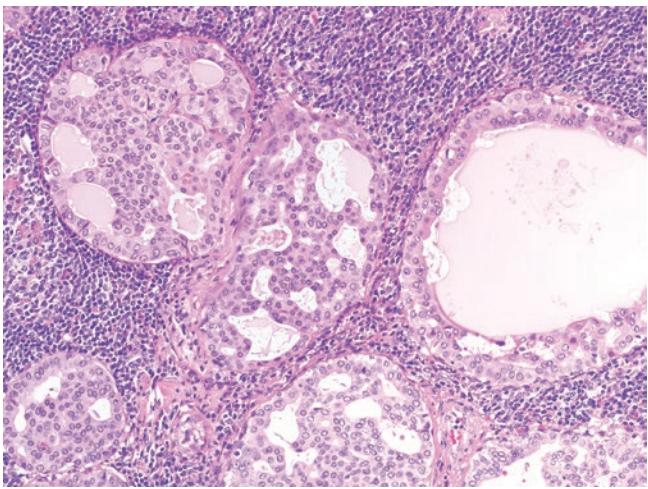


Fig. 14.24 (H&E, 200 \times) Intraductal carcinoma, tumor-associated lymphoid proliferation

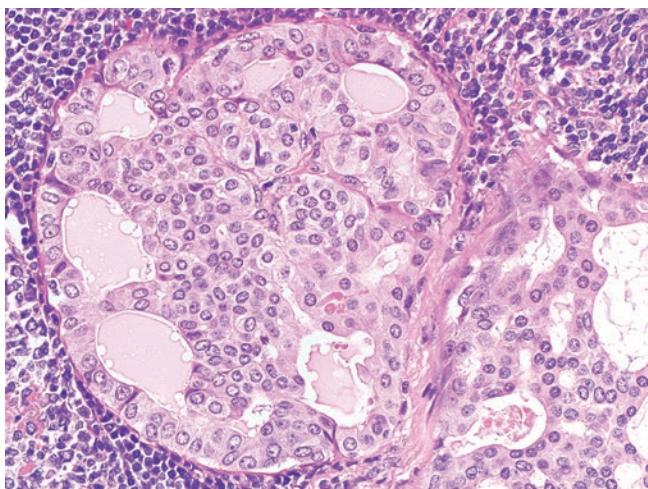


Fig. 14.25 (H&E, 400 \times) Intraductal carcinoma, tumor-associated lymphoid proliferation

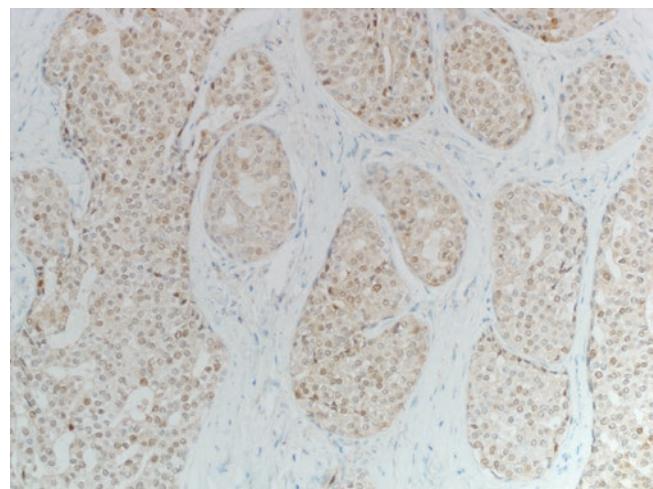


Fig. 14.28 (S-100, 200 \times) Intraductal carcinoma, diffuse immunoreactivity

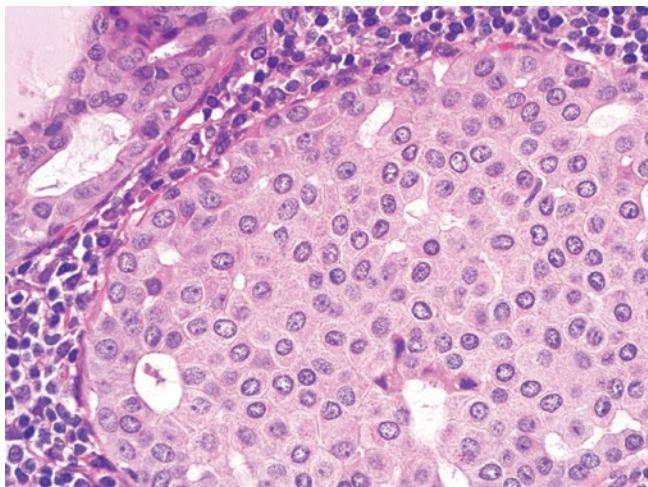


Fig. 14.26 (H&E, 600 \times) Intraductal carcinoma, tumor-associated lymphoid proliferation

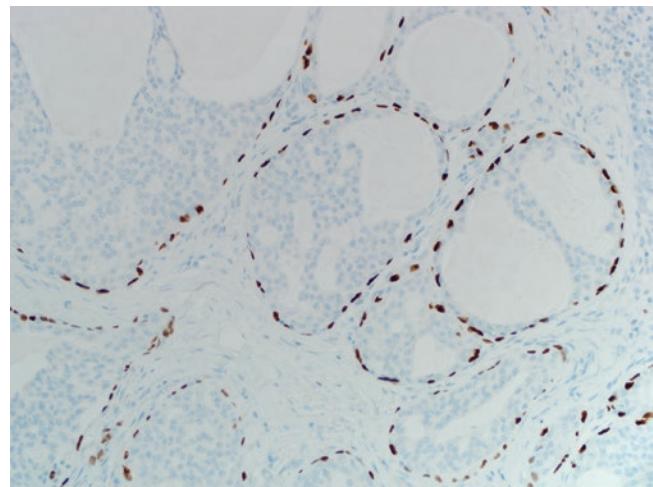


Fig. 14.29 (p63, 200 \times) Intraductal carcinoma, basal immunoreactivity

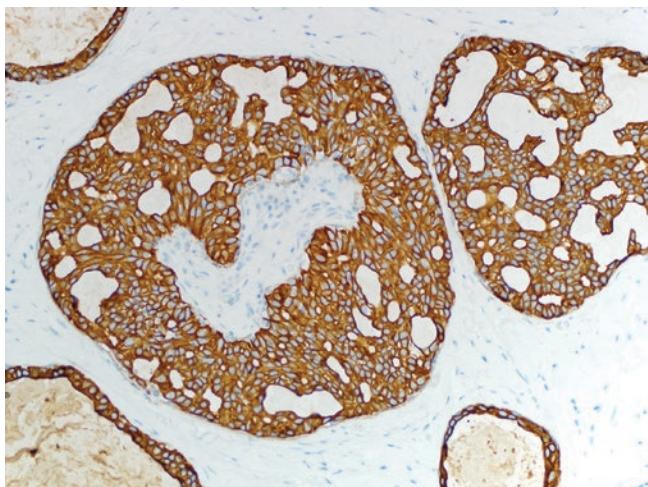


Fig. 14.27 (AE1/AE3, 200 \times) Intraductal carcinoma, diffuse immunoreactivity

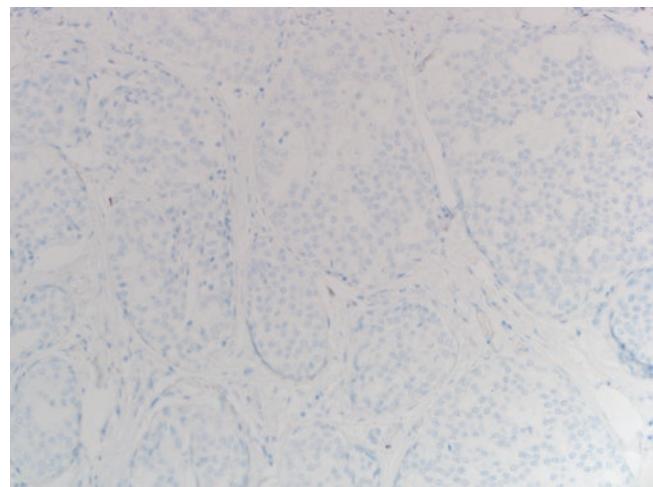


Fig. 14.30 (Androgen receptor, 200 \times) Intraductal carcinoma, negative immunoreactivity

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Lymphadenoma

15

Lymphadenoma affects children and adults and presents at a mean age of approximately 65 years. Women and men are involved with similar frequency. The majority of cases involve the parotid gland, presenting as a single mass. Lymphadenoma is circumscribed, comprised of multiple cell types (ductal and

basal), and may exhibit a variety of architectural patterns (nests and cysts) in a background of reactive lymphoid tissue. Sebaceous cells may or may not be present (sebaceous and non-sebaceous) (Figs. 15.1–15.16).

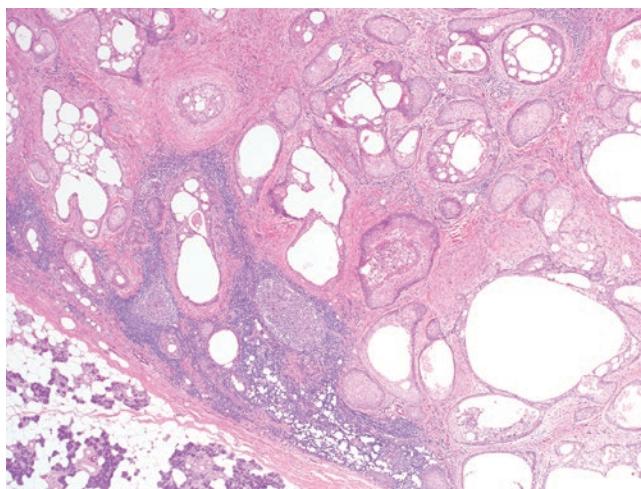


Fig. 15.1 (H&E, 40×) Lymphadenoma, circumscribed

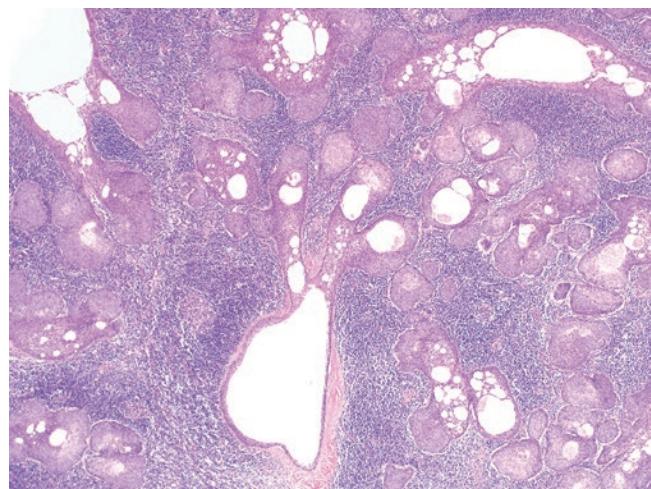


Fig. 15.4 (H&E, 40×) Lymphadenoma, sebaceous

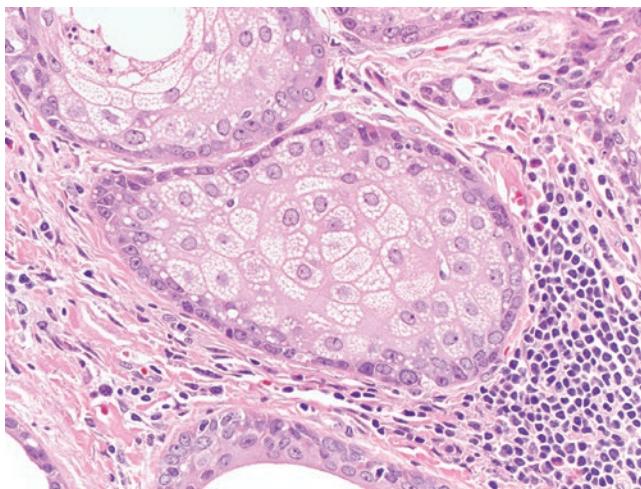


Fig. 15.2 (H&E, 400×) Lymphadenoma, biphasic

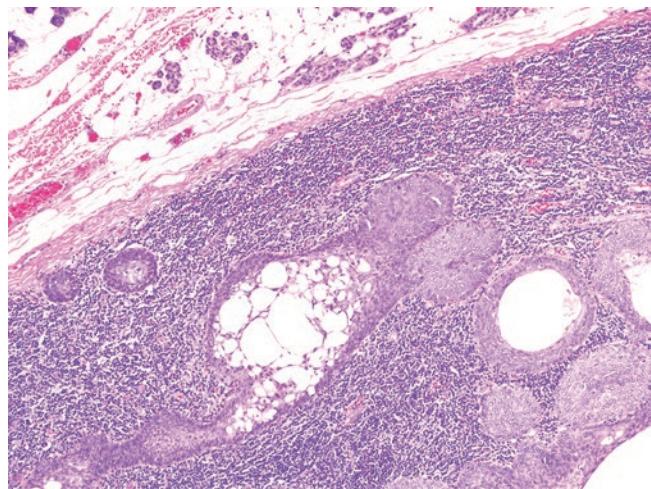


Fig. 15.5 (H&E, 100×) Lymphadenoma, sebaceous

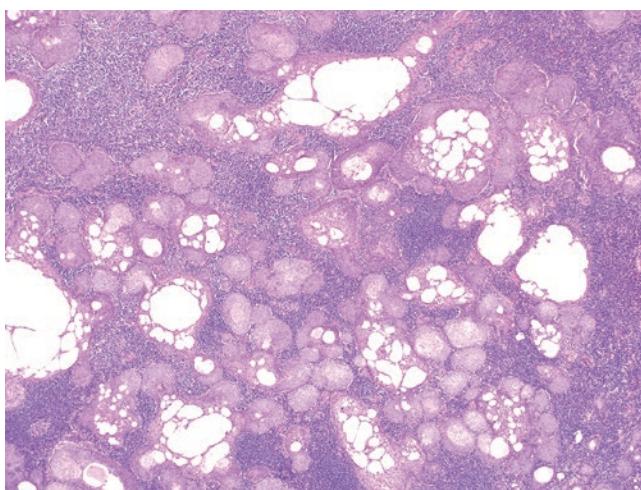


Fig. 15.3 (H&E, 40×) Lymphadenoma, sebaceous

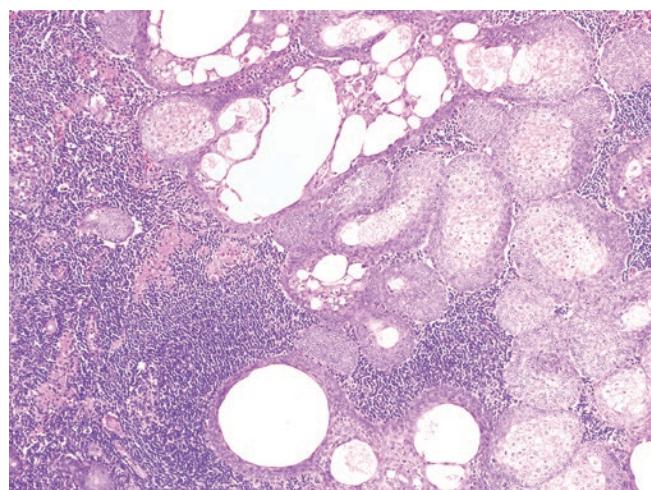


Fig. 15.6 (H&E, 100×) Lymphadenoma, sebaceous

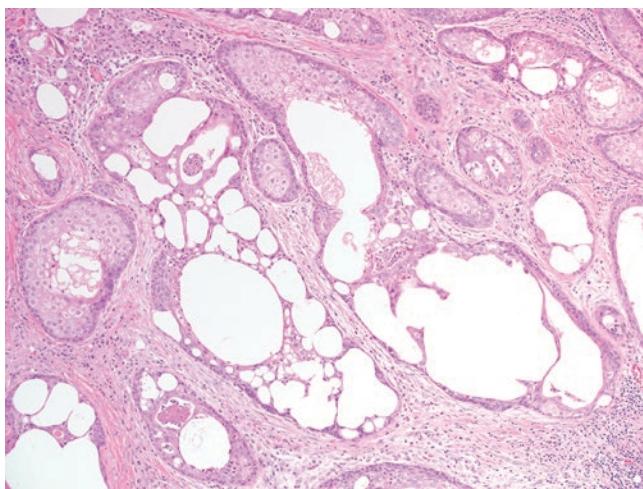


Fig. 15.7 (H&E, 100 \times) Lymphadenoma, sebaceous

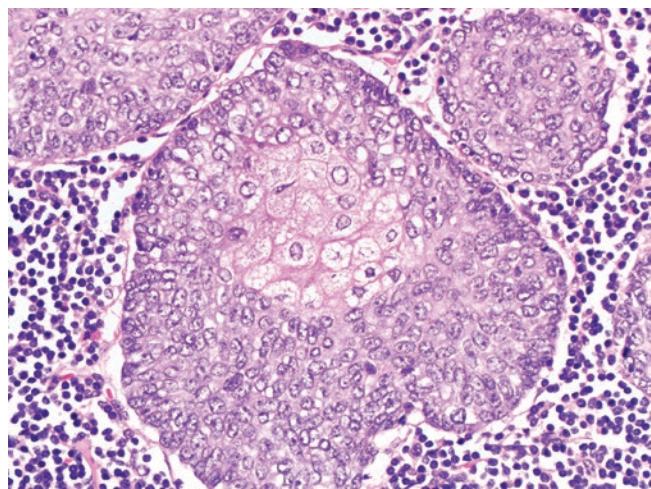


Fig. 15.10 (H&E, 400 \times) Lymphadenoma, sebaceous

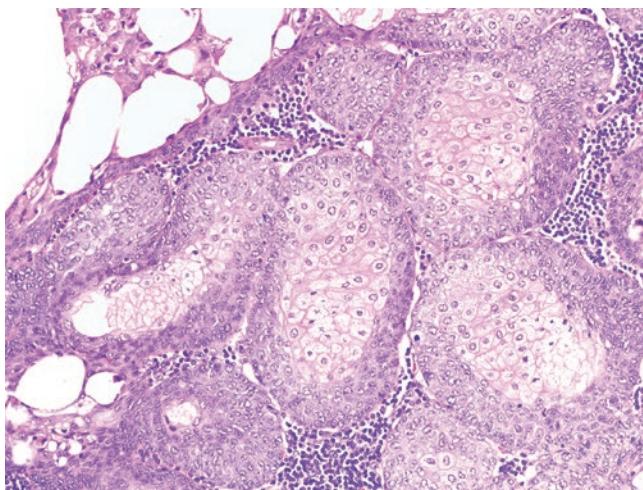


Fig. 15.8 (H&E, 200 \times) Lymphadenoma, sebaceous

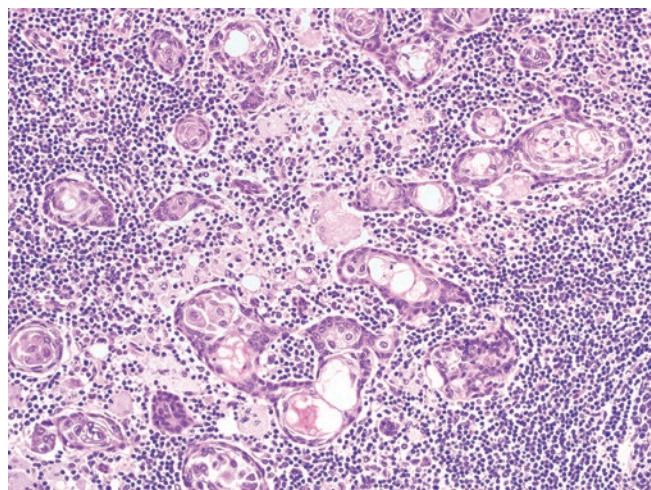


Fig. 15.11 (H&E, 200 \times) Lymphadenoma, sebaceous, histiocytic reaction

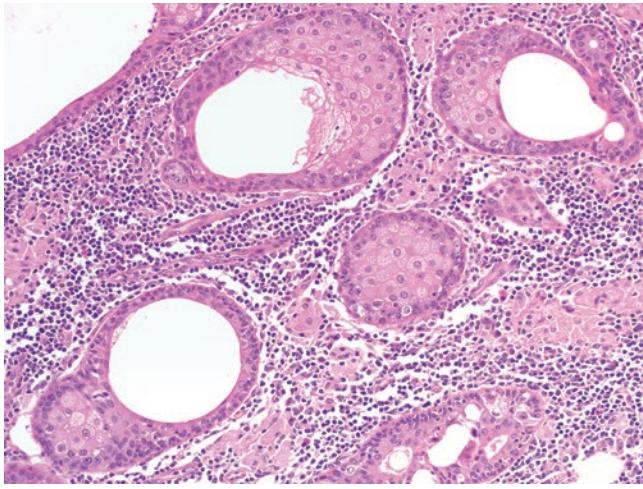


Fig. 15.9 (H&E, 200 \times) Lymphadenoma, sebaceous

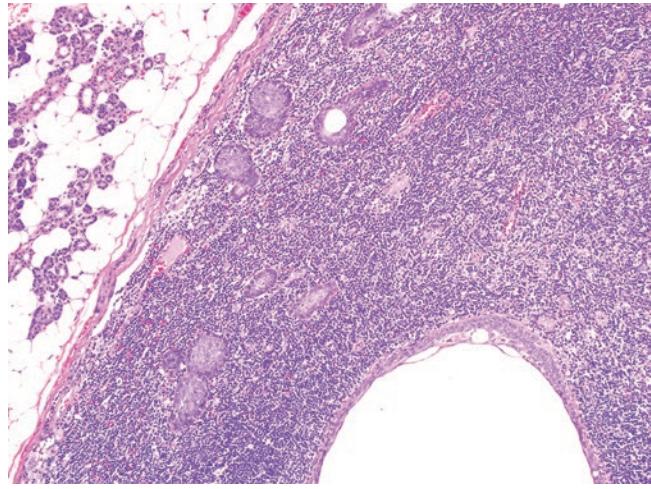


Fig. 15.12 (H&E, 100 \times) Lymphadenoma, non-sebaceous

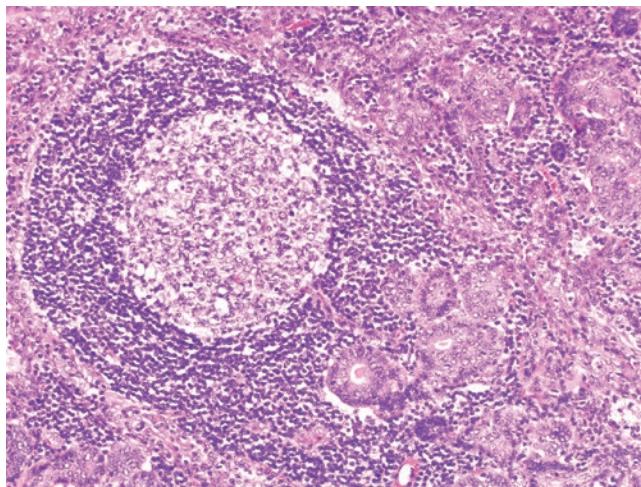


Fig. 15.13 (H&E, 200 \times) Lymphadenoma, non-sebaceous

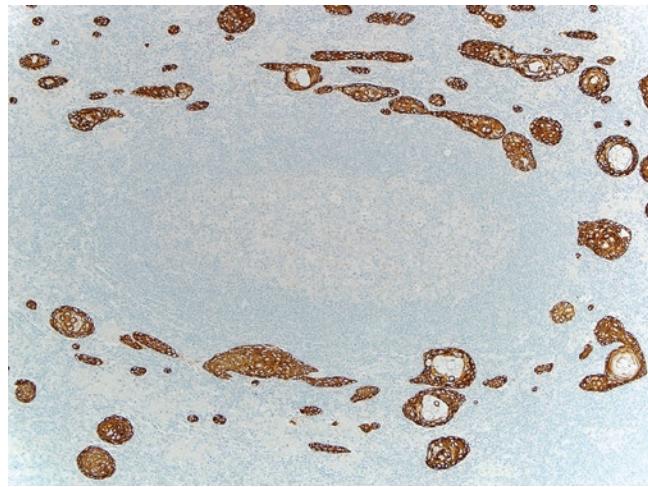


Fig. 15.15 (AE1/AE3, 100 \times) Lymphadenoma, diffuse immunoreactivity

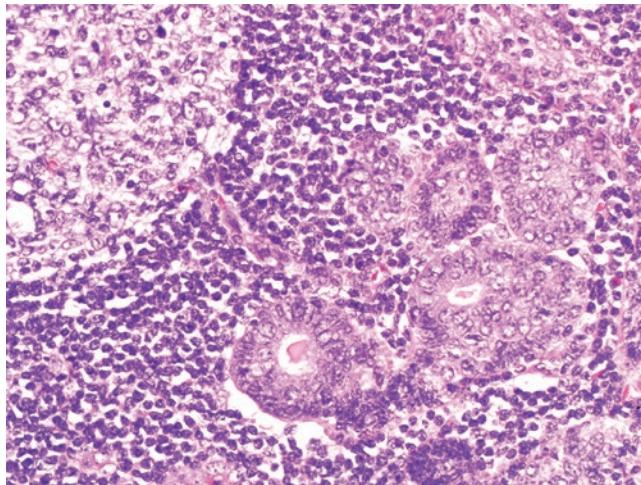


Fig. 15.14 (H&E, 400 \times) Lymphadenoma, non-sebaceous

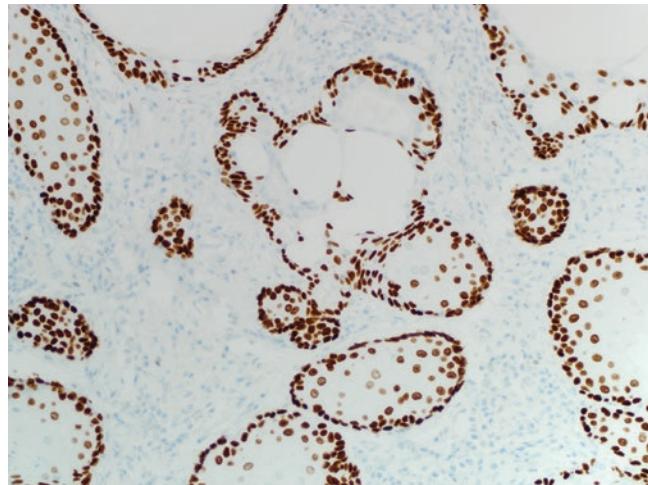


Fig. 15.16 (p63, 200 \times) Lymphadenoma, basal immunoreactivity

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Lymphoepithelial Carcinoma

16

Lymphoepithelial carcinoma affects children and adults and presents at a mean age of approximately 55 years. Women and men are involved with similar frequency. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of lymphoepithelial carcinoma behave

as intermediate to high-grade malignancies. Lymphoepithelial carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (polygonal and spindled), and exhibit a variety of architectural patterns (solid, trabecular, and single cells) (Figs. 16.1–16.17).

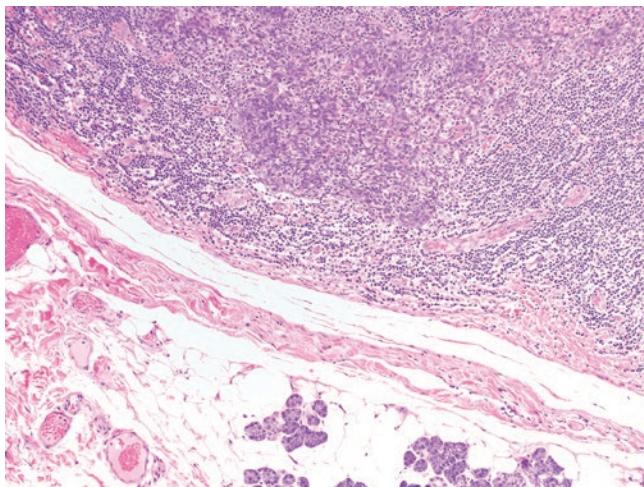


Fig. 16.1 (H&E, 100×) Lymphoepithelial carcinoma, circumscribed

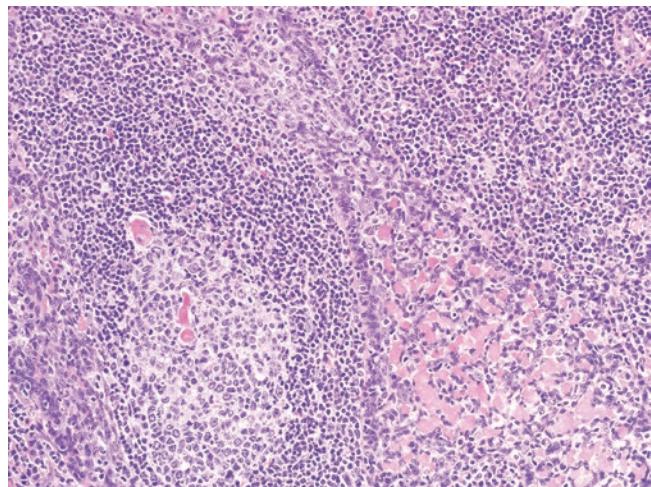


Fig. 16.4 (H&E, 200×) Lymphoepithelial carcinoma, tumor-associated lymphoid proliferation

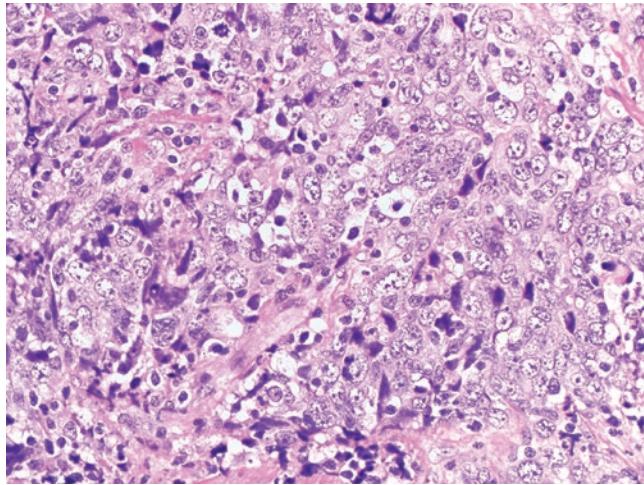


Fig. 16.2 (H&E, 400×) Lymphoepithelial carcinoma, biphasic

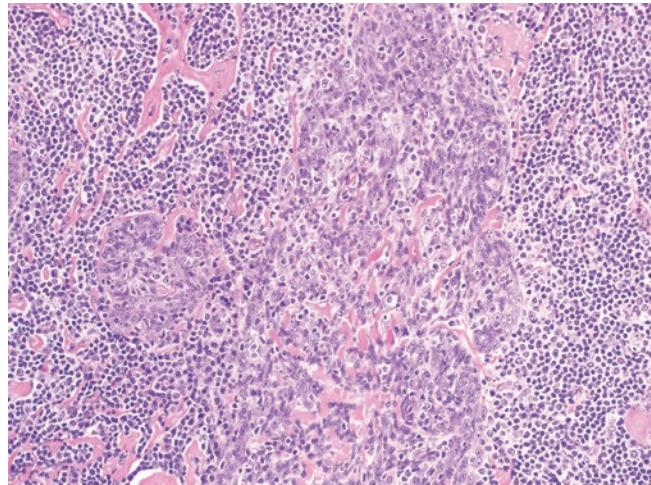


Fig. 16.5 (H&E, 200×) Lymphoepithelial carcinoma, tumor-associated lymphoid proliferation

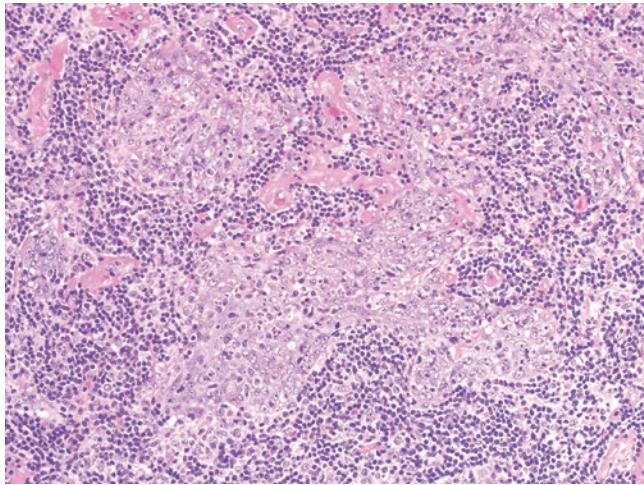


Fig. 16.3 (H&E, 200×) Lymphoepithelial carcinoma, tumor-associated lymphoid proliferation

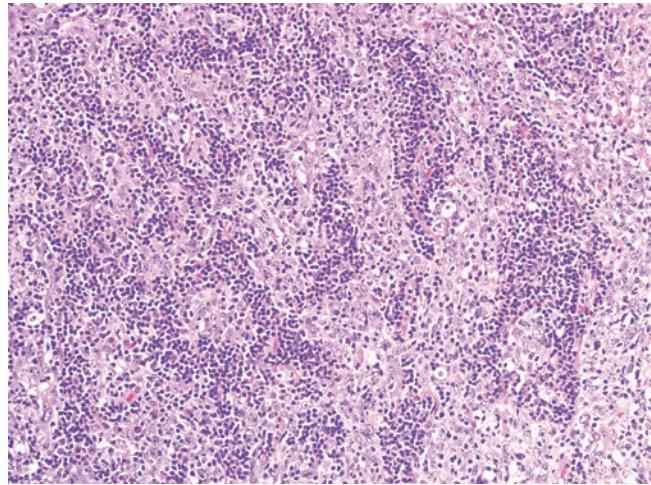


Fig. 16.6 (H&E, 200×) Lymphoepithelial carcinoma, tumor-associated lymphoid proliferation

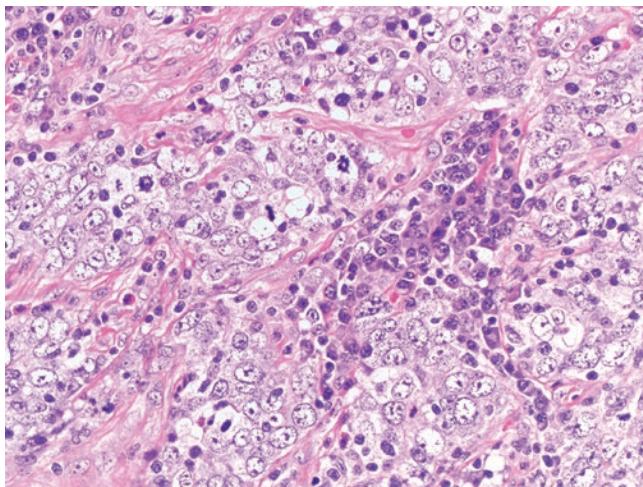


Fig. 16.7 (H&E, 400×) Lymphoepithelial carcinoma, cytomorphologic atypia

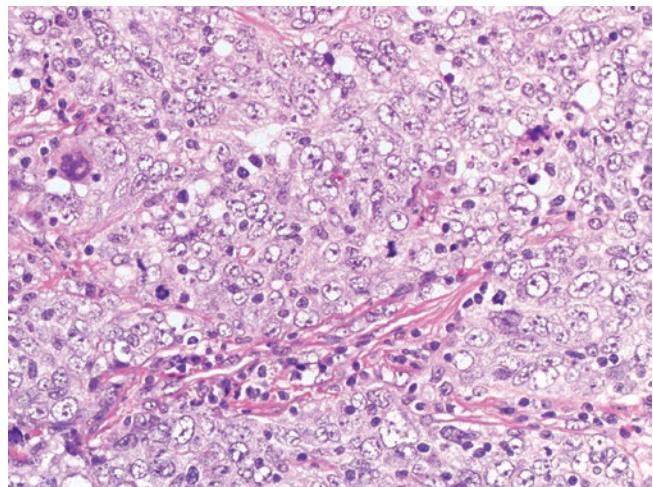


Fig. 16.10 (H&E, 400×) Lymphoepithelial carcinoma, mitotic activity

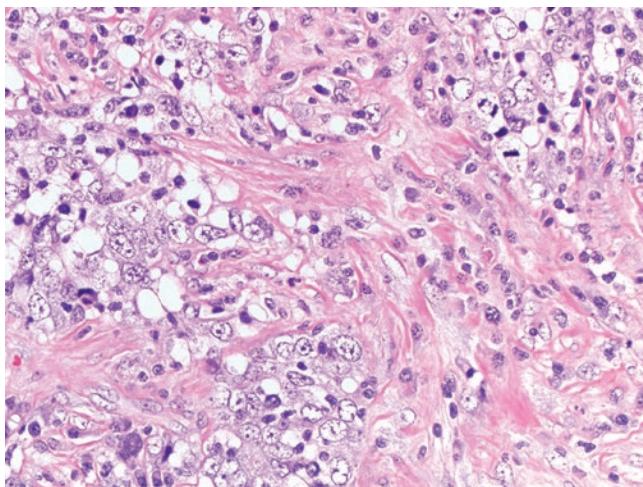


Fig. 16.8 (H&E, 400×) Lymphoepithelial carcinoma, cytomorphologic atypia

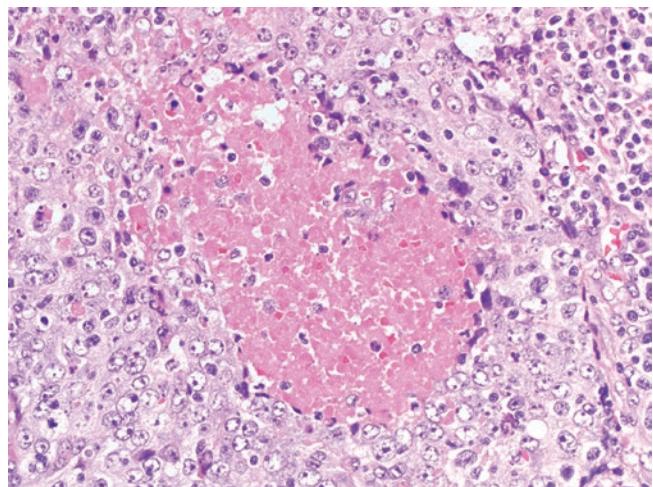


Fig. 16.11 (H&E, 400×) Lymphoepithelial carcinoma, necrosis

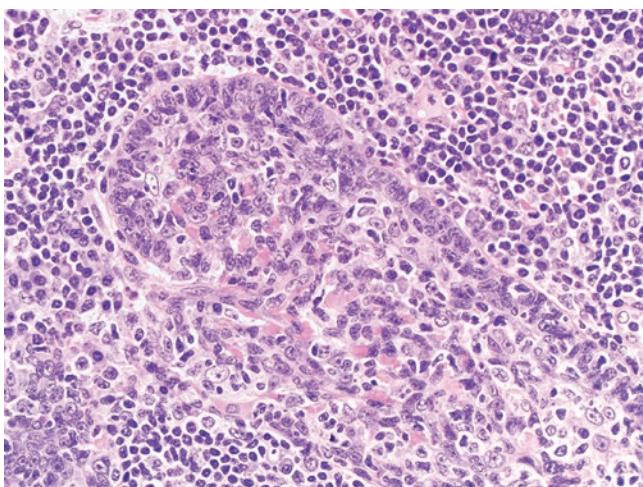


Fig. 16.9 (H&E, 400×) Lymphoepithelial carcinoma, cytomorphologic atypia

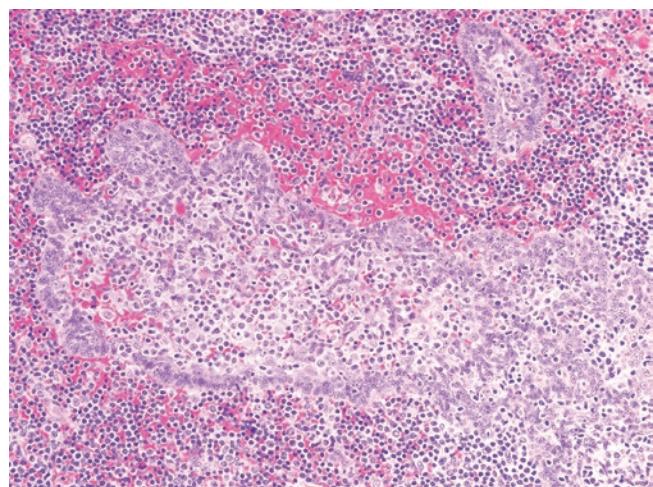


Fig. 16.12 (H&E, 200×) Lymphoepithelial carcinoma, hemorrhagic

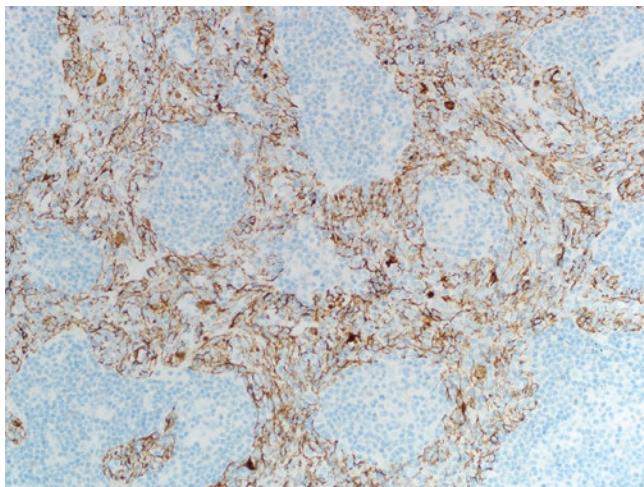


Fig. 16.13 (AE1/AE3, 200×) Lymphoepithelial carcinoma, diffuse immunoreactivity

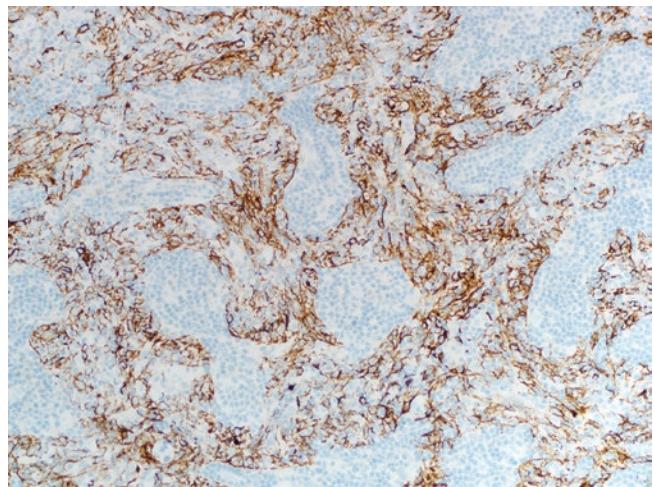


Fig. 16.16 (34βE12, 200×) Lymphoepithelial carcinoma, diffuse immunoreactivity

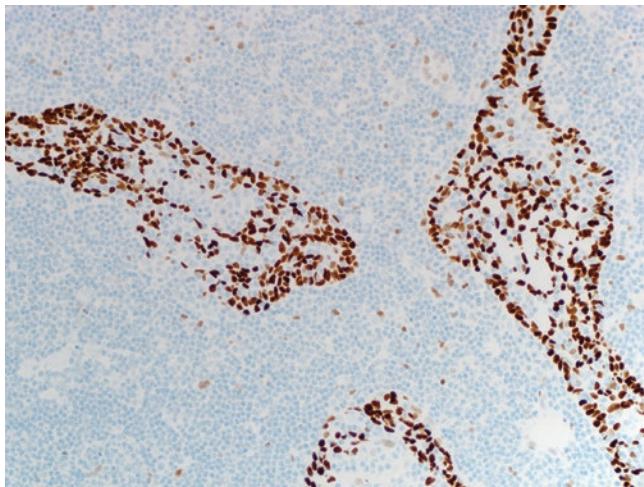


Fig. 16.14 (p63, 200×) Lymphoepithelial carcinoma, diffuse immunoreactivity

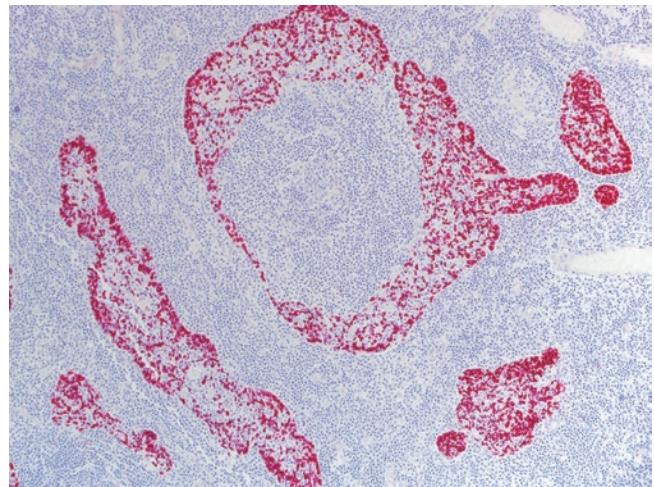


Fig. 16.17 (EBV in situ hybridization, 100×) Lymphoepithelial carcinoma, diffuse hybridization

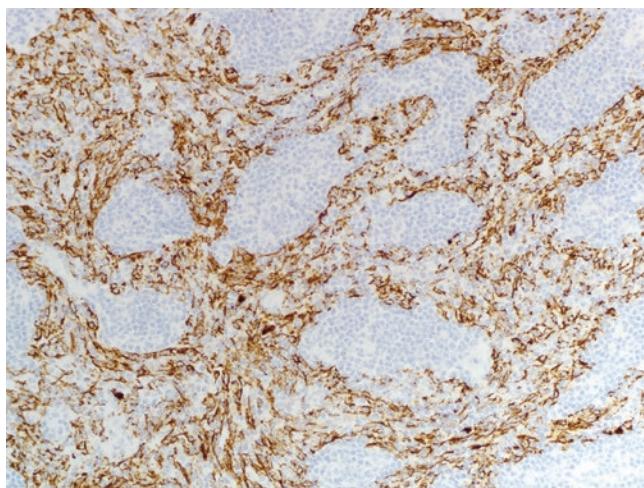


Fig. 16.15 (CK5/6, 200×) Lymphoepithelial carcinoma, diffuse immunoreactivity

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Mucoepidermoid Carcinoma

17

Mucoepidermoid carcinoma affects children and adults and is the most common salivary gland malignancy. Women are involved slightly more than men. The majority of cases involve major salivary glands, presenting as single or multiple masses. Most cases of mucoepidermoid carcinoma behave as low to intermediate-grade malignancies.

Mucoepidermoid carcinoma may be circumscribed or infiltrative, comprised of multiple cell types (mucous, epidermoid, intermediate, columnar, oncocytic, and clear), and exhibit a variety of architectural patterns (solid, cystic, papillary, and sclerosing) (Figs. 17.1–17.40).

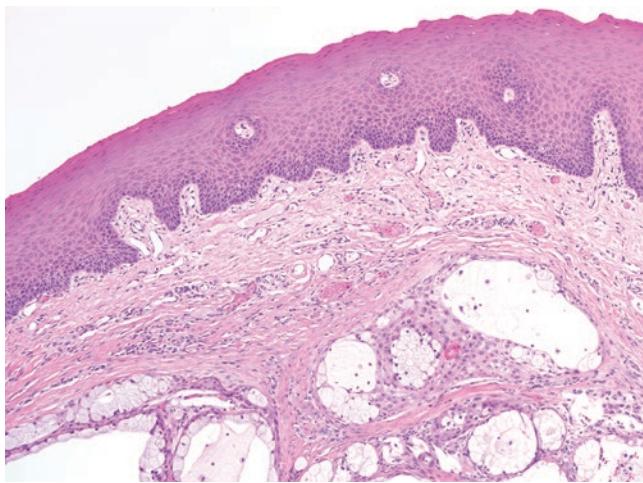


Fig. 17.1 (H&E, 100 \times) Mucoepidermoid carcinoma, circumscribed

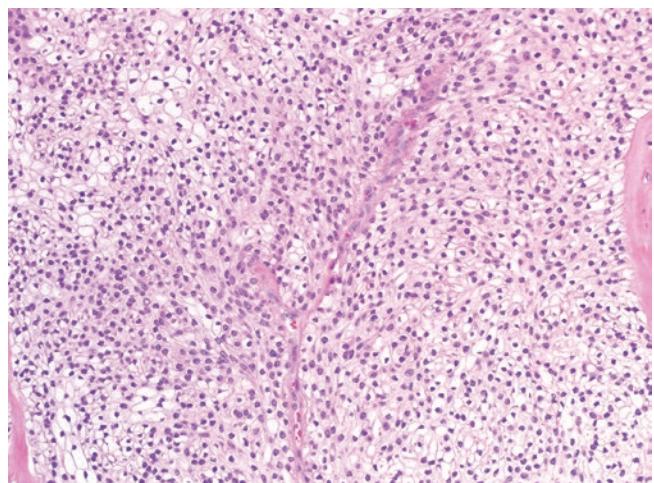


Fig. 17.4 (H&E, 200 \times) Mucoepidermoid carcinoma, solid

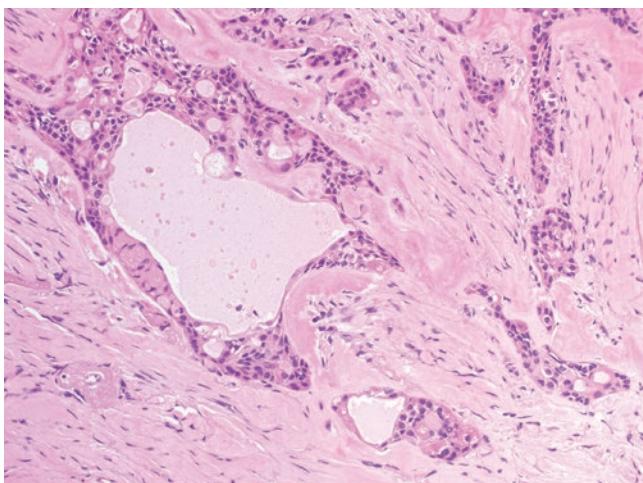


Fig. 17.2 (H&E, 200 \times) Mucoepidermoid carcinoma, infiltrative

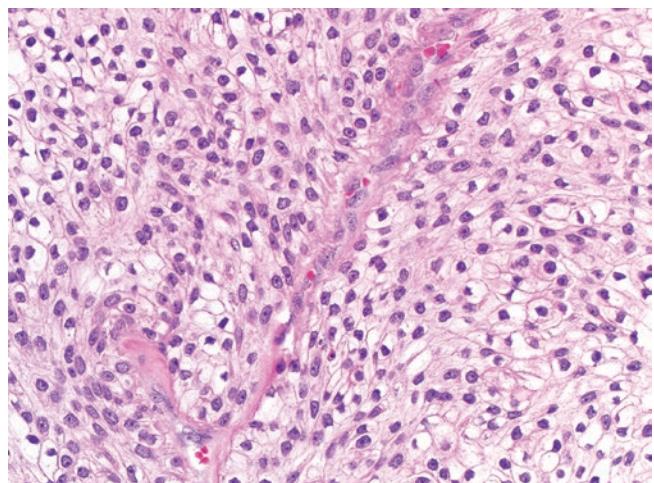


Fig. 17.5 (H&E, 400 \times) Mucoepidermoid carcinoma, solid

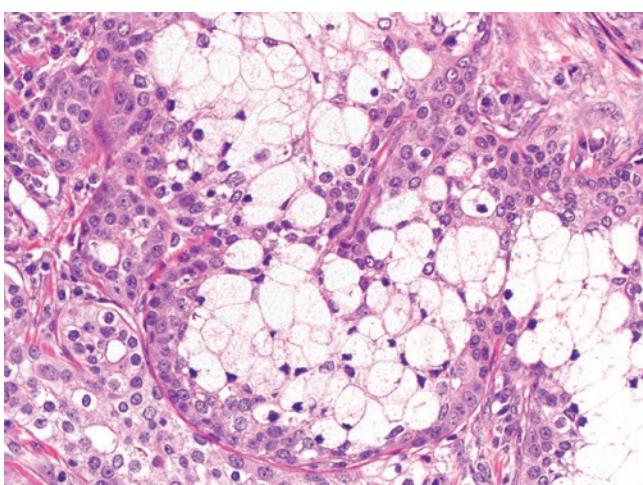


Fig. 17.3 (H&E, 400 \times) Mucoepidermoid carcinoma, triphasic or more

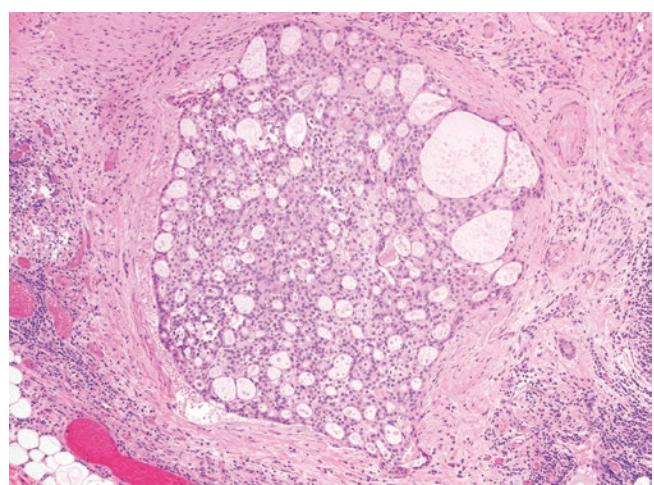


Fig. 17.6 (H&E, 100 \times) Mucoepidermoid carcinoma, microcystic

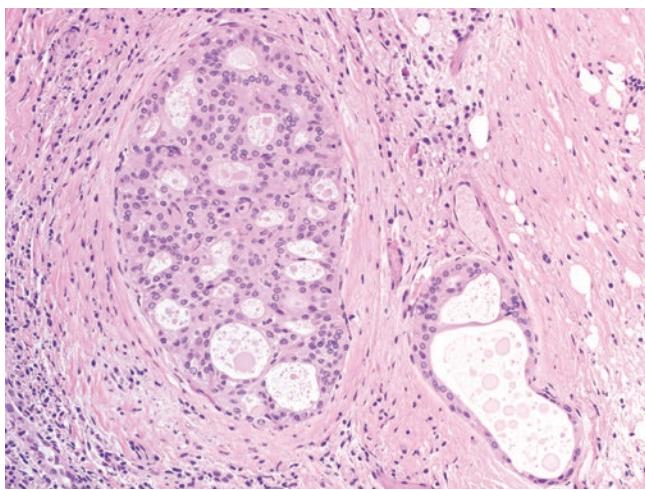


Fig. 17.7 (H&E, 200 \times) Mucoepidermoid carcinoma, microcystic

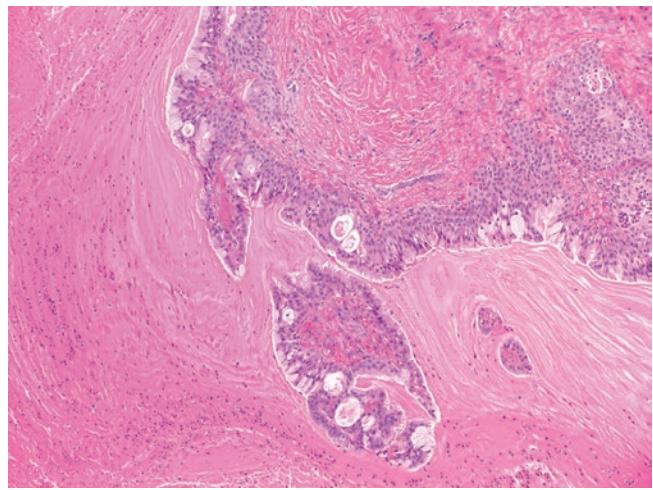


Fig. 17.10 (H&E, 100 \times) Mucoepidermoid carcinoma, cystic

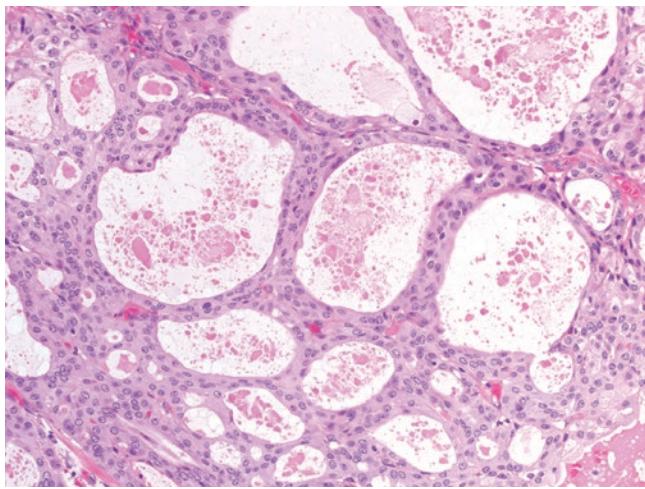


Fig. 17.8 (H&E, 200 \times) Mucoepidermoid carcinoma, microcystic

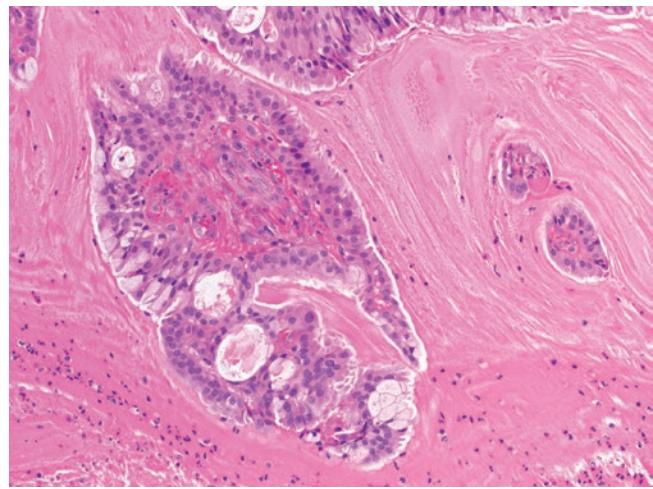


Fig. 17.11 (H&E, 200 \times) Mucoepidermoid carcinoma, cystic

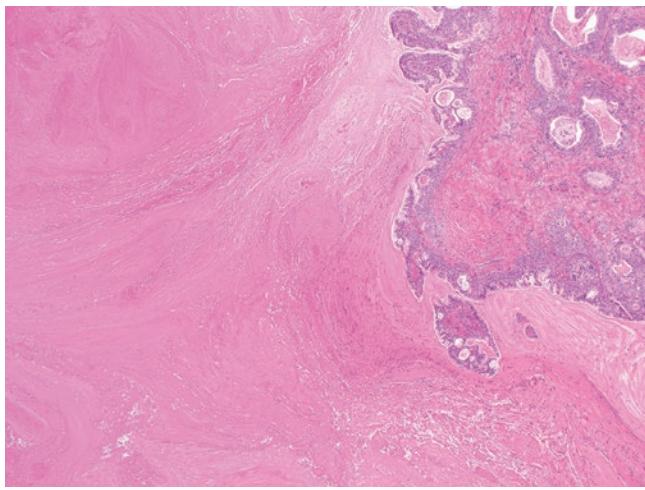


Fig. 17.9 (H&E, 40 \times) Mucoepidermoid carcinoma, cystic

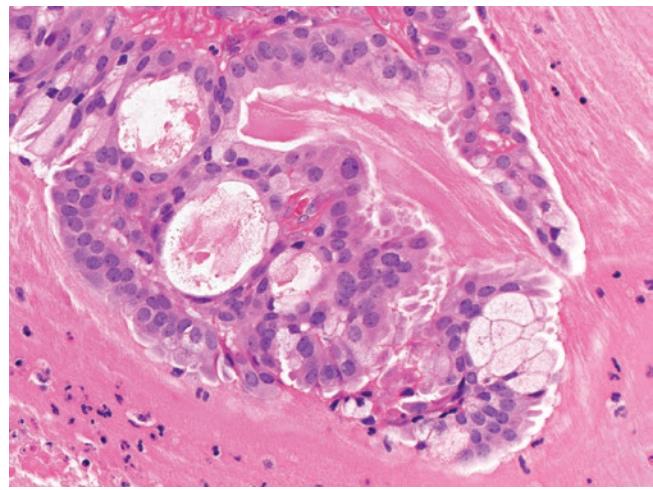


Fig. 17.12 (H&E, 400 \times) Mucoepidermoid carcinoma, cystic

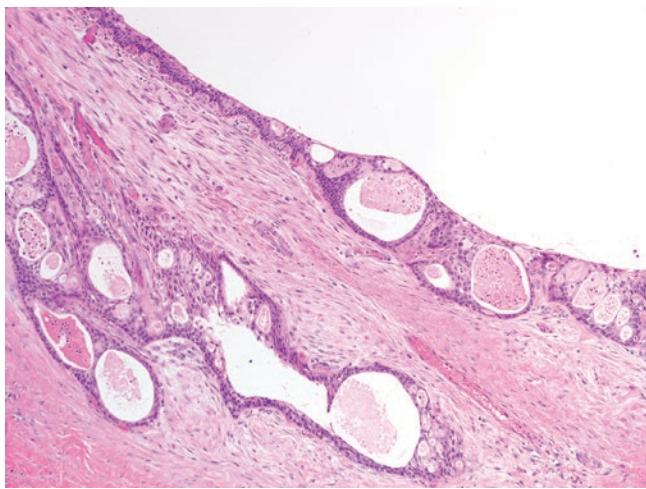


Fig. 17.13 (H&E, 100 \times) Mucoepidermoid carcinoma, cystic

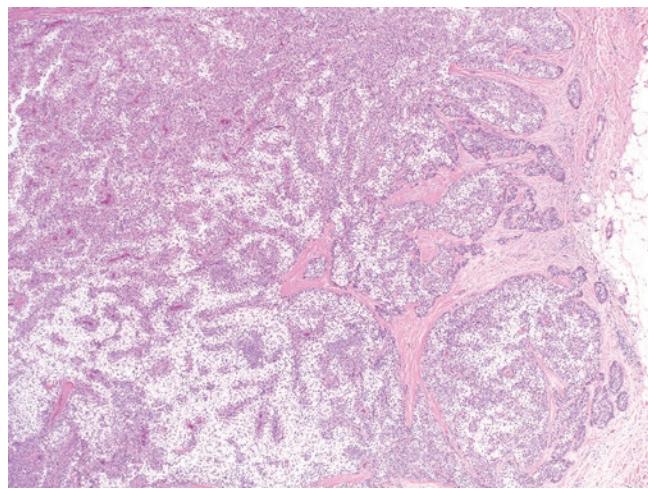


Fig. 17.16 (H&E, 40 \times) Mucoepidermoid carcinoma, clear

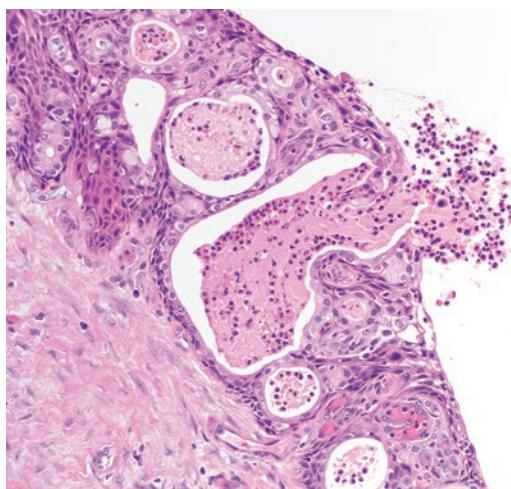


Fig. 17.14 (H&E, 100 \times) Mucoepidermoid carcinoma, cystic

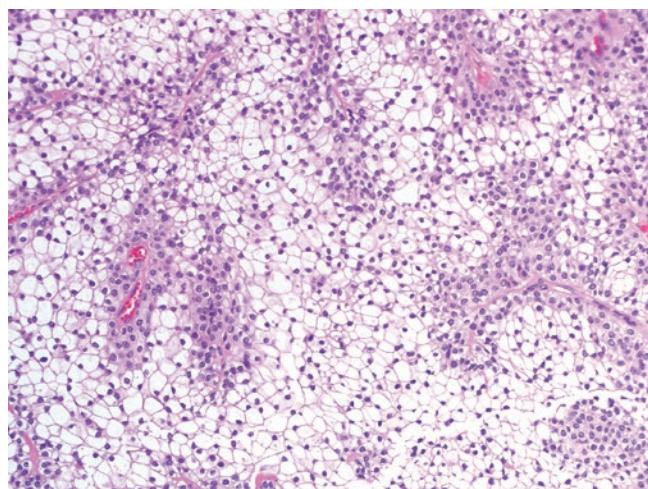


Fig. 17.17 (H&E, 200 \times) Mucoepidermoid carcinoma, clear

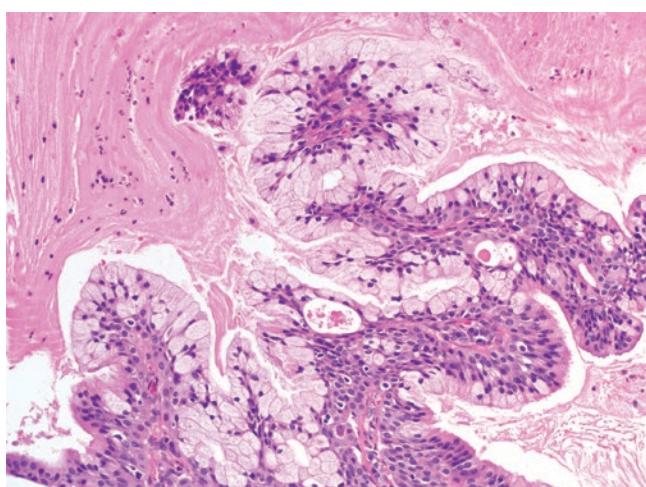


Fig. 17.15 (H&E, 200 \times) Mucoepidermoid carcinoma, cystic

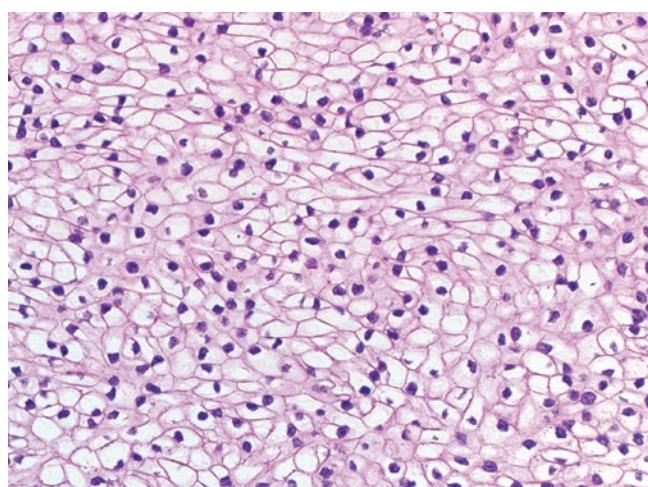


Fig. 17.18 (H&E, 400 \times) Mucoepidermoid carcinoma, clear

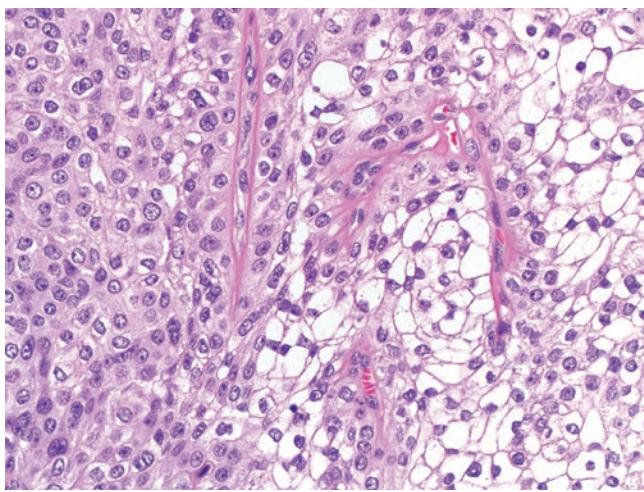


Fig. 17.19 (H&E, 400 \times) Mucoepidermoid carcinoma, clear

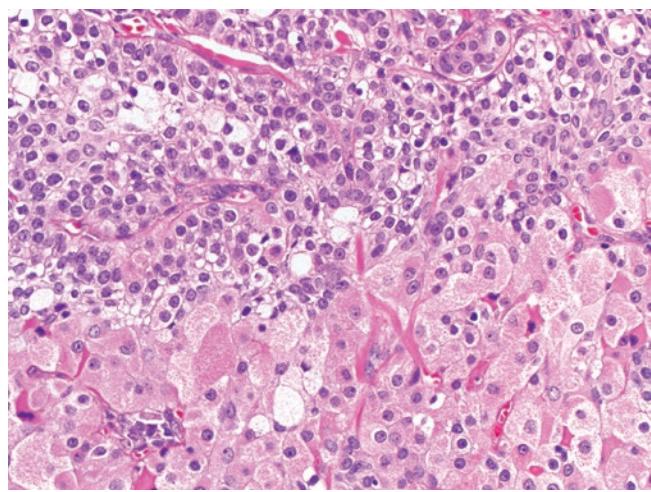


Fig. 17.22 (H&E, 400 \times) Mucoepidermoid carcinoma, oncocytic

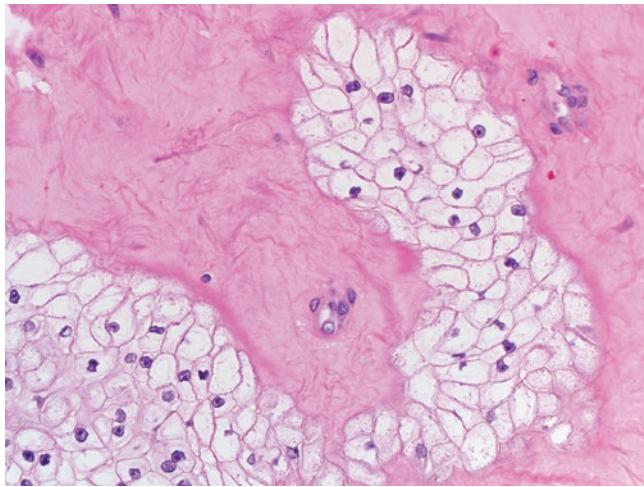


Fig. 17.20 (H&E, 400 \times) Mucoepidermoid carcinoma, clear

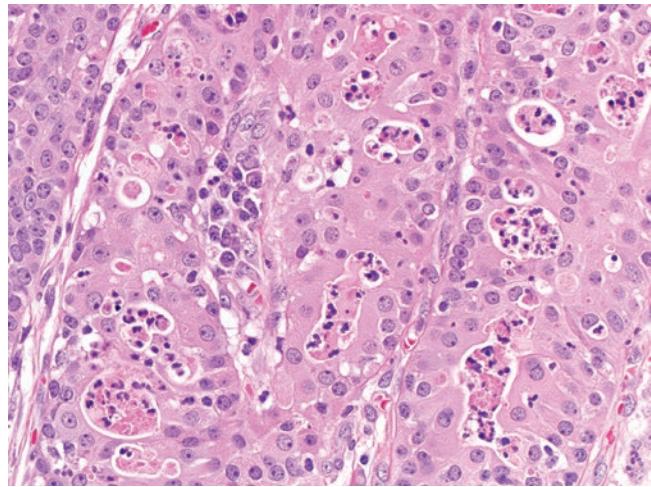


Fig. 17.23 (H&E, 400 \times) Mucoepidermoid carcinoma, oncocytic

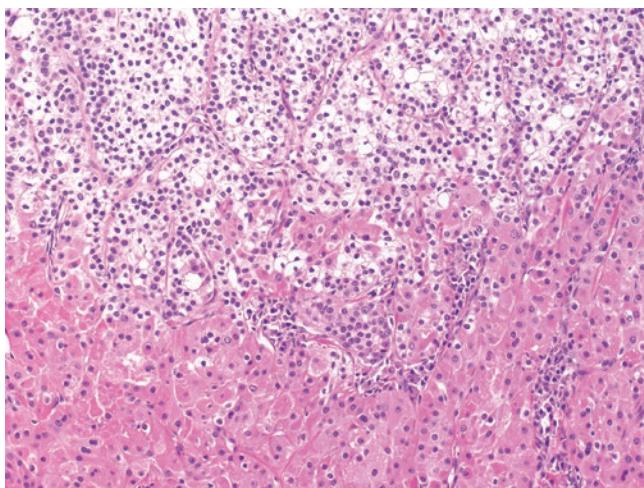


Fig. 17.21 (H&E, 200 \times) Mucoepidermoid carcinoma, oncocytic

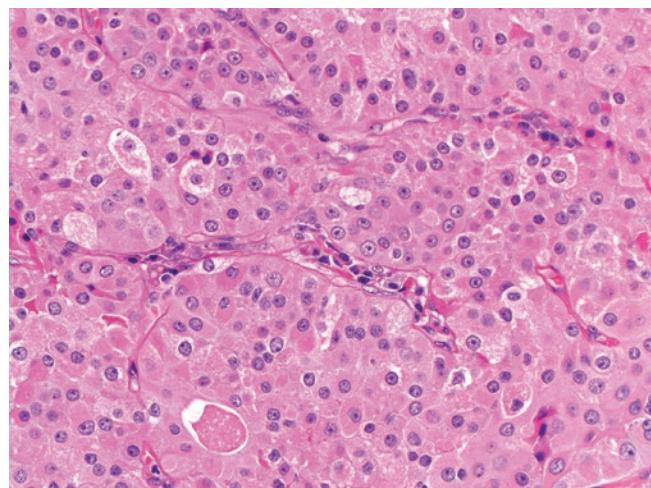


Fig. 17.24 (H&E, 400 \times) Mucoepidermoid carcinoma, oncocytic

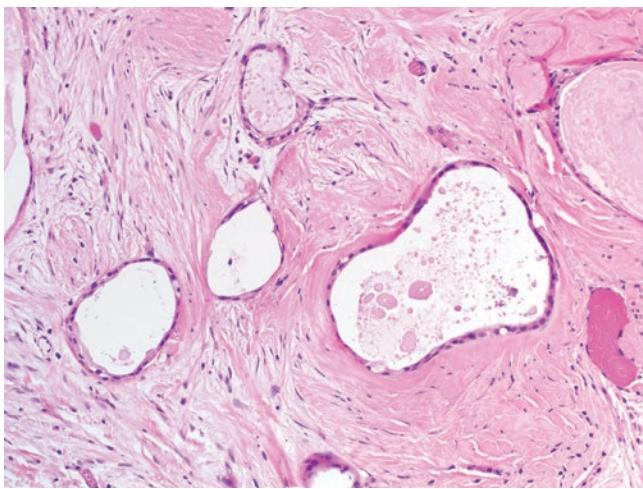


Fig. 17.25 (H&E, 200×) Mucoepidermoid carcinoma, sclerosing

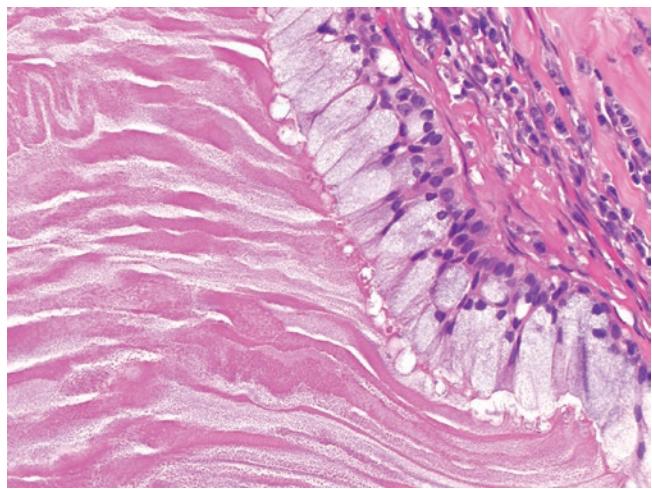


Fig. 17.28 (H&E, 400×) Mucoepidermoid carcinoma, mucin

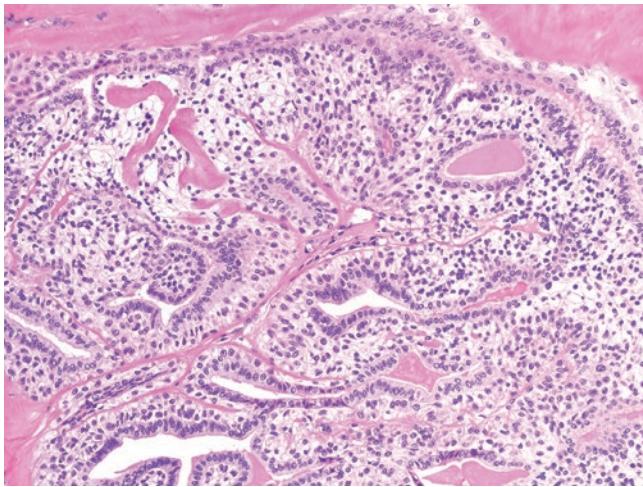


Fig. 17.26 (H&E, 200×) Mucoepidermoid carcinoma, columnar

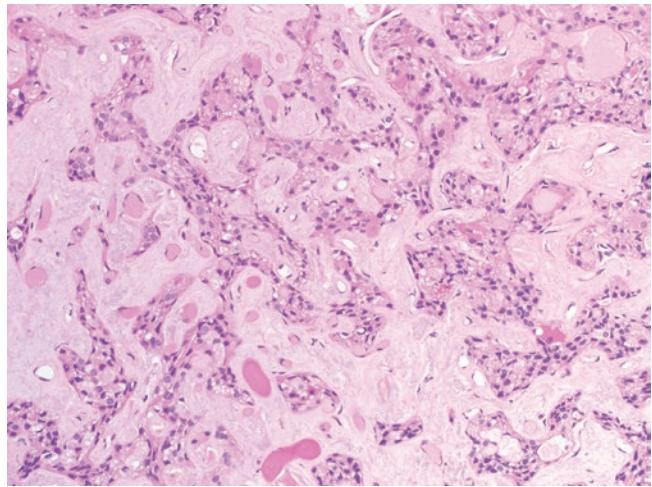


Fig. 17.29 (H&E, 200×) Mucoepidermoid carcinoma, myxoid

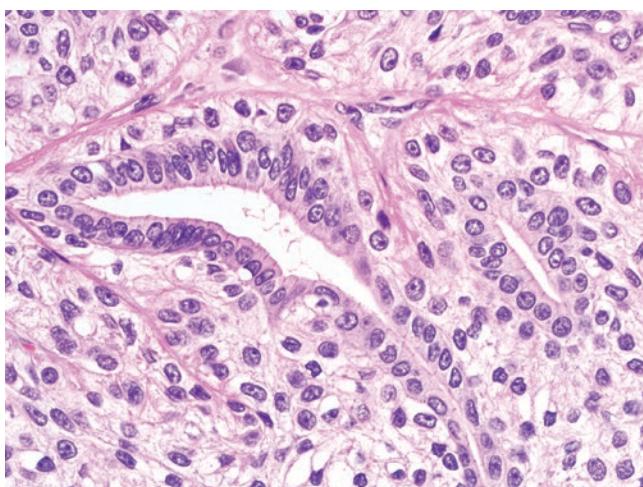


Fig. 17.27 (H&E, 400×) Mucoepidermoid carcinoma, columnar

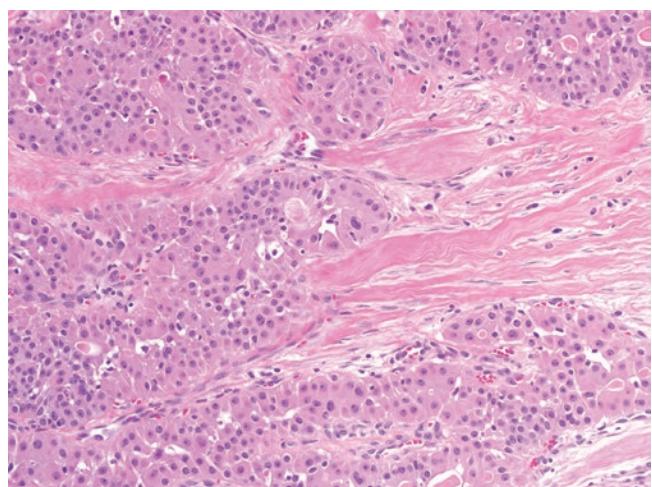


Fig. 17.30 (H&E, 200×) Mucoepidermoid carcinoma, hyalinized

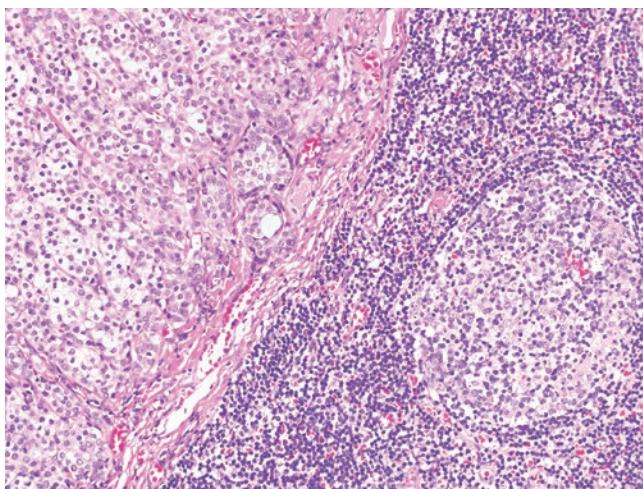


Fig. 17.31 (H&E, 200×) Mucoepidermoid carcinoma, tumor-associated lymphoid proliferation

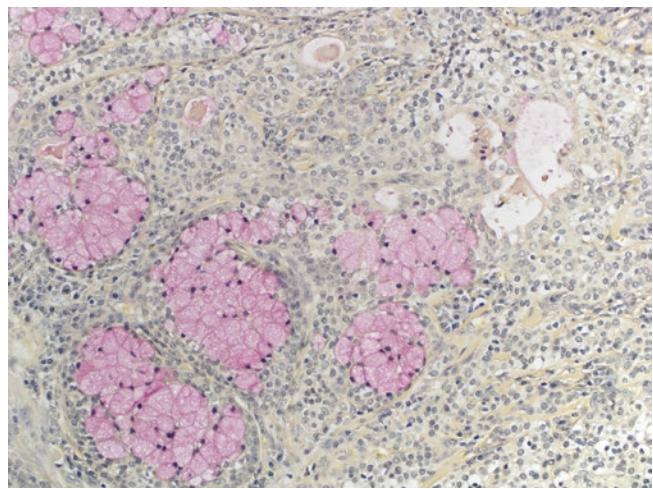


Fig. 17.34 (Mucicarmine, 200×) Mucoepidermoid carcinoma, intracytoplasmic reactivity

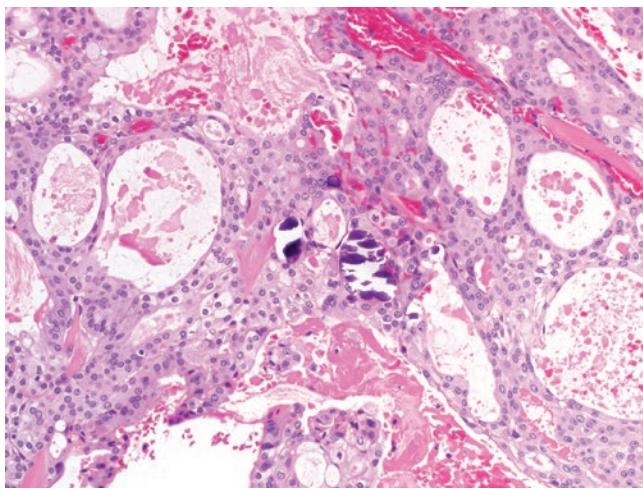


Fig. 17.32 (H&E, 200×) Mucoepidermoid carcinoma, microcalcifications

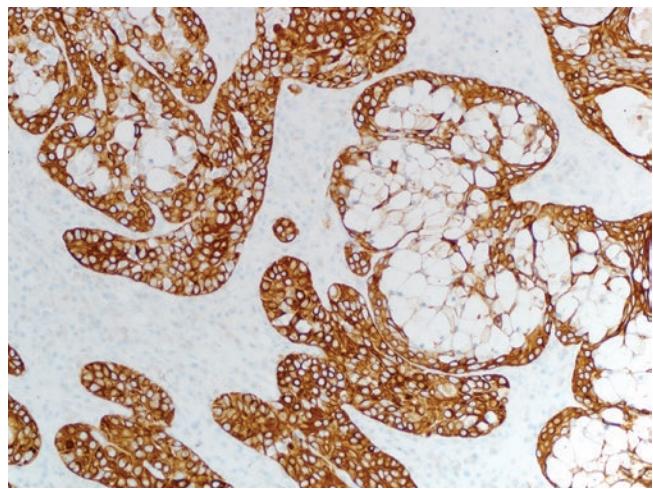


Fig. 17.35 (AE1/AE3, 200×) Mucoepidermoid carcinoma, diffuse immunoreactivity

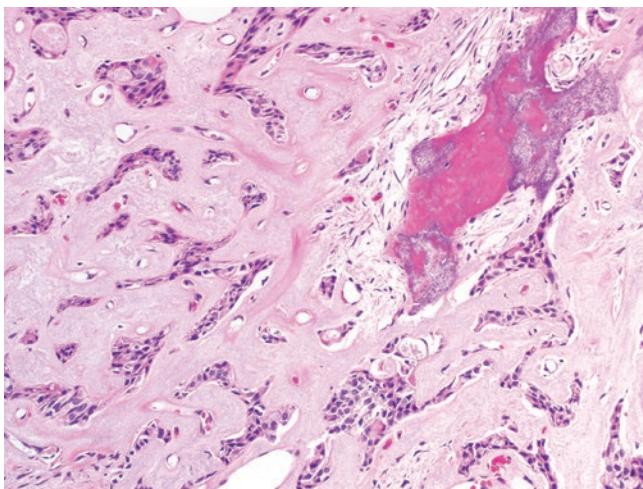


Fig. 17.33 (H&E, 200×) Mucoepidermoid carcinoma, osseous metaplasia

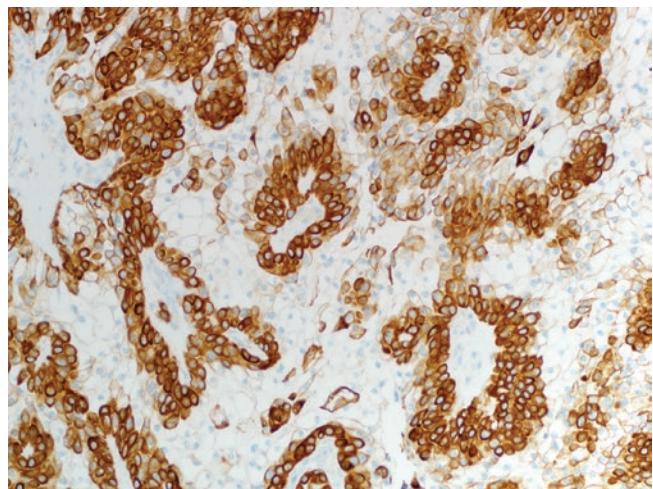


Fig. 17.36 (AE1/AE3, 200×) Mucoepidermoid carcinoma, focal immunoreactivity

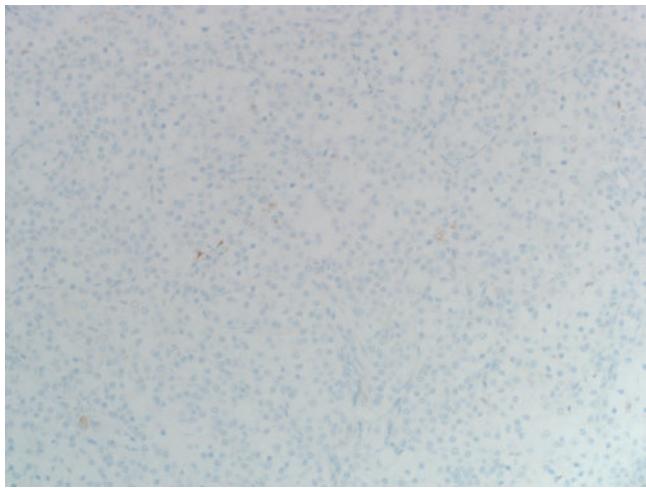


Fig. 17.37 (S-100, 200 \times) Mucoepidermoid carcinoma, negative immunoreactivity

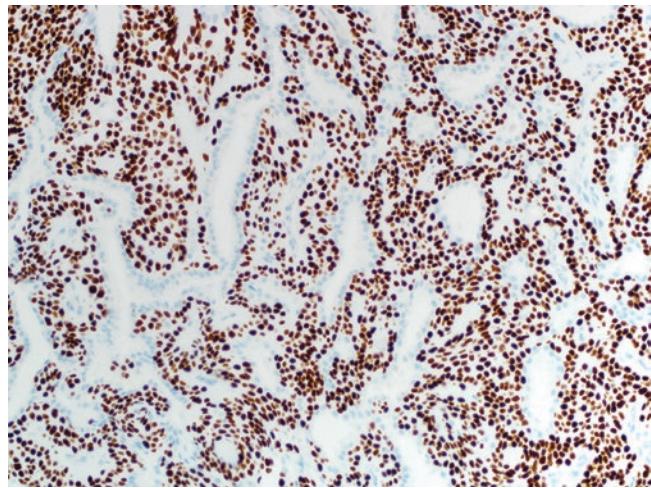


Fig. 17.39 (p63, 200 \times) Mucoepidermoid carcinoma, focal immunoreactivity

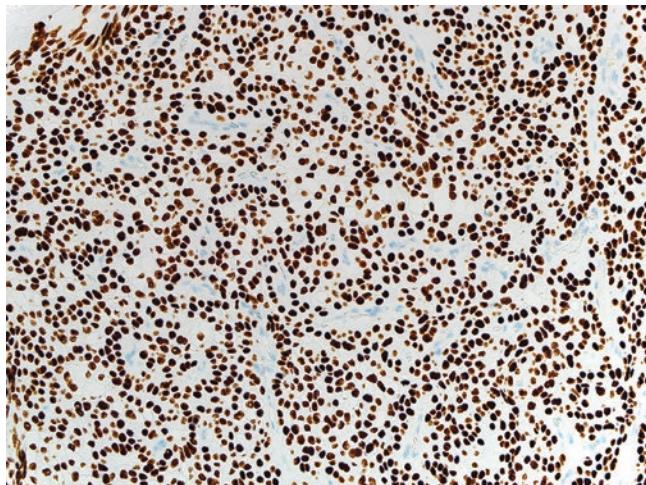


Fig. 17.38 (p63, 200 \times) Mucoepidermoid carcinoma, diffuse immunoreactivity

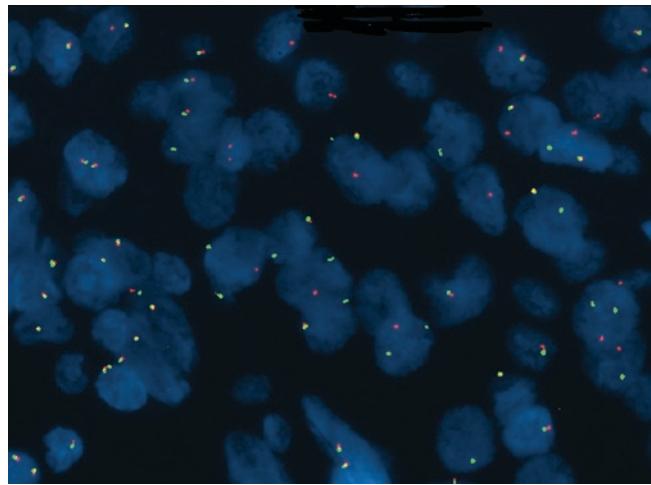


Fig. 17.40 (Fluorescent in situ hybridization, 600 \times) Mucoepidermoid carcinoma, *MAML2* rearrangement

Suggested Reading

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Myoepithelioma

18

Myoepithelioma is the benign counterpart of myoepithelial carcinoma. Myoepithelioma affects children and adults and presents at a mean age of approximately 45 years. Women and men are involved with similar frequency. The majority of cases involve major salivary glands, presenting

as single or multiple masses. Myoepithelioma may be circumscribed or multi-nodular, comprised almost exclusively of one cell type (myoepithelial), and exhibit a variety of architectural patterns (solid, trabecular, and cystic) (Figs. 18.1–18.23).

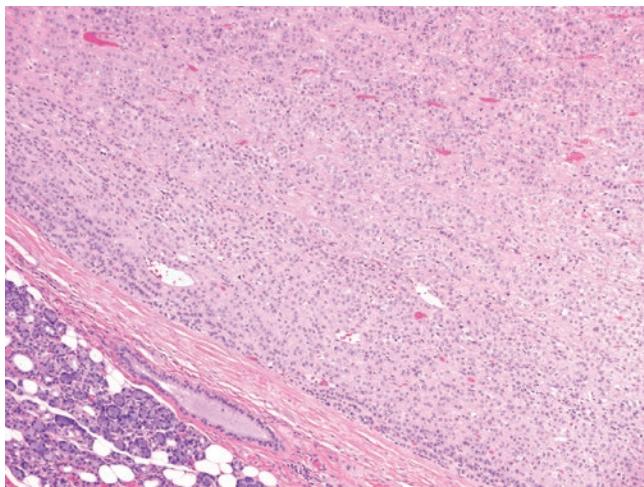


Fig. 18.1 (H&E, 100×) Myoepithelioma, circumscribed

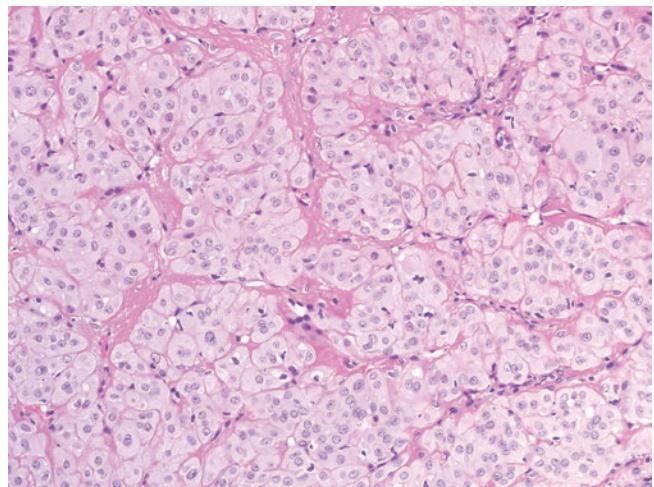


Fig. 18.4 (H&E, 200×) Myoepithelioma, epithelioid

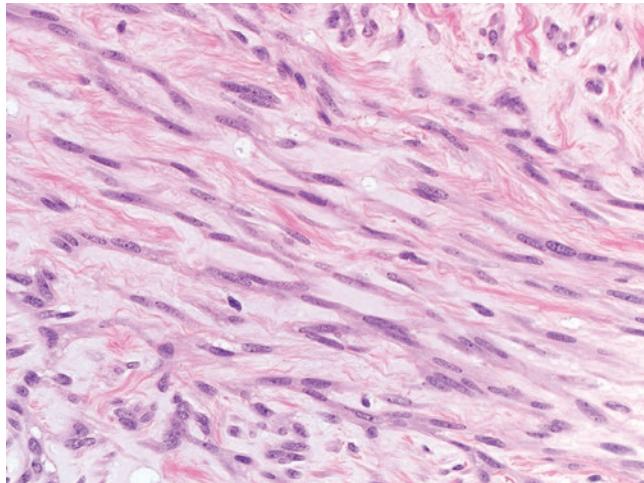


Fig. 18.2 (H&E, 400×) Myoepithelioma, monophasic

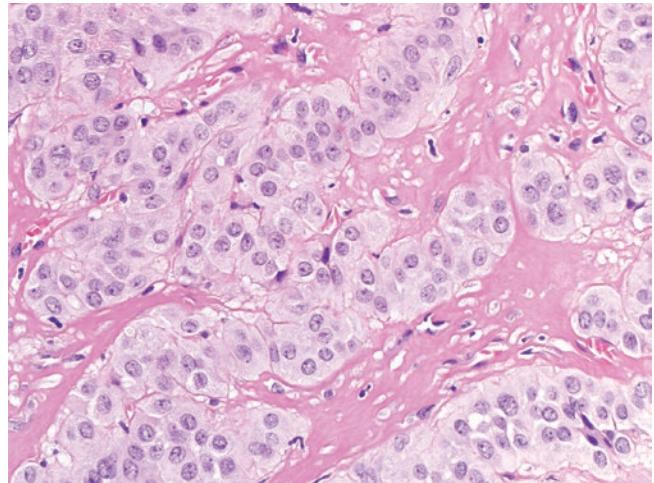


Fig. 18.5 (H&E, 400×) Myoepithelioma, epithelioid

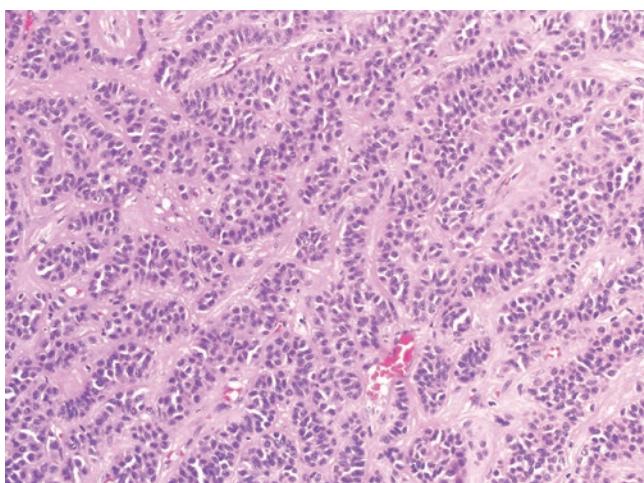


Fig. 18.3 (H&E, 200×) Myoepithelioma, trabecular

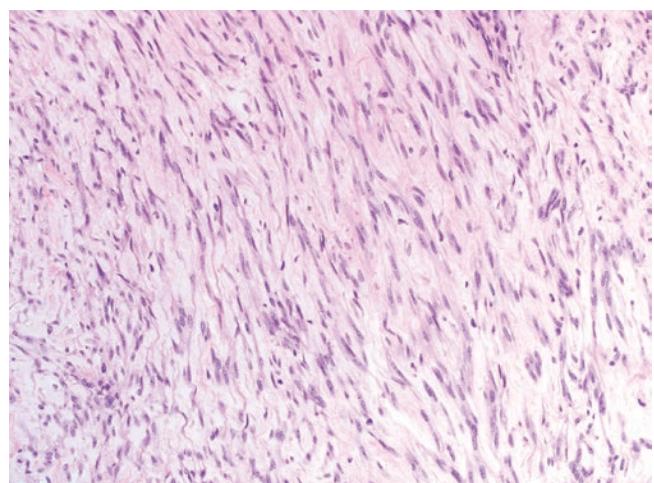


Fig. 18.6 (H&E, 200×) Myoepithelioma, spindled

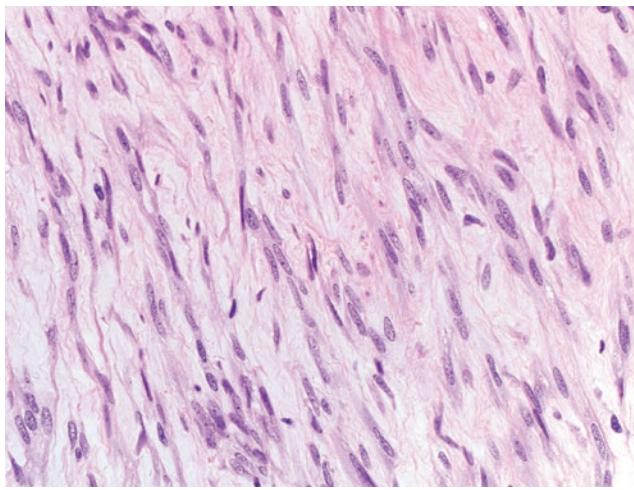


Fig. 18.7 (H&E, 400 \times) Myoepithelioma, spindled

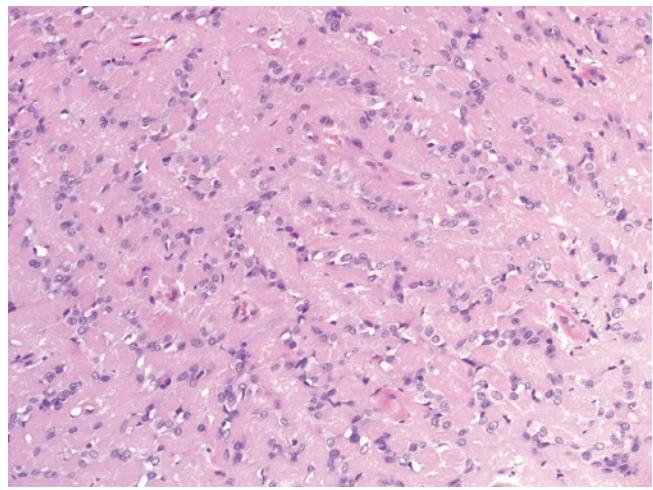


Fig. 18.10 (H&E, 200 \times) Myoepithelioma, plasmacytoid

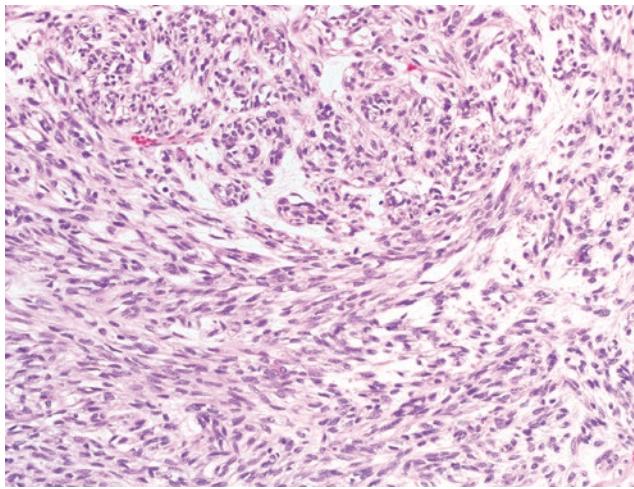


Fig. 18.8 (H&E, 200 \times) Myoepithelioma, spindled

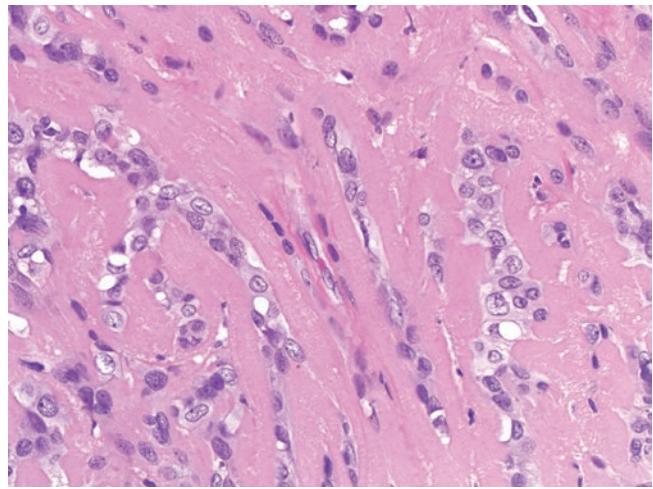


Fig. 18.11 (H&E, 400 \times) Myoepithelioma, plasmacytoid

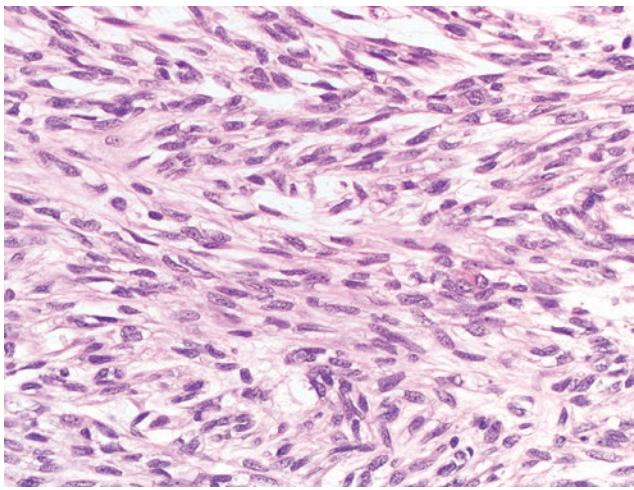


Fig. 18.9 (H&E, 400 \times) Myoepithelioma, spindled

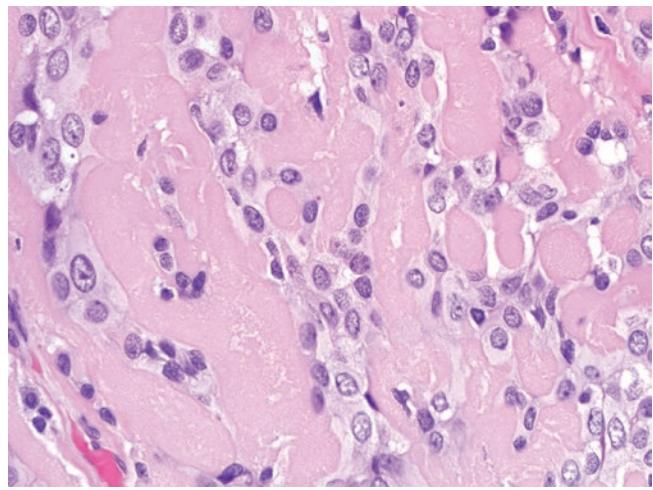


Fig. 18.12 (H&E, 600 \times) Myoepithelioma, plasmacytoid

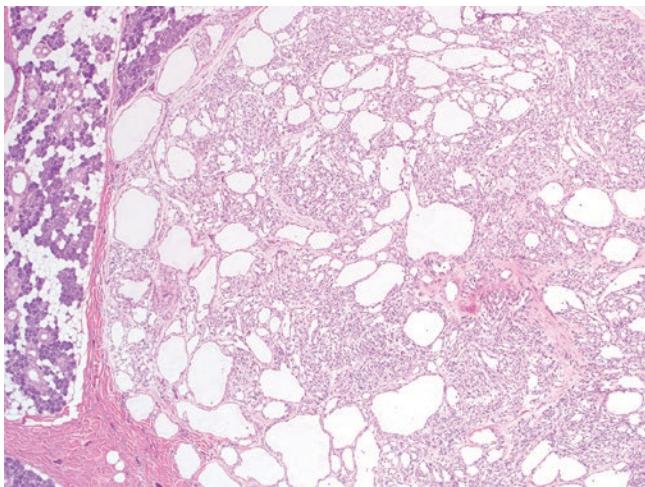


Fig. 18.13 (H&E, 40 \times) Myoepithelioma, cystic

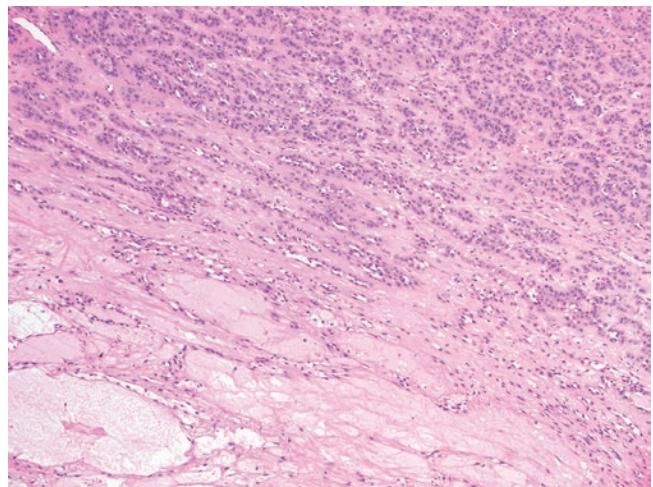


Fig. 18.16 (H&E, 100 \times) Myoepithelioma, myxoid

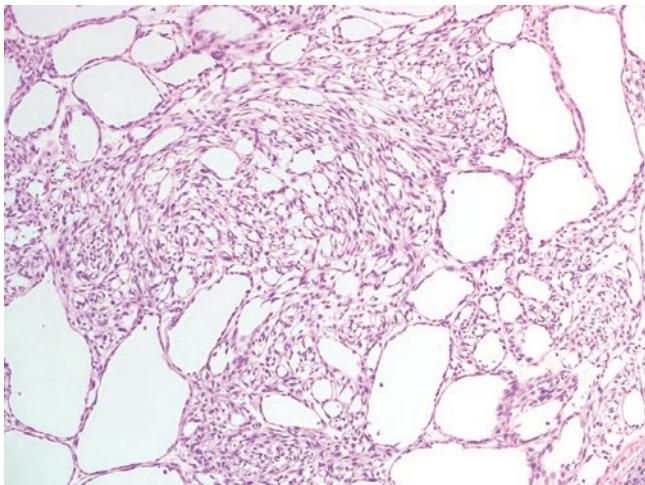


Fig. 18.14 (H&E, 100 \times) Myoepithelioma, cystic

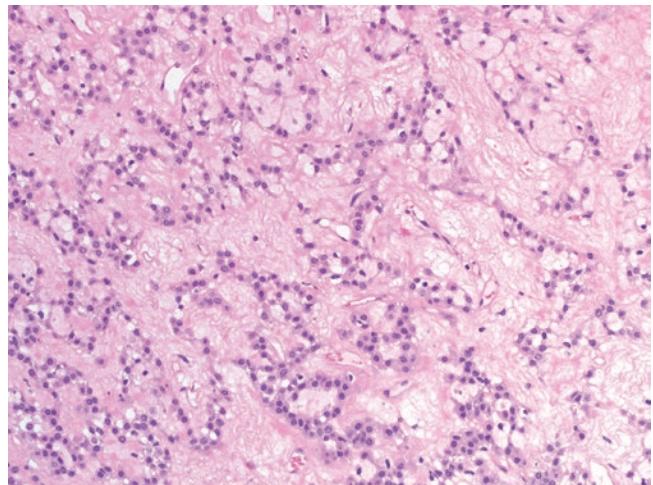


Fig. 18.17 (H&E, 200 \times) Myoepithelioma, myxoid

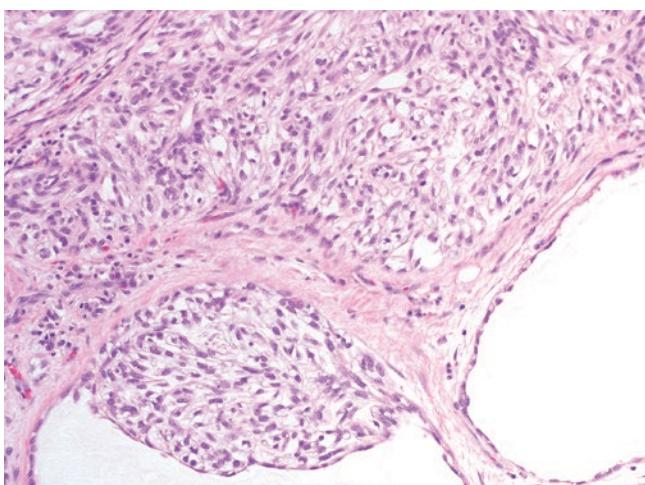


Fig. 18.15 (H&E, 200 \times) Myoepithelioma, cystic

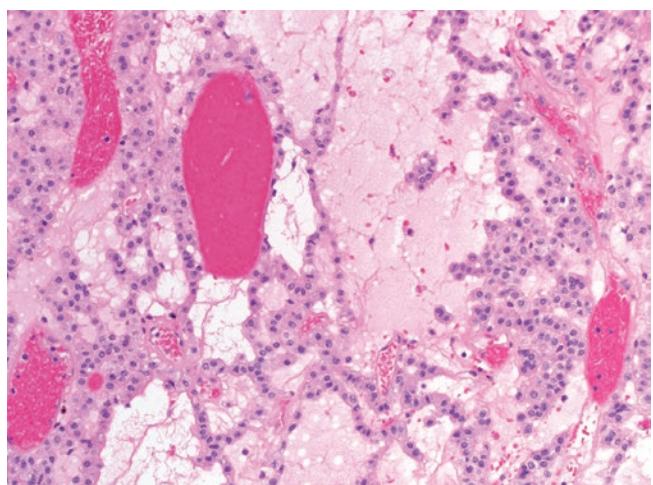


Fig. 18.18 (H&E, 200 \times) Myoepithelioma, myxoid

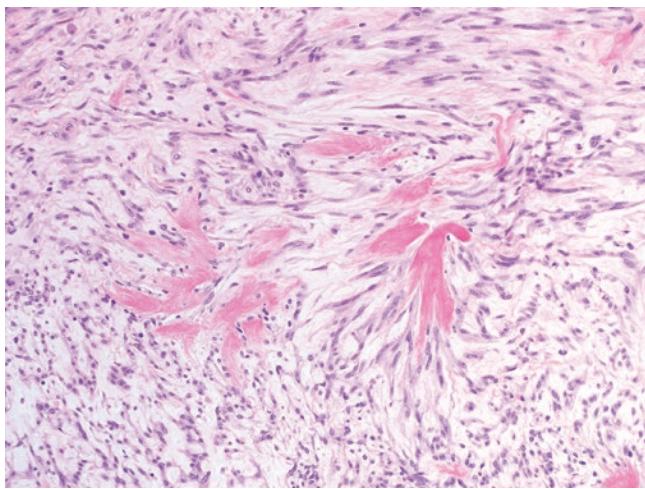


Fig. 18.19 (H&E, 200×) Myoepithelioma, hyalinized

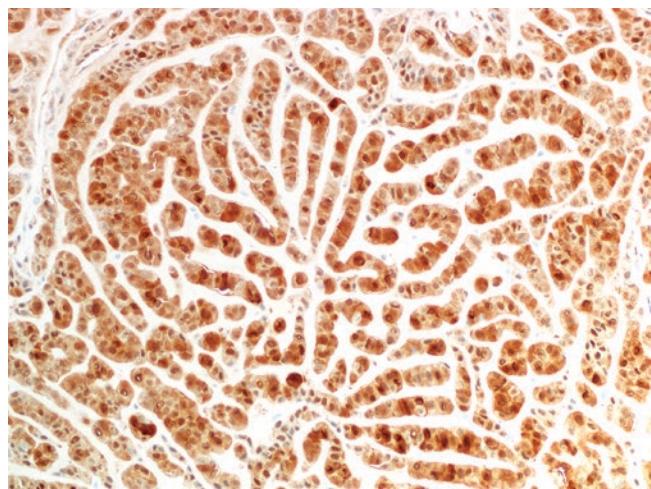


Fig. 18.22 (S-100, 200×) Myoepithelioma, diffuse immunoreactivity

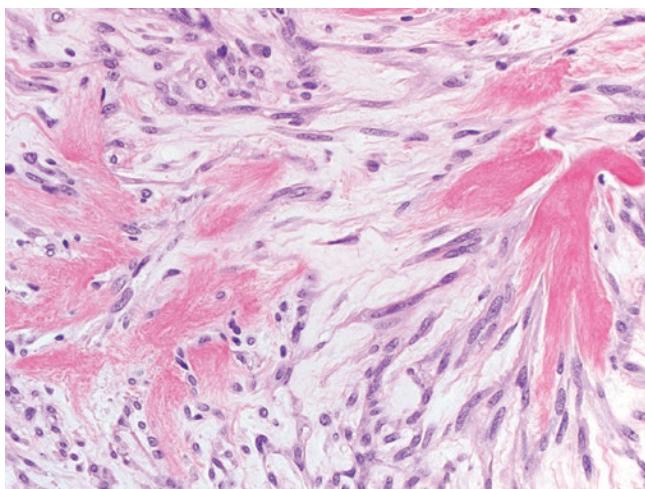


Fig. 18.20 (H&E, 400×) Myoepithelioma, hyalinized

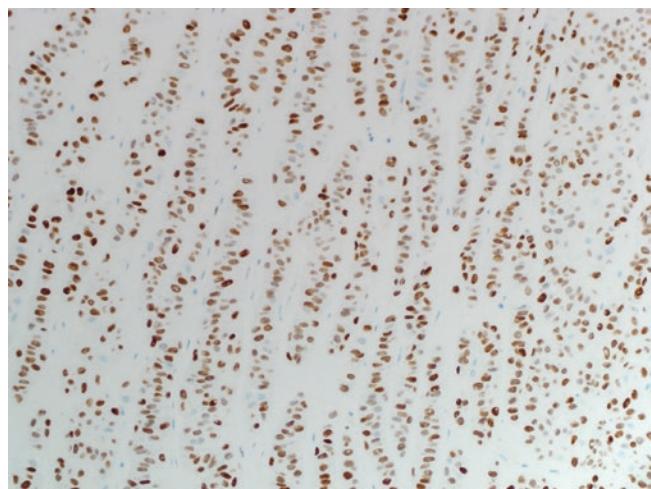


Fig. 18.23 (p63, 200×) Myoepithelioma, diffuse immunoreactivity

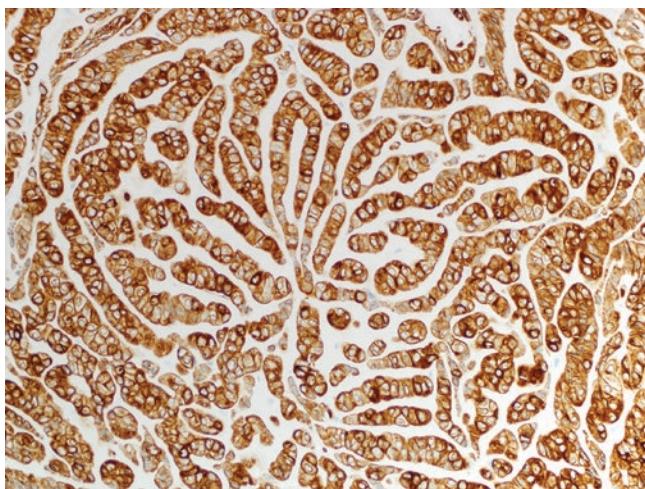


Fig. 18.21 (AE1/AE3, 200×) Myoepithelioma, diffuse immunoreactivity

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Myoepithelial Carcinoma

19

Myoepithelial carcinoma is the malignant counterpart of myoepithelioma. Myoepithelial carcinoma affects children and adults. Women and men are involved with similar frequency. The majority of cases involve major salivary glands, presenting as single or multiple masses. Most cases of myoepithelial carcinoma behave as intermediate to high-

grade malignancies. Myoepithelial carcinoma may be circumscribed or infiltrative, comprised almost exclusively of one cell type (myoepithelial), and exhibit a variety of architectural patterns (solid, trabecular, and cystic) (Figs. 19.1–19.22).

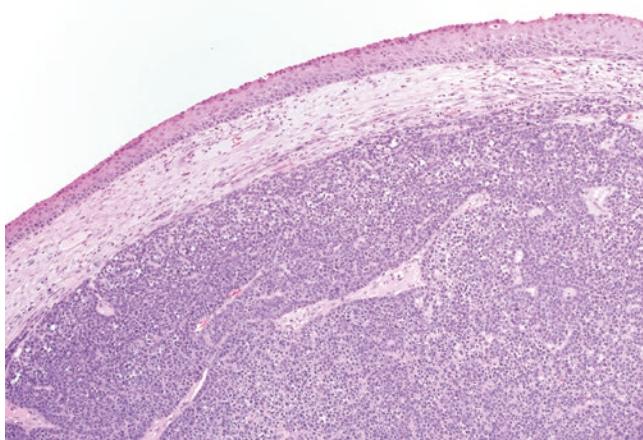


Fig. 19.1 (H&E, $100\times$) Myoepithelial carcinoma, circumscribed

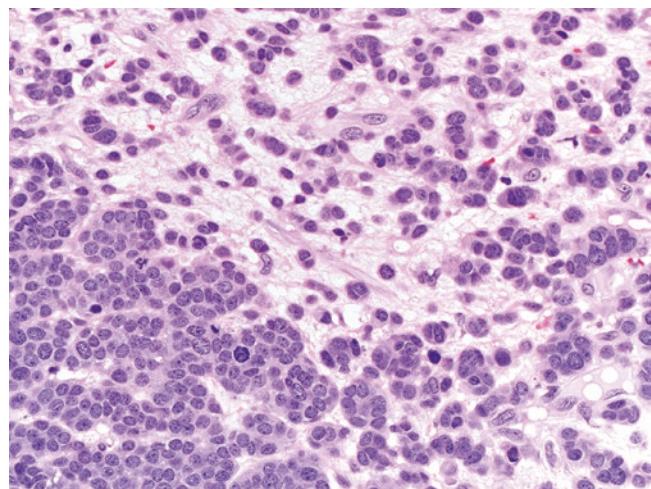


Fig. 19.4 (H&E, $400\times$) Myoepithelial carcinoma, monophasic

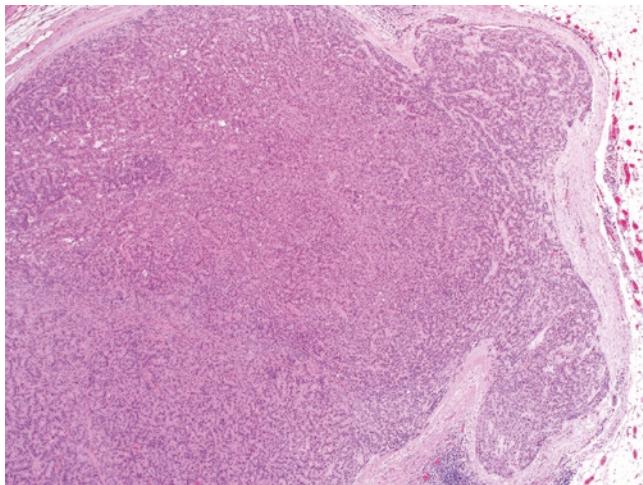


Fig. 19.2 (H&E, $40\times$) Myoepithelial carcinoma, encapsulated

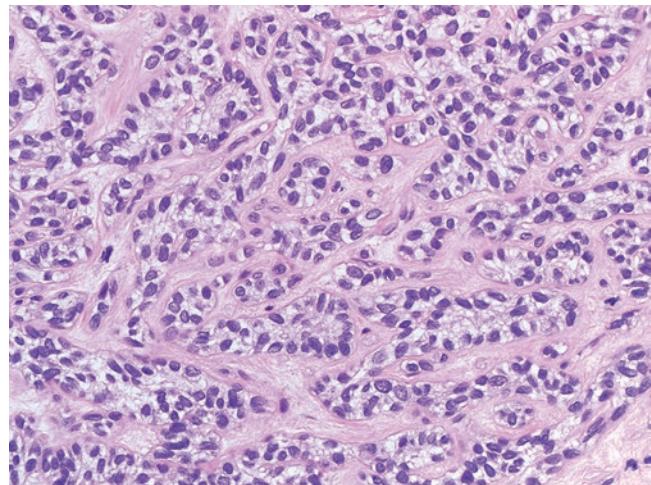


Fig. 19.5 (H&E, $400\times$) Myoepithelial carcinoma, cords

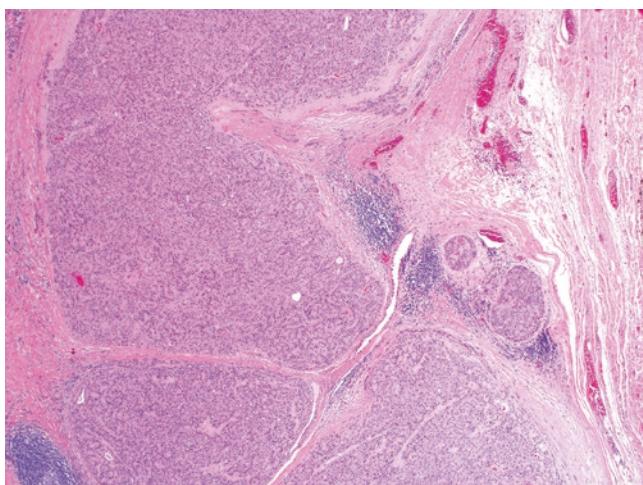


Fig. 19.3 (H&E, $40\times$) Myoepithelial carcinoma, infiltrative

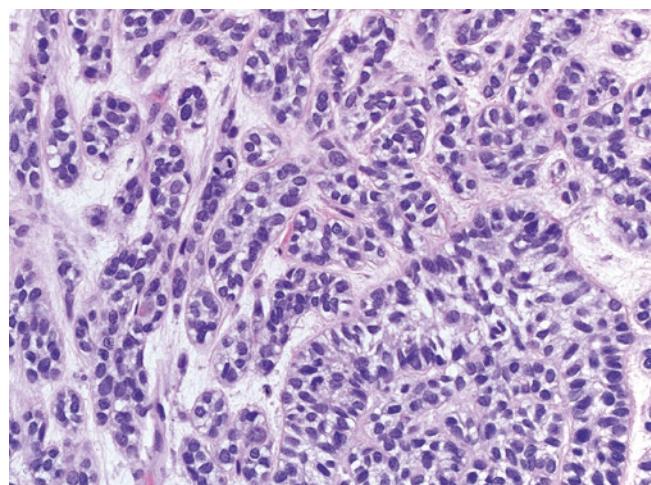


Fig. 19.6 (H&E, $400\times$) Myoepithelial carcinoma, cords

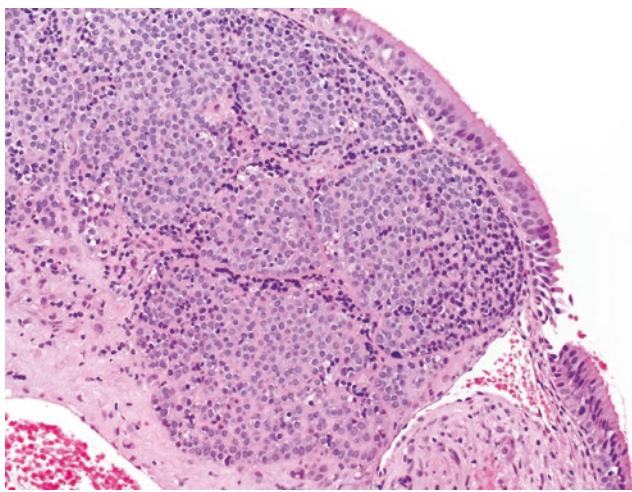


Fig. 19.7 (H&E, 200×) Myoepithelial carcinoma, nests

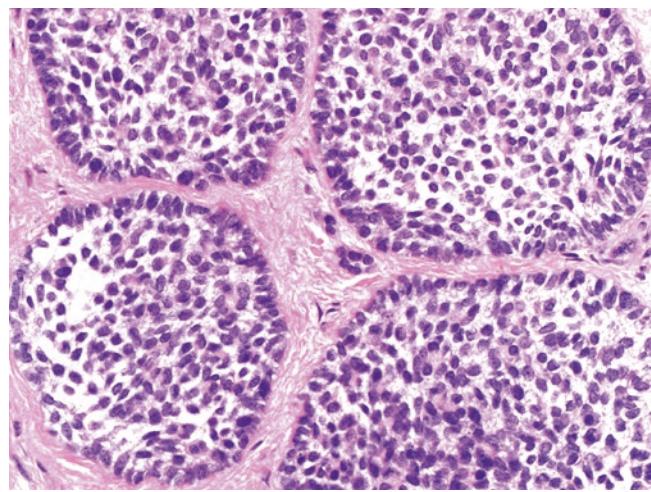


Fig. 19.10 (H&E, 400×) Myoepithelial carcinoma, nests

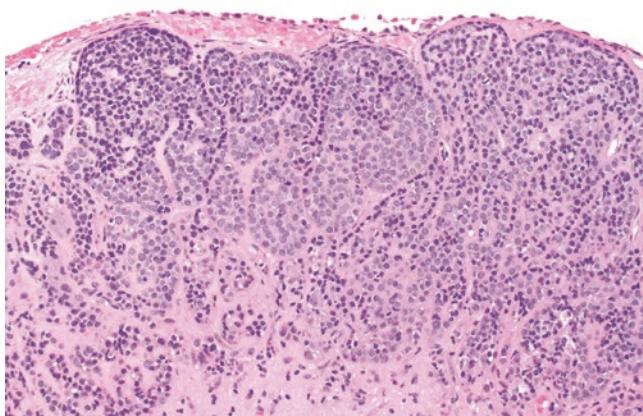


Fig. 19.8 (H&E, 200×) Myoepithelial carcinoma, nests

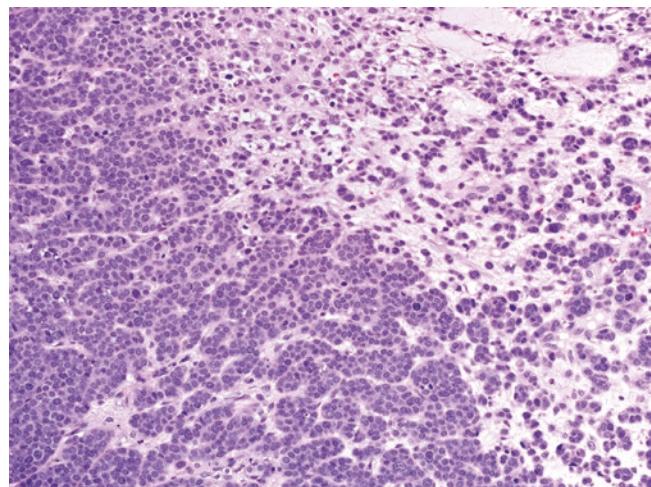


Fig. 19.11 (H&E, 200×) Myoepithelial carcinoma, cords and nests

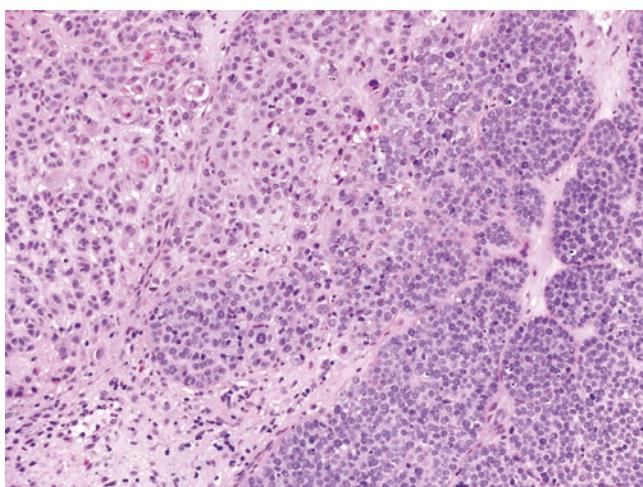


Fig. 19.9 (H&E, 200×) Myoepithelial carcinoma, nests

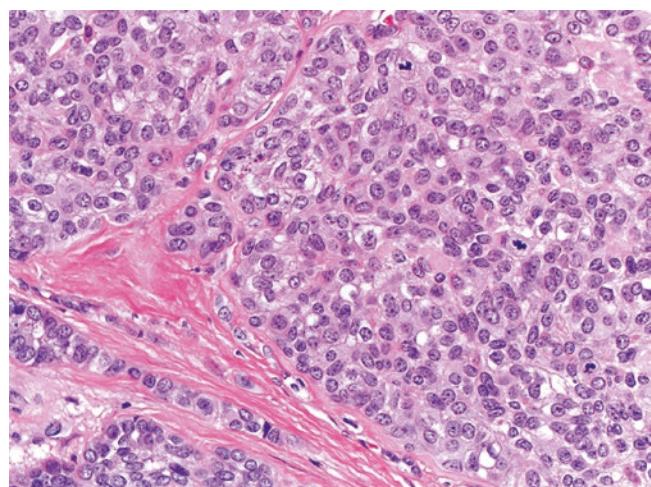


Fig. 19.12 (H&E, 400×) Myoepithelial carcinoma, solid

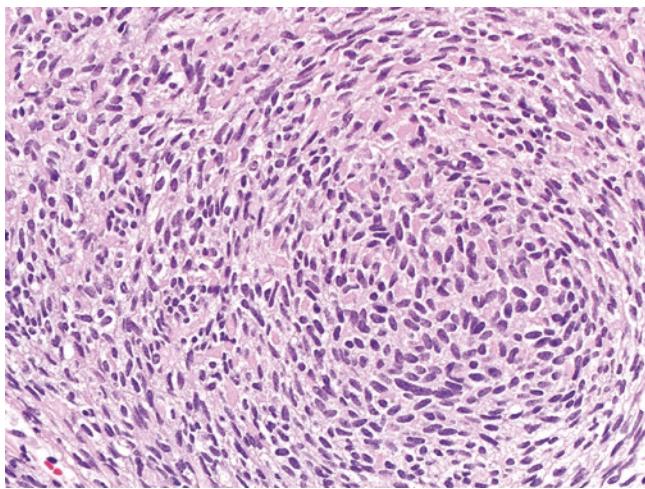


Fig. 19.13 (H&E, 400 \times) Myoepithelial carcinoma, solid

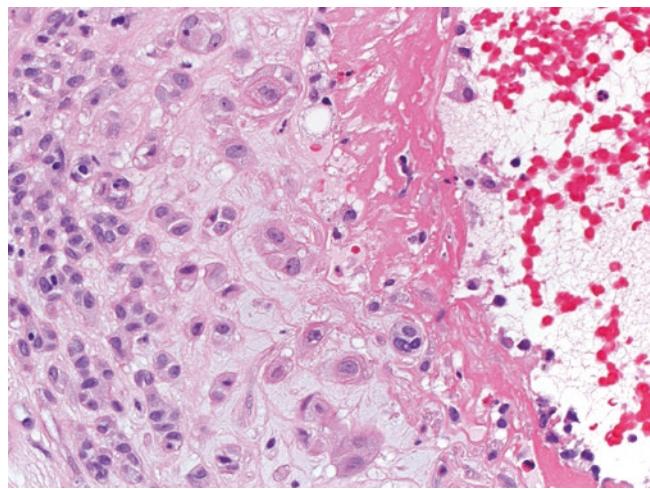


Fig. 19.16 (H&E, 400 \times) Myoepithelial carcinoma, vascular

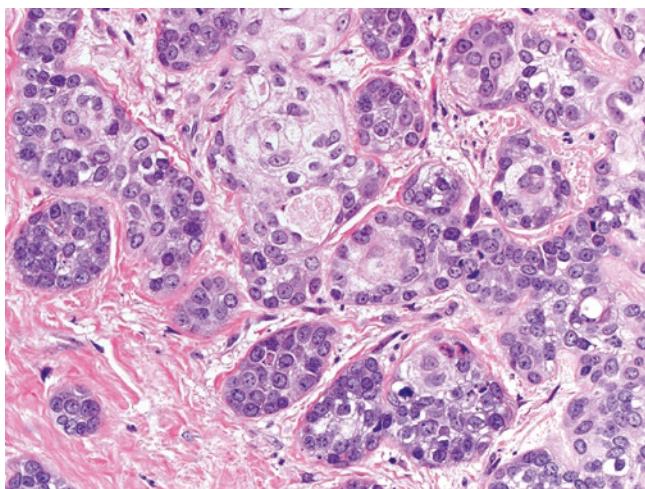


Fig. 19.14 (H&E, 400 \times) Myoepithelial carcinoma, cytomorphologic atypia

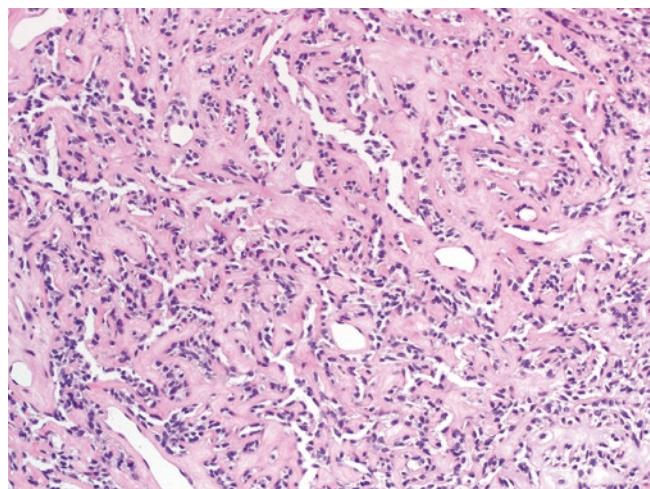


Fig. 19.17 (H&E, 200 \times) Myoepithelial carcinoma, pseudo-vascular

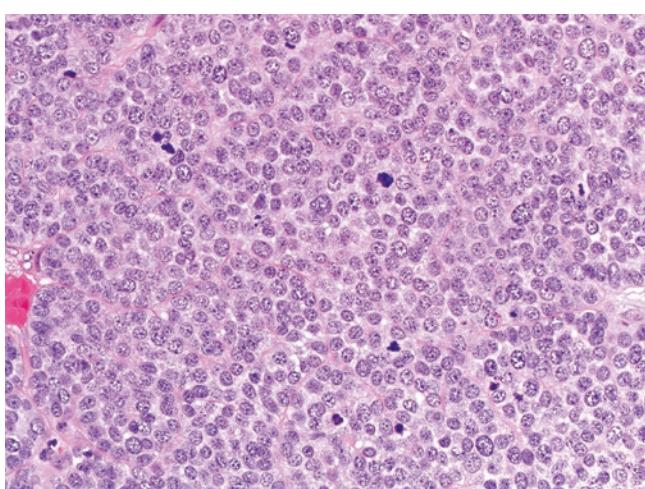


Fig. 19.15 (H&E, 400 \times) Myoepithelial carcinoma, mitotic activity

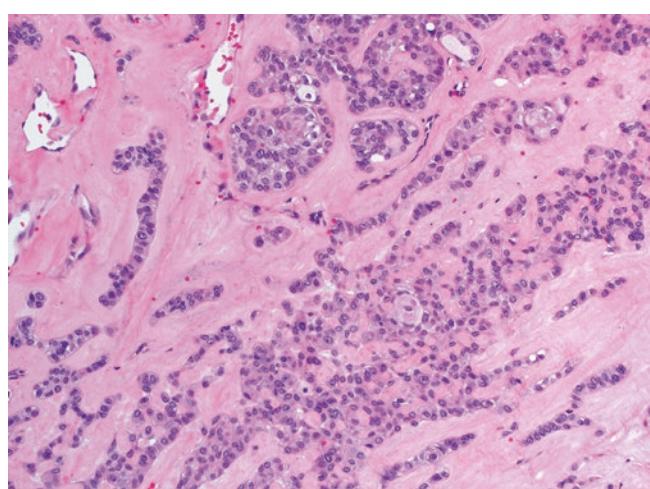


Fig. 19.18 (H&E, 200 \times) Myoepithelial carcinoma, hyalinized

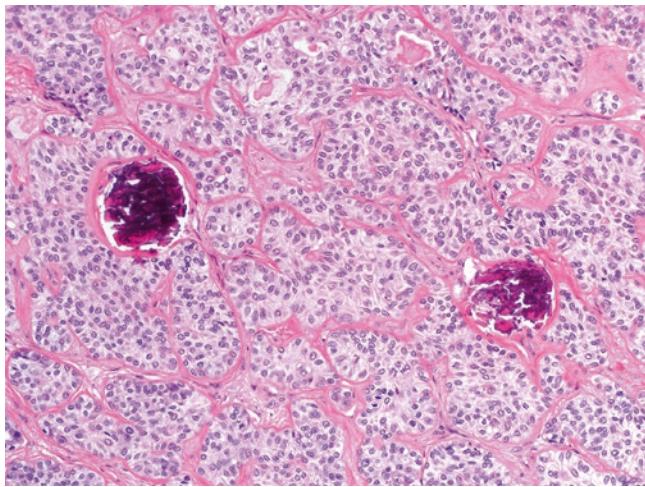


Fig. 19.19 (H&E, 200×) Myoepithelial carcinoma, microcalcifications

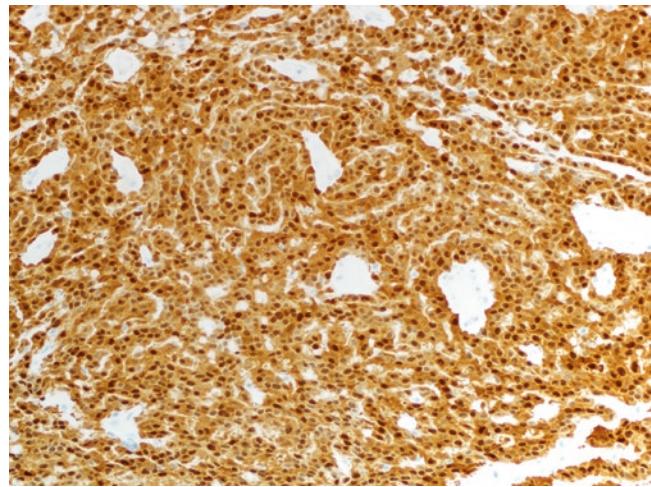


Fig. 19.21 (S-100, 200×) Myoepithelial carcinoma, diffuse immunoreactivity

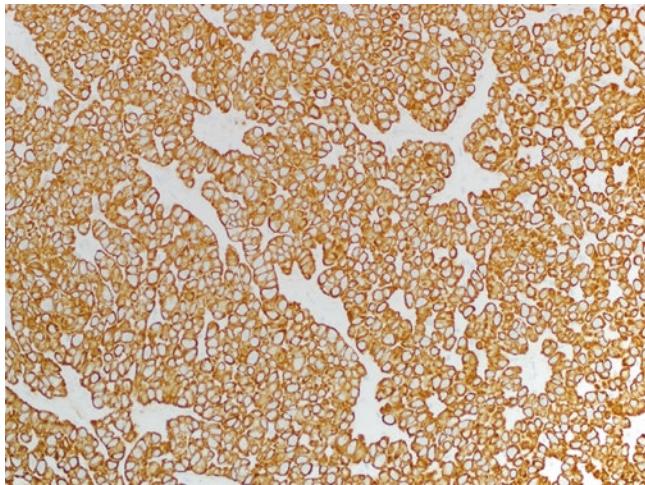


Fig. 19.20 (AE1/AE3, 200×) Myoepithelial carcinoma, diffuse immunoreactivity

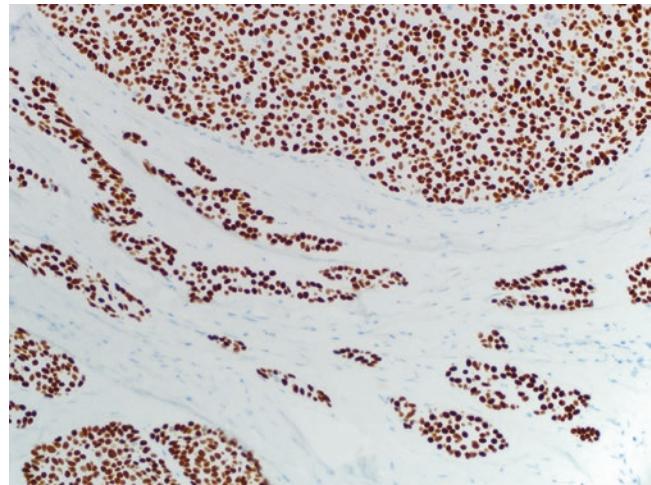


Fig. 19.22 (p63, 200×) Myoepithelial carcinoma, diffuse immunoreactivity

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Oncocytoma

20

Oncocytoma is the benign counterpart of oncocytic carcinoma. Oncocytoma affects predominantly adults and presents at a mean age of approximately 65 years. Women and men are involved with similar frequency. The majority of cases involve the parotid gland, presenting as single or

multiple masses. Oncocytoma may be circumscribed or multi-nodular, comprised of multiple cell types (oncocytic, basal), and exhibit a variety of architectural patterns (solid, organoid, trabecular, cystic, and duct-like) (Figs. 20.1–20.26).

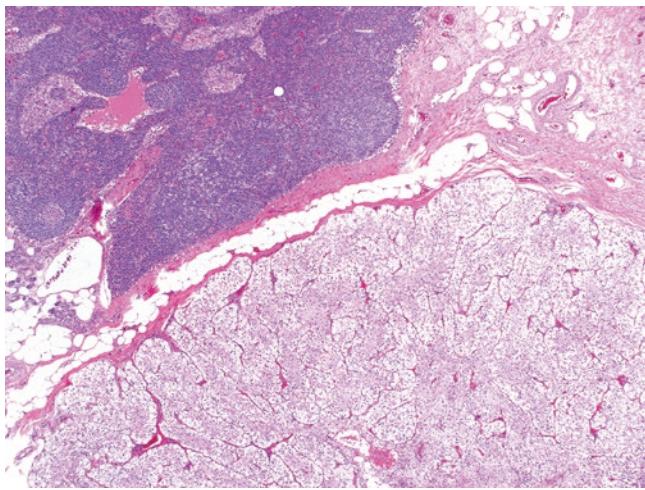


Fig. 20.1 (H&E, 40×) Oncocytoma, circumscribed

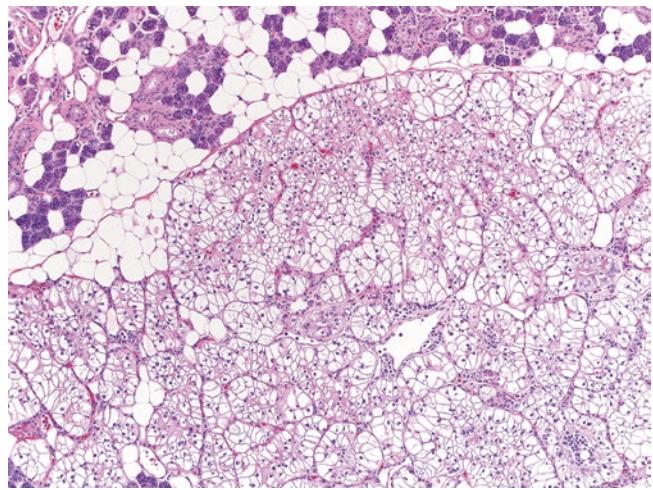


Fig. 20.4 (H&E, 100×) Oncocytoma, clear and eosinophilic

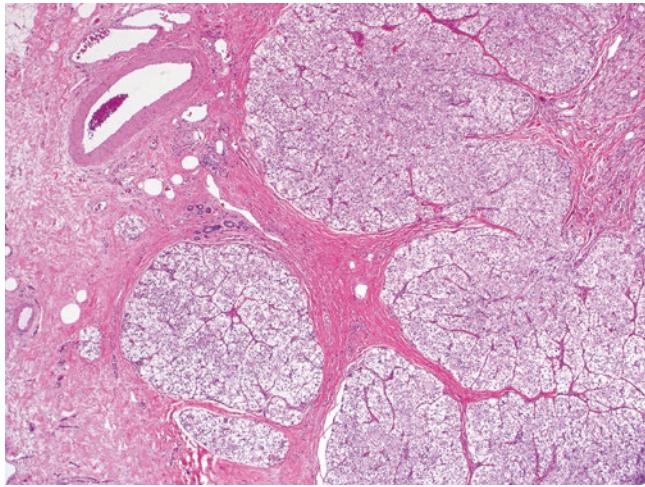


Fig. 20.2 (H&E, 40×) Oncocytoma, nodular

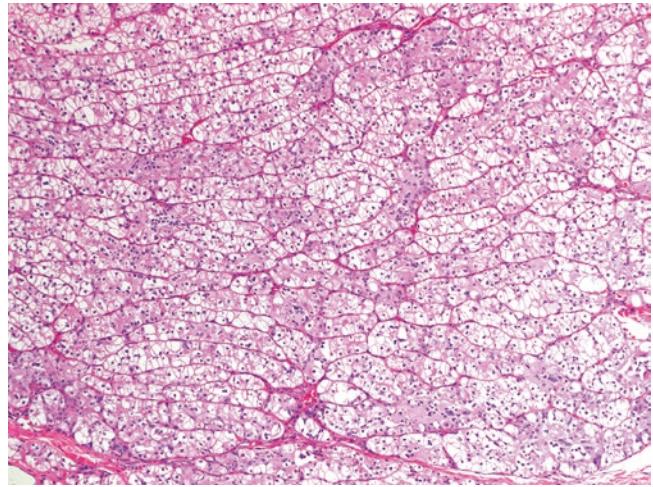


Fig. 20.5 (H&E, 100×) Oncocytoma, clear and eosinophilic

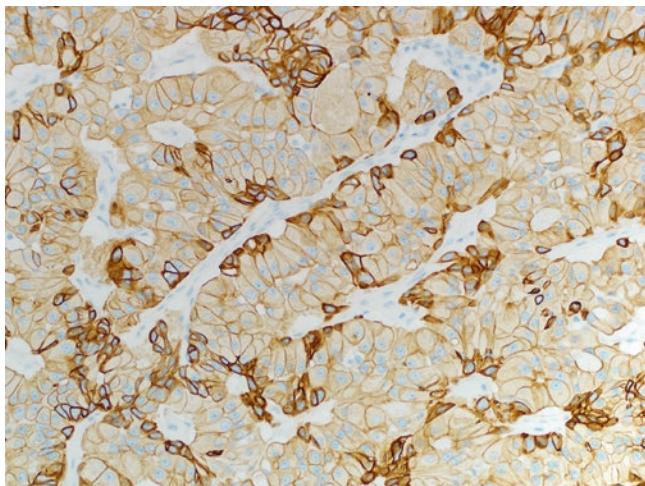


Fig. 20.3 (AE1/AE3, 200x) Oncocytoma, biphasic

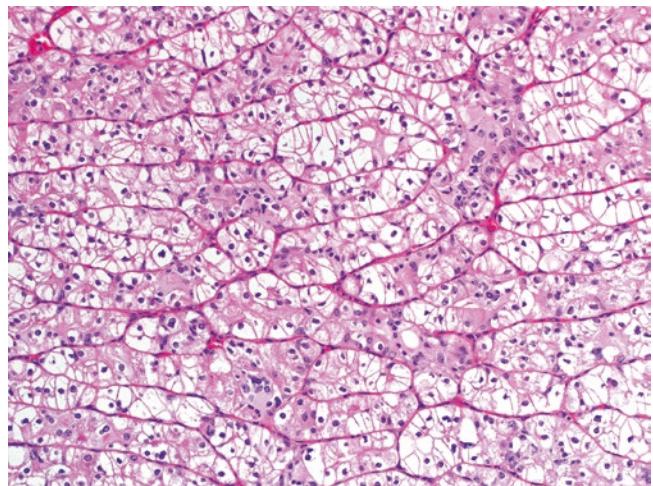


Fig. 20.6 (H&E, 200×) Oncocytoma, clear and eosinophilic

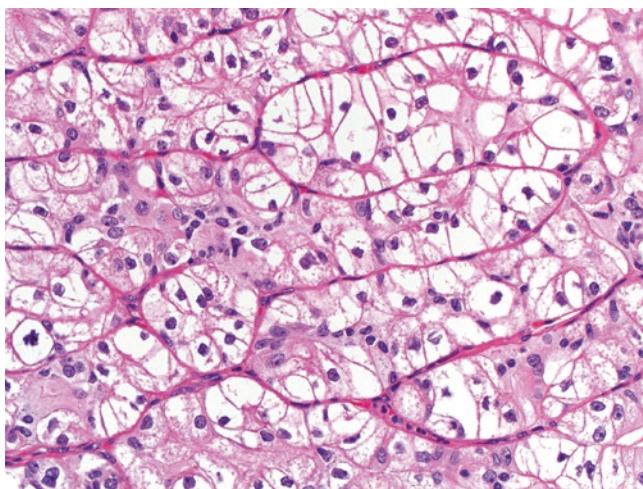


Fig. 20.7 (H&E, 400 \times) Oncocytoma, clear and eosinophilic

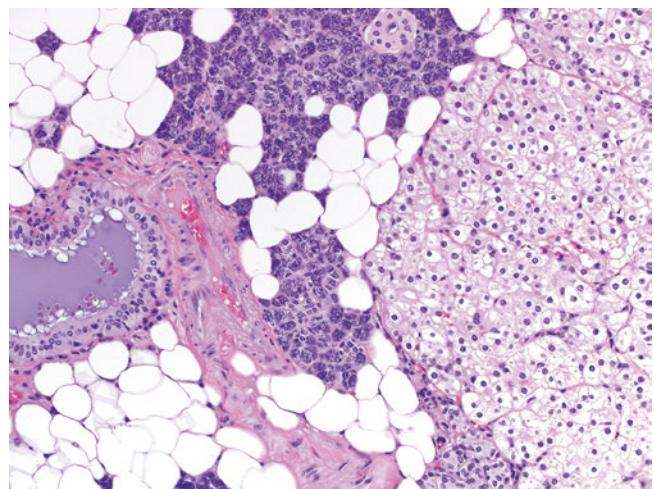


Fig. 20.10 (H&E, 200 \times) Oncocytoma, adjacent serous acini

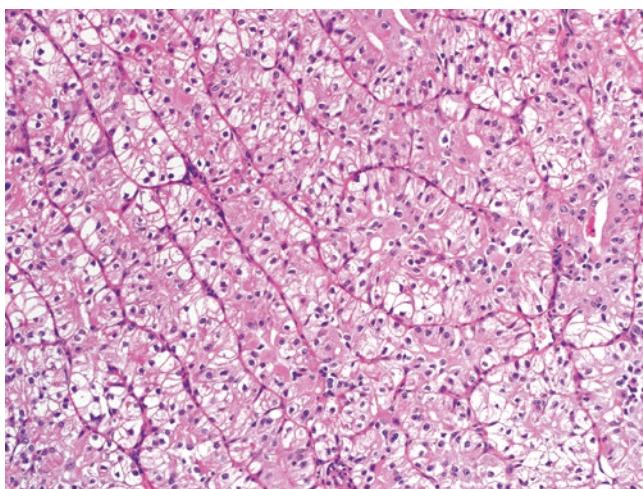


Fig. 20.8 (H&E, 200 \times) Oncocytoma, clear and eosinophilic

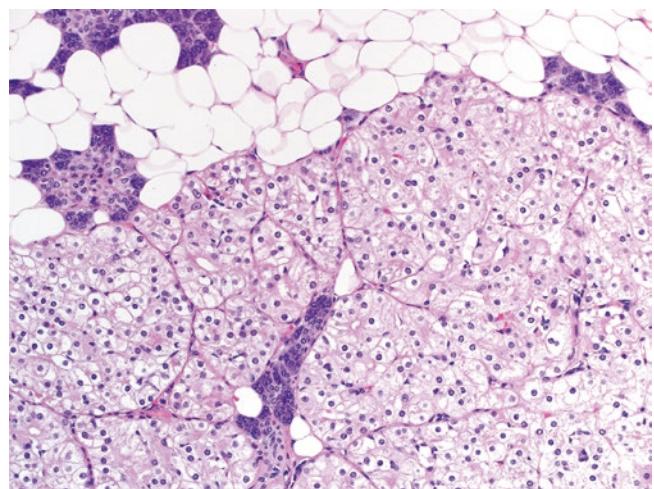


Fig. 20.11 (H&E, 200 \times) Oncocytoma, entrapped serous acini

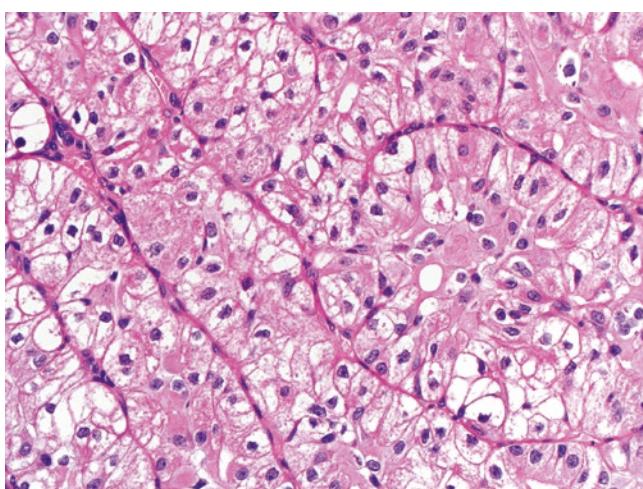


Fig. 20.9 (H&E, 400 \times) Oncocytoma, clear and eosinophilic

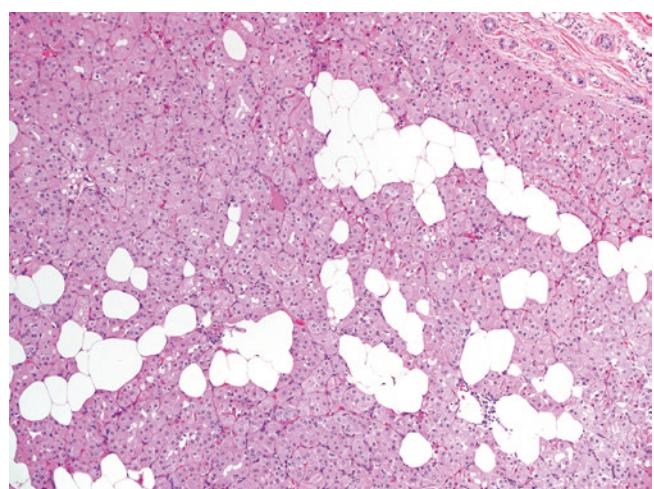


Fig. 20.12 (H&E, 100 \times) Oncocytoma, adipocytic metaplasia

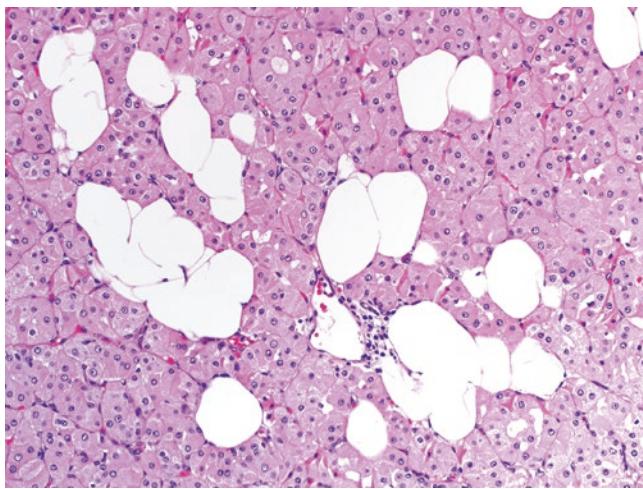


Fig. 20.13 (H&E, 200×) Oncocytoma, adipocytic metaplasia

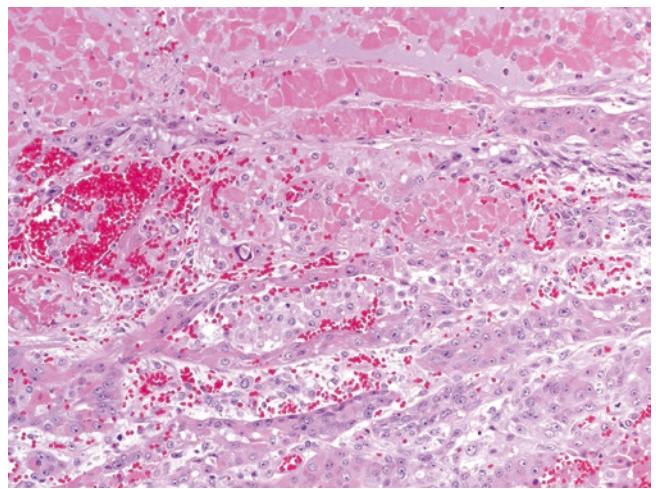


Fig. 20.16 (H&E, 200×) Oncocytoma, squamous metaplasia and necrosis (biopsy-related)

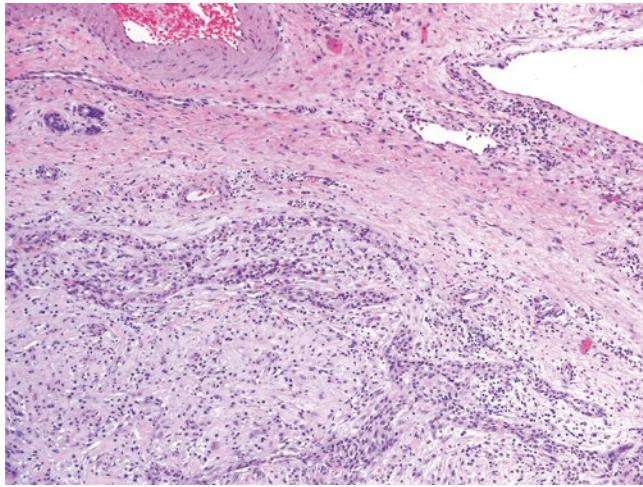


Fig. 20.14 (H&E, 100×) Oncocytoma, squamous metaplasia (biopsy-related)

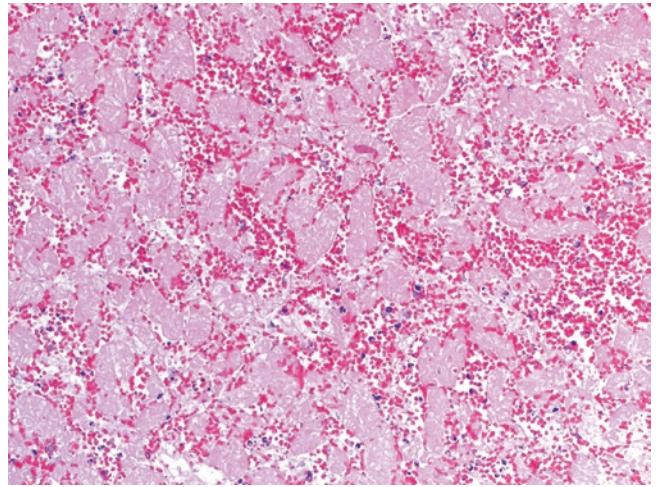


Fig. 20.17 (H&E, 200×) Oncocytoma, necrosis (biopsy-related)

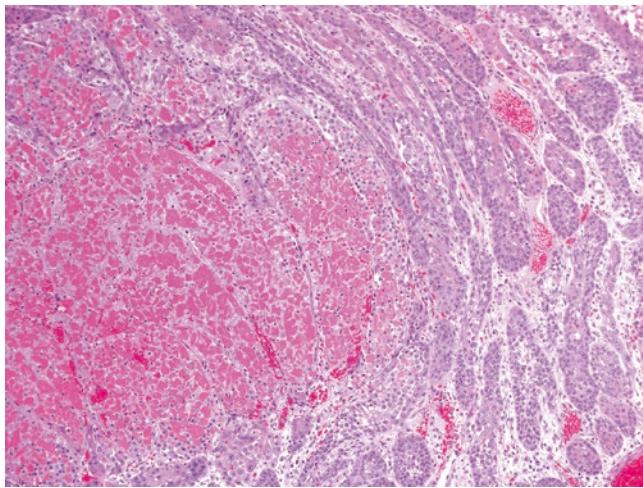


Fig. 20.15 (H&E, 100×) Oncocytoma, squamous metaplasia and necrosis (biopsy-related)

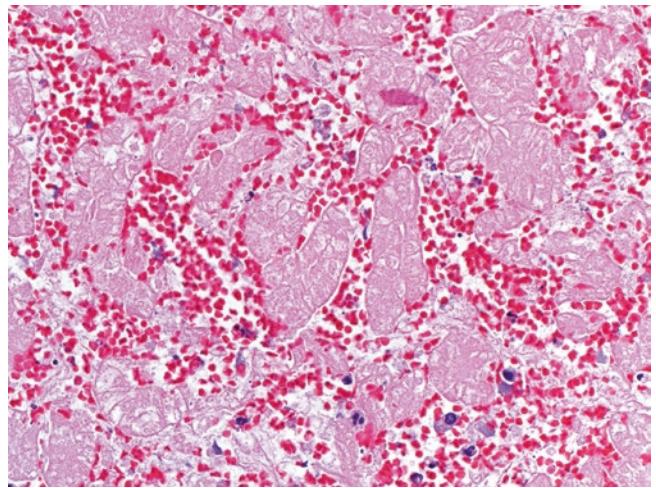


Fig. 20.18 (H&E, 400×) Oncocytoma, necrosis (biopsy-related)

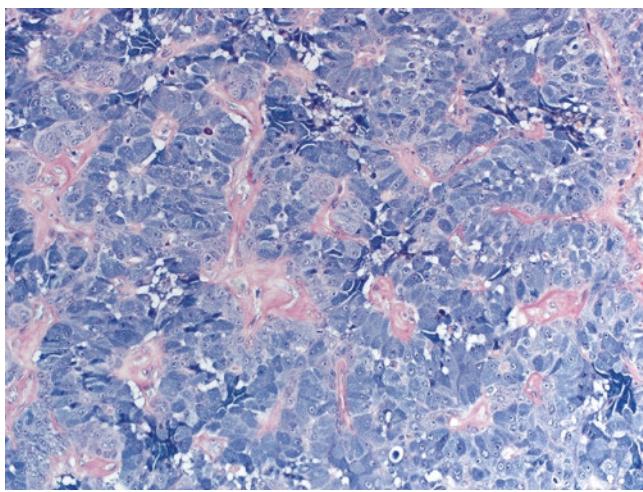


Fig. 20.19 (PTAH, 200×) Oncocytoma, intracytoplasmic reactivity

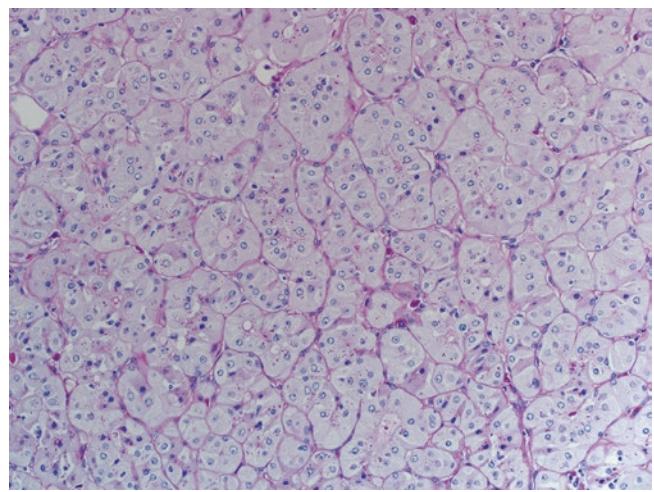


Fig. 20.22 (PAS-D, 200×) Oncocytoma, cytoplasmic granules

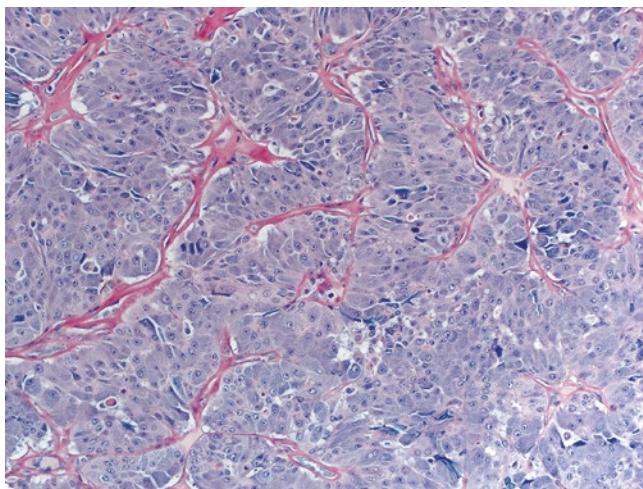


Fig. 20.20 (PTAH, 200×) Oncocytoma, negative reactivity

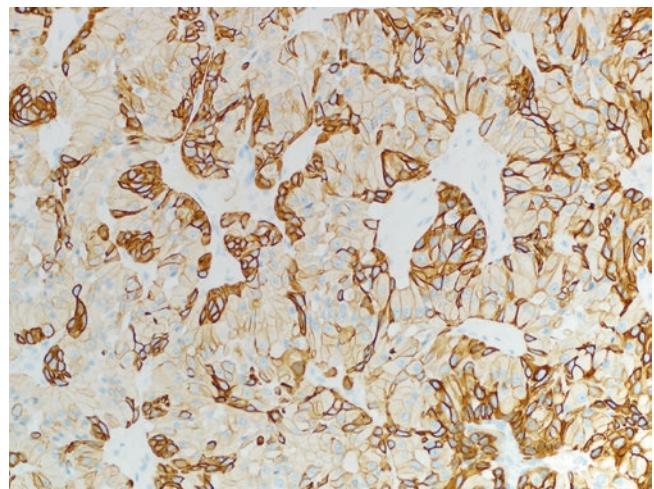


Fig. 20.23 (AE1/AE3, 200×) Oncocytoma, diffuse immunoreactivity

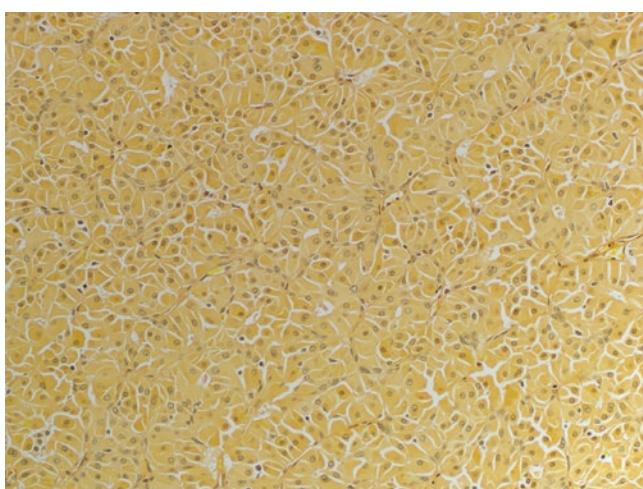


Fig. 20.21 (Mucicarmine, 200×) Oncocytoma, negative reactivity

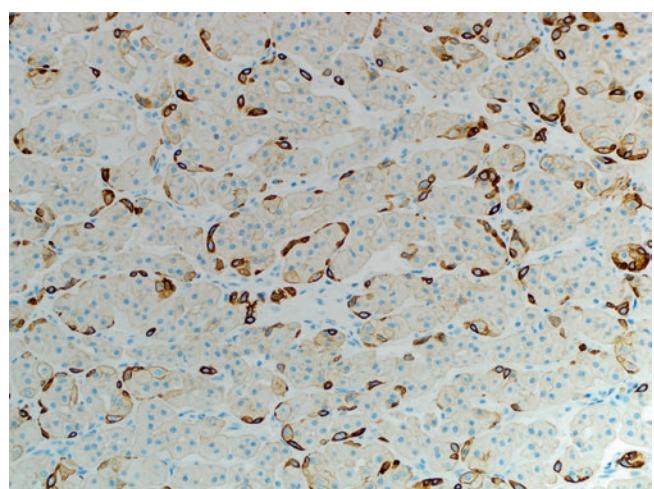


Fig. 20.24 (AE1/AE3, 200×) Oncocytoma, basal immunoreactivity

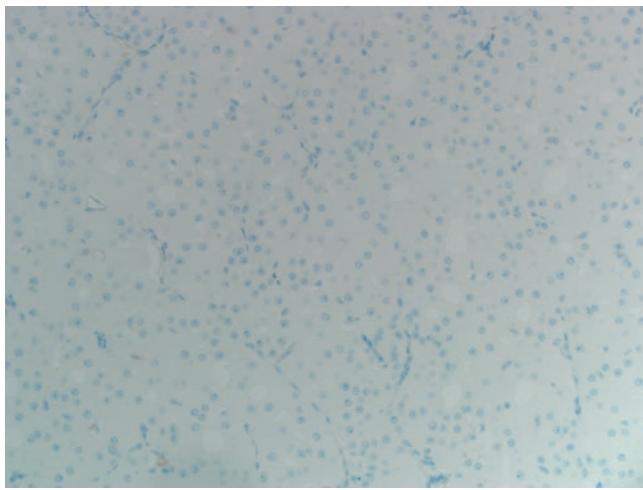


Fig. 20.25 (S-100, 200 \times) Oncocytoma, negative immunoreactivity

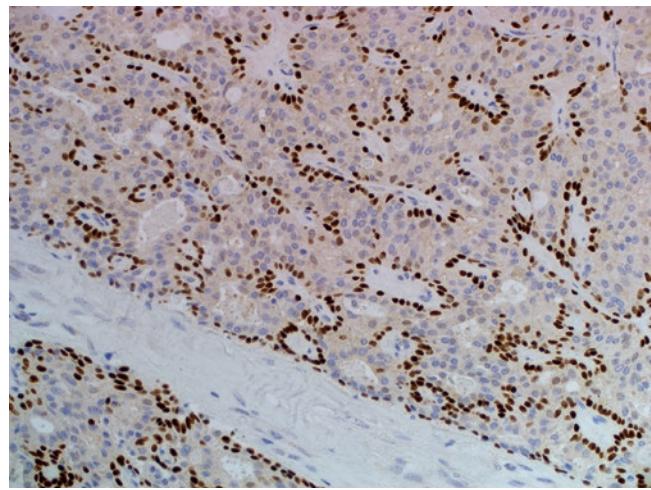


Fig. 20.26 (p63, 200 \times) Oncocytoma, basal immunoreactivity

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Oncocytic Carcinoma

21

Oncocytic carcinoma is the malignant counterpart of oncocytoma. Oncocytic carcinoma affects children and adults. Women and men are involved with similar frequency. The majority of cases involve the parotid gland, presenting as single or multiple masses. Oncocytic carcinoma may be

circumscribed or infiltrative, comprised of multiple cell types (oncocyte, basal), and exhibit a variety of architectural patterns (solid, organoid, trabecular, cystic, and duct-like) (Figs. 21.1–21.12).

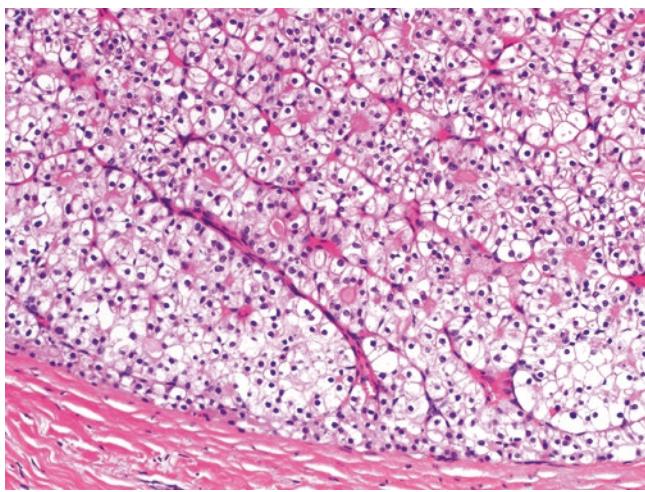


Fig. 21.1 (H&E, 200 \times) Oncocytic carcinoma, circumscribed

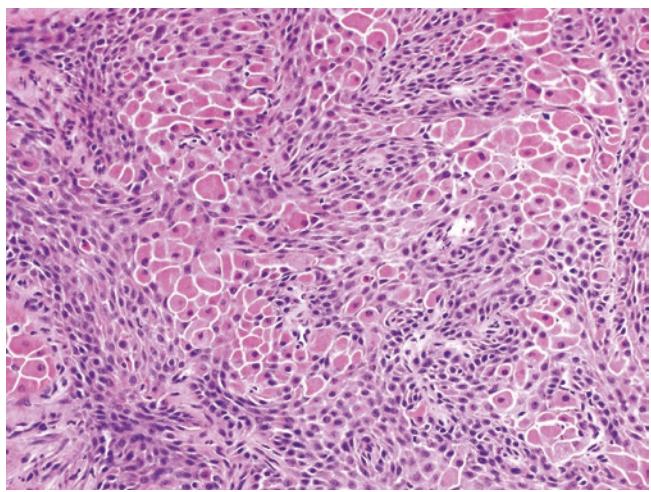


Fig. 21.4 (H&E, 200 \times) Oncocytic carcinoma, biphasic

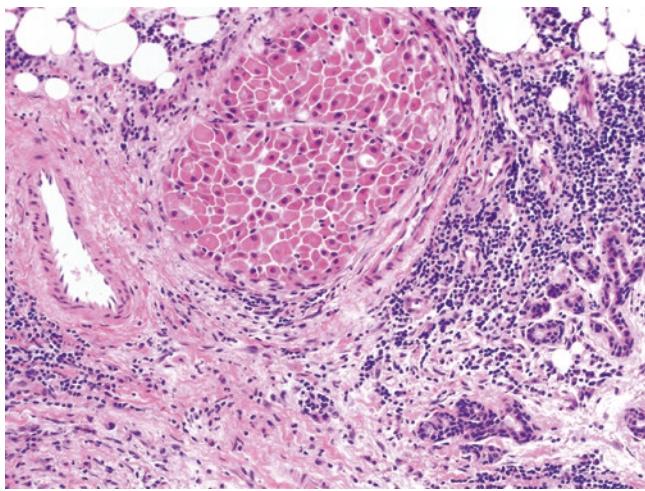


Fig. 21.2 (H&E, 200 \times) Oncocytic carcinoma, infiltrative

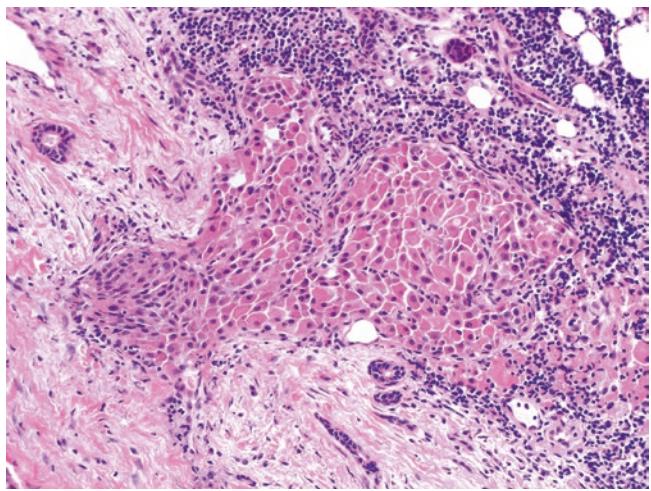


Fig. 21.5 (H&E, 200 \times) Oncocytic carcinoma, eosinophilic

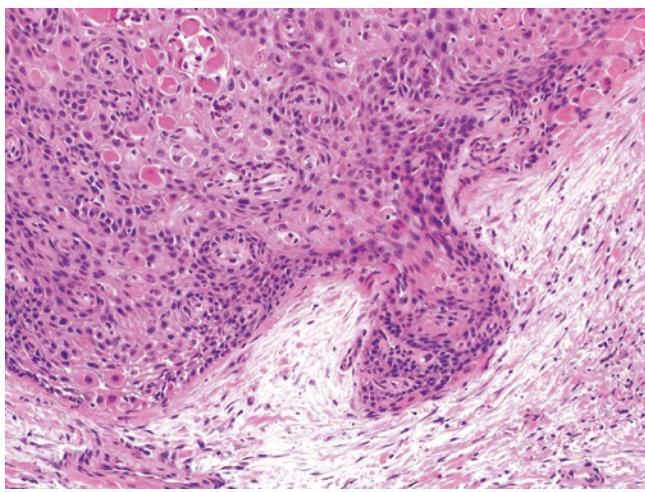


Fig. 21.3 (H&E, 200 \times) Oncocytic carcinoma, infiltrative

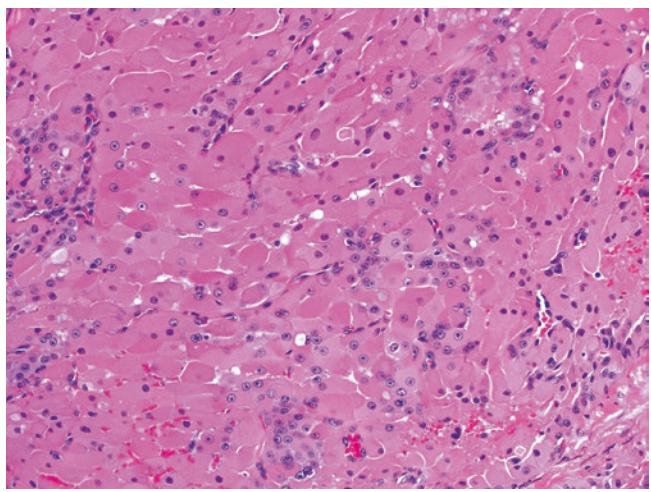


Fig. 21.6 (H&E, 200 \times) Oncocytic carcinoma, eosinophilic

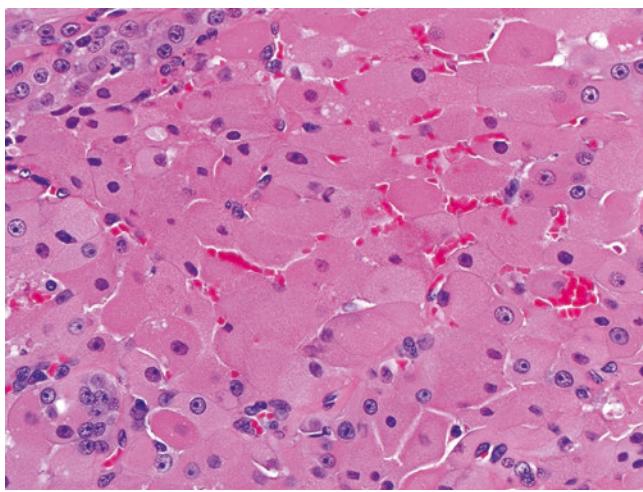


Fig. 21.7 (H&E, 400 \times) Oncocytic carcinoma, eosinophilic

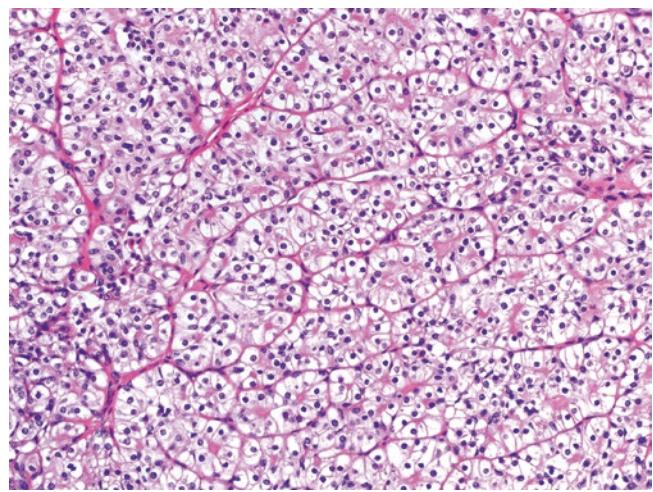


Fig. 21.10 (H&E, 200 \times) Oncocytic carcinoma, clear

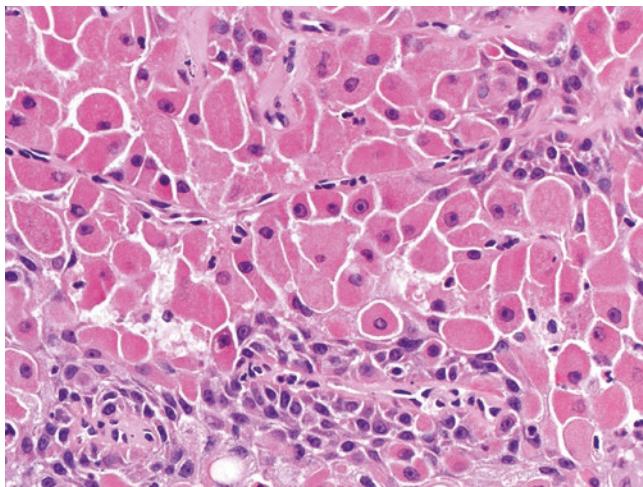


Fig. 21.8 (H&E, 400 \times) Oncocytic carcinoma, eosinophilic

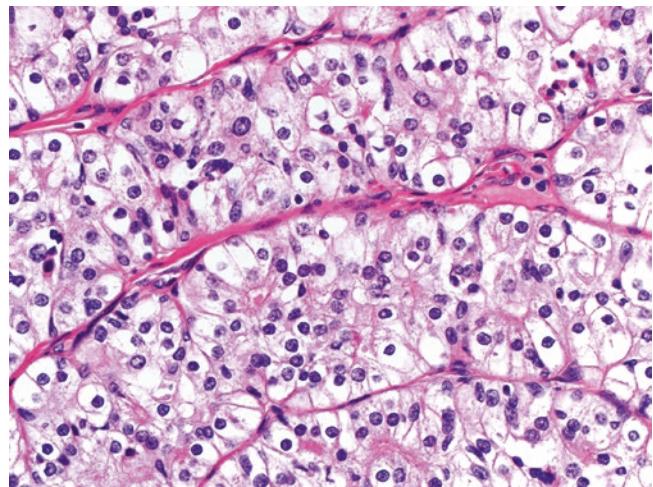


Fig. 21.11 (H&E, 400 \times) Oncocytic carcinoma, clear

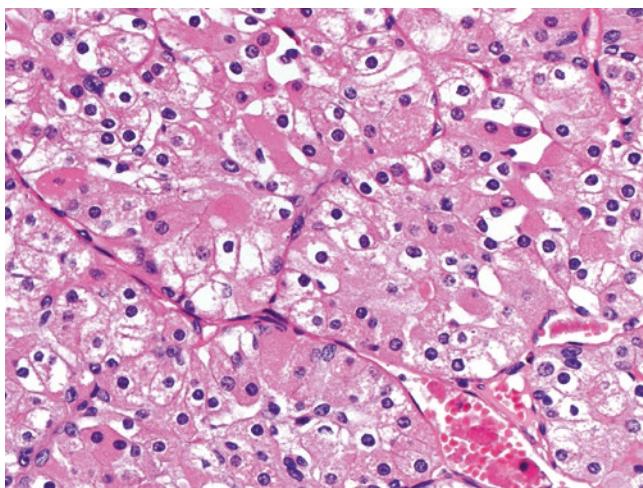


Fig. 21.9 (H&E, 400 \times) Oncocytic carcinoma, eosinophilic and clear

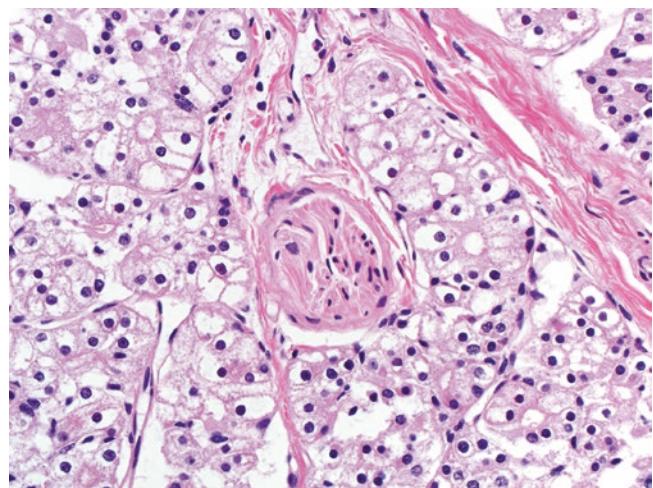


Fig. 21.12 (H&E, 400 \times) Oncocytic carcinoma, perineural invasion

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Pleomorphic Adenoma

22

Pleomorphic adenoma is the benign counterpart of carcinoma ex pleomorphic adenoma. Pleomorphic adenoma affects children and adults and presents at a mean age of approximately 45 years. Women are involved more than men. The majority of cases involve the parotid gland, presenting as single or

multiple masses. Pleomorphic adenoma may be encapsulated, circumscribed, or multi-nodular, comprised of multiple cell types (ductal, myoepithelial, and mesenchymal), and exhibit a variety of architectural patterns (solid, trabecular, and cystic) (Figs. 22.1–22.36).

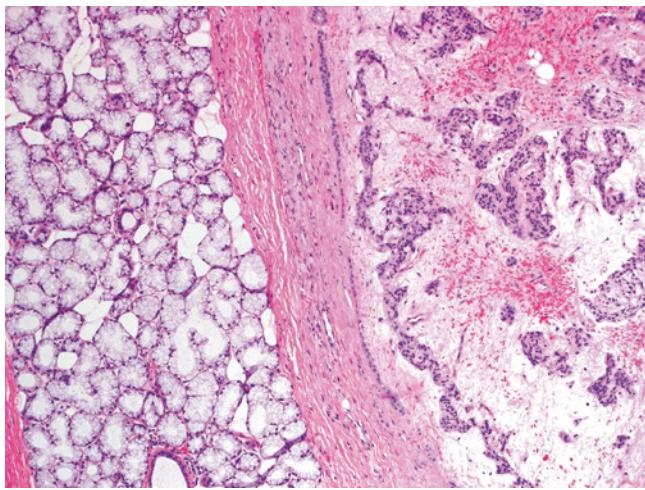


Fig. 22.1 (H&E, 100×) Pleomorphic adenoma, encapsulated

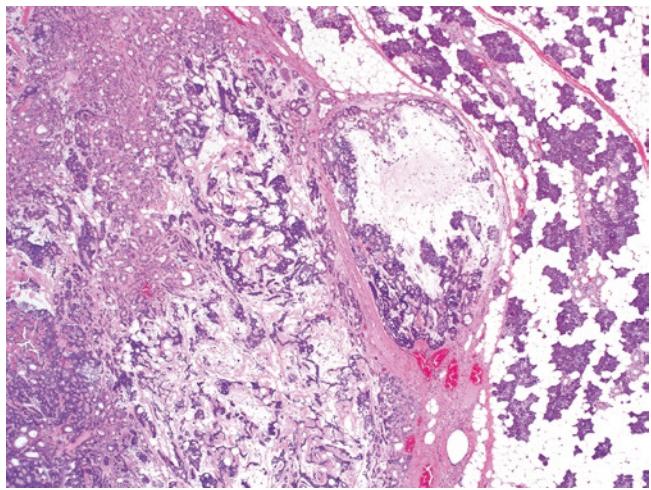


Fig. 22.4 (H&E, 40×) Pleomorphic adenoma, triphasic or more

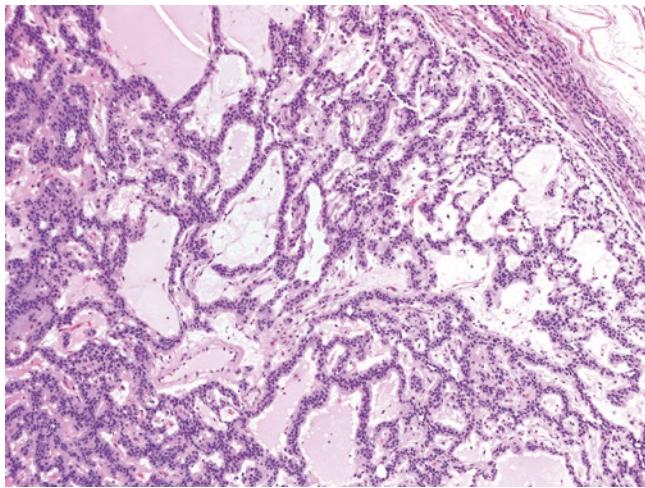


Fig. 22.2 (H&E, 100×) Pleomorphic adenoma, circumscribed

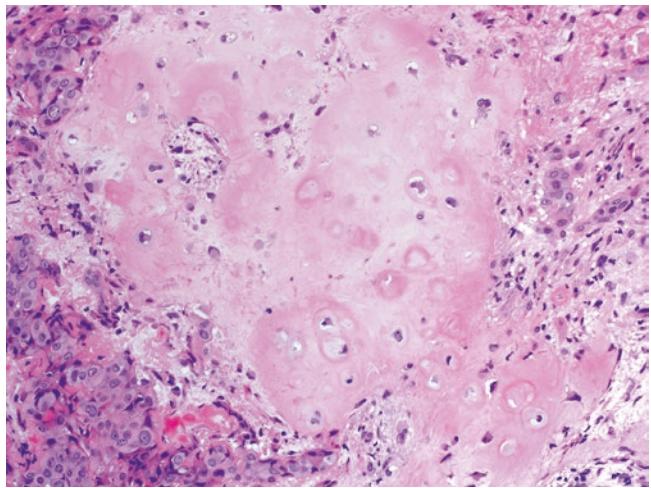


Fig. 22.5 (H&E, 200×) Pleomorphic adenoma, triphasic or more

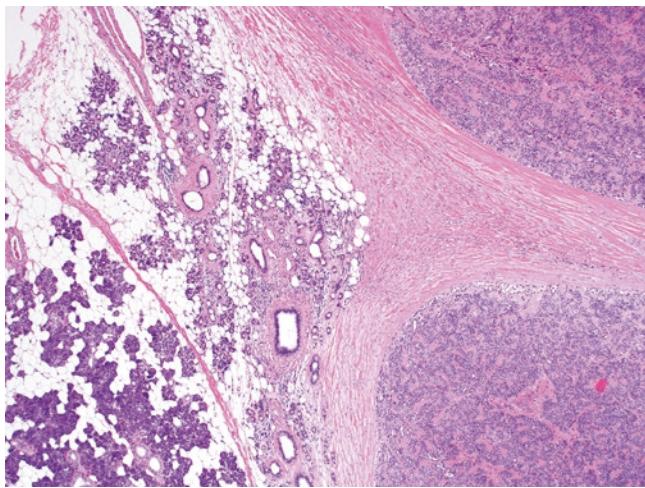


Fig. 22.3 (H&E, 40×) Pleomorphic adenoma, nodular

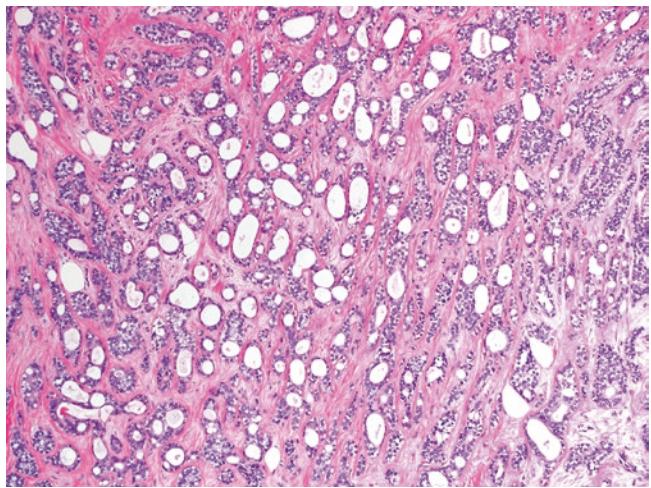


Fig. 22.6 (H&E, 100×) Pleomorphic adenoma, ducts

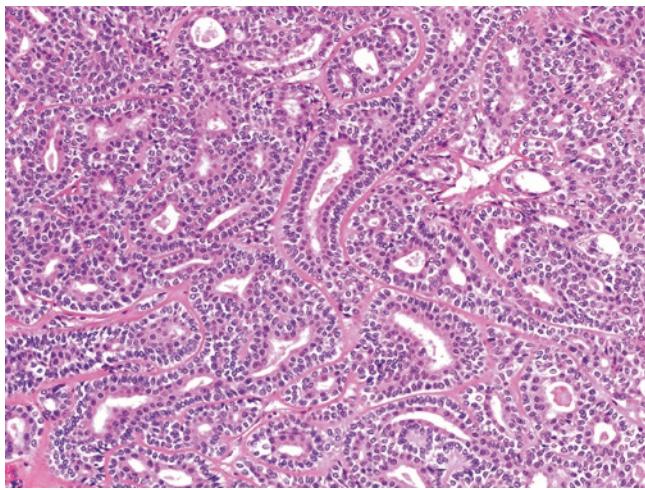


Fig. 22.7 (H&E, 200×) Pleomorphic adenoma, ducts

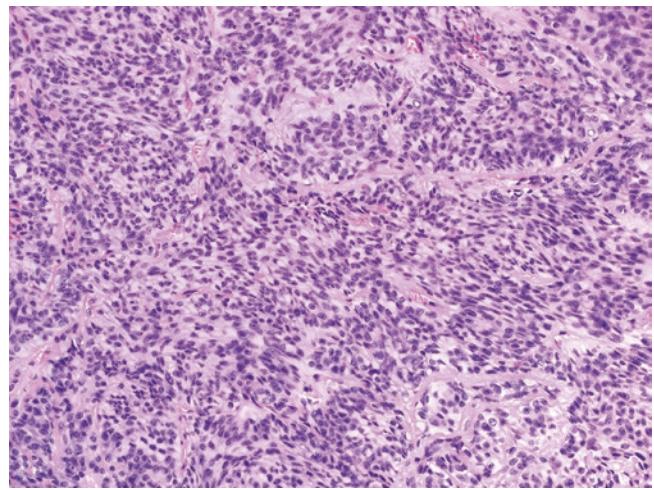


Fig. 22.10 (H&E, 200×) Pleomorphic adenoma, myoepithelial cells, spindled

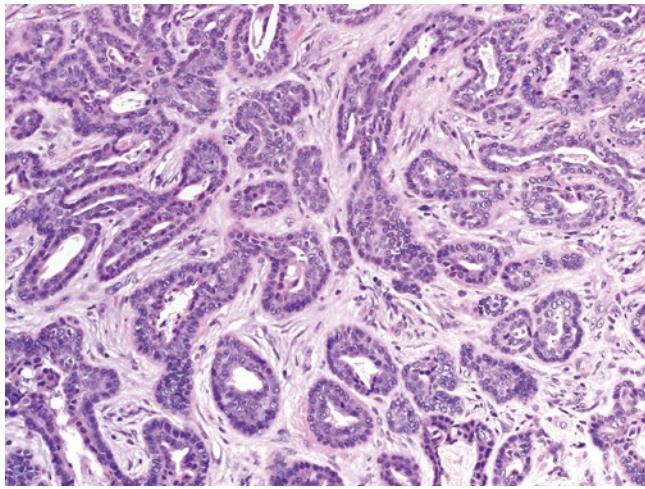


Fig. 22.8 (H&E, 200×) Pleomorphic adenoma, ducts

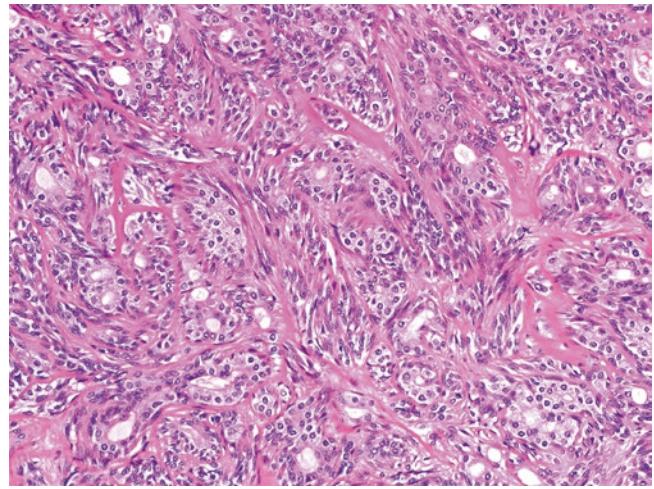


Fig. 22.11 (H&E, 200×) Pleomorphic adenoma, myoepithelial cells, spindled

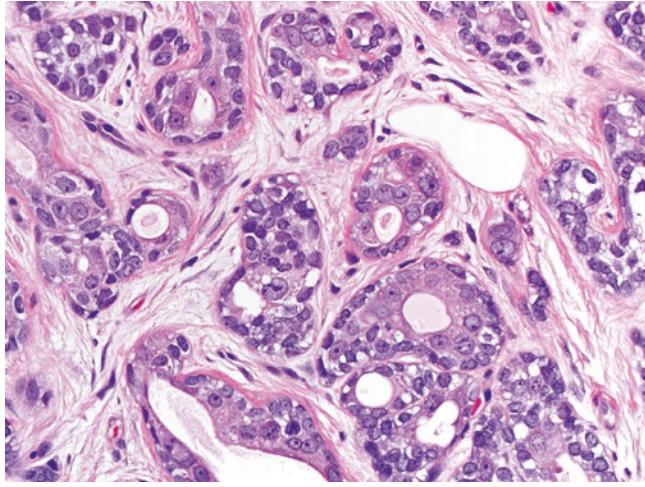


Fig. 22.9 (H&E, 400×) Pleomorphic adenoma, ducts

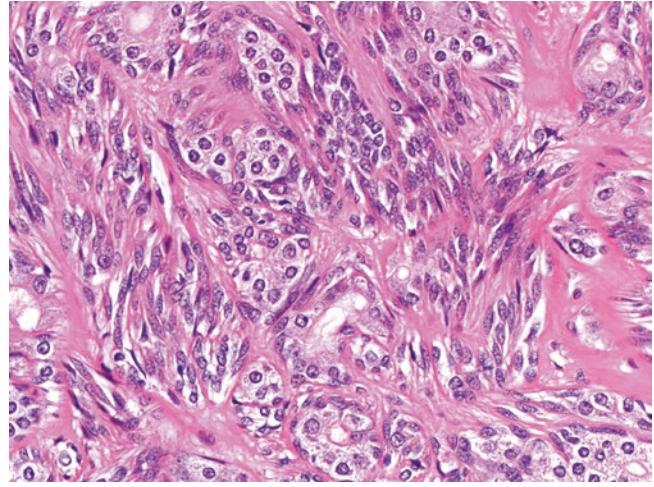


Fig. 22.12 (H&E, 400×) Pleomorphic adenoma, myoepithelial cells, spindled

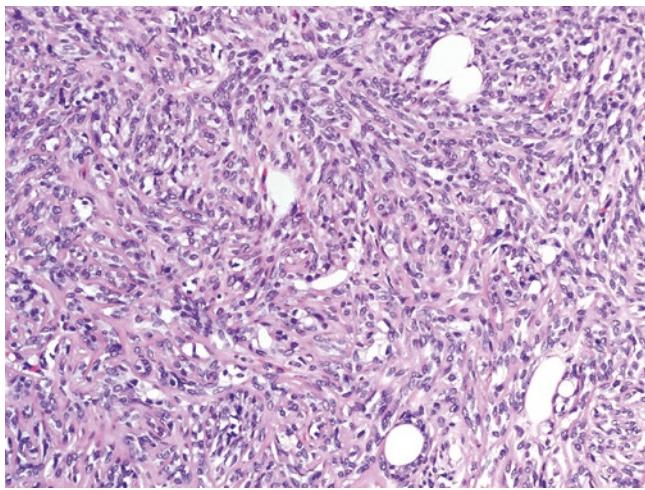


Fig. 22.13 (H&E, 200 \times) Pleomorphic adenoma, myoepithelial cells, spindled

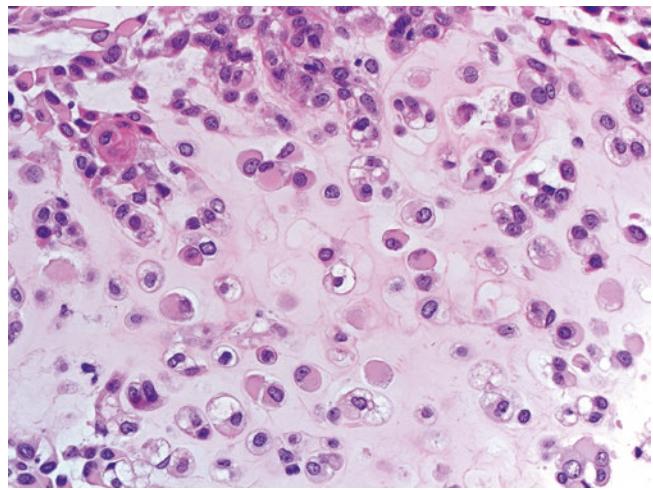


Fig. 22.16 (H&E, 400 \times) Pleomorphic adenoma, myoepithelial cells, plasmacytoid

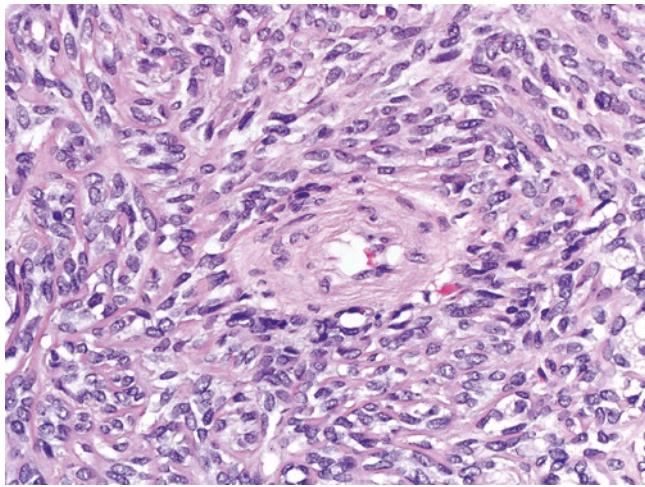


Fig. 22.14 (H&E, 400 \times) Pleomorphic adenoma, myoepithelial cells, spindled

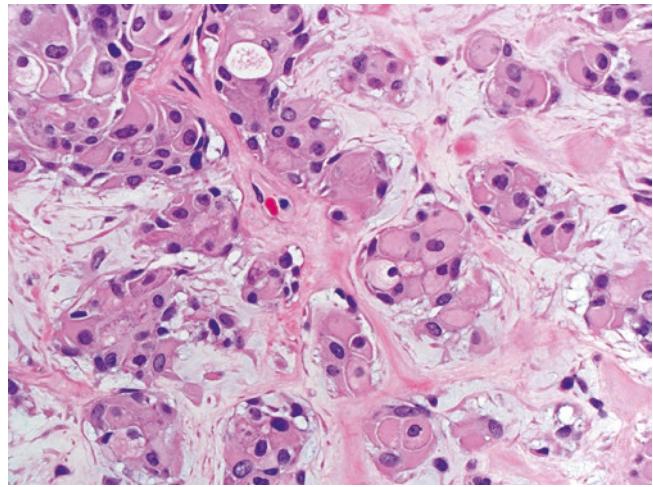


Fig. 22.17 (H&E, 400 \times) Pleomorphic adenoma, myoepithelial cells, plasmacytoid

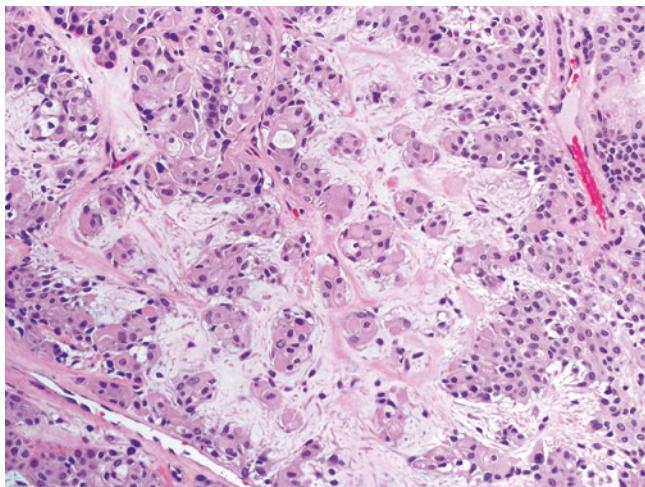


Fig. 22.15 (H&E, 200 \times) Pleomorphic adenoma, myoepithelial cells, plasmacytoid

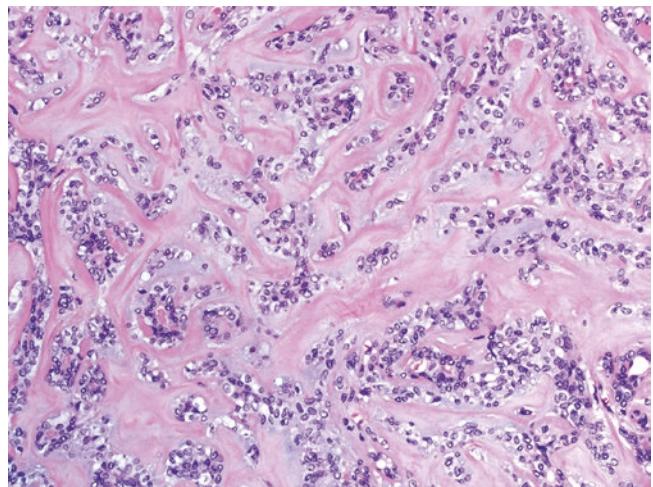


Fig. 22.18 (H&E, 200 \times) Pleomorphic adenoma, myoepithelial cells, clear

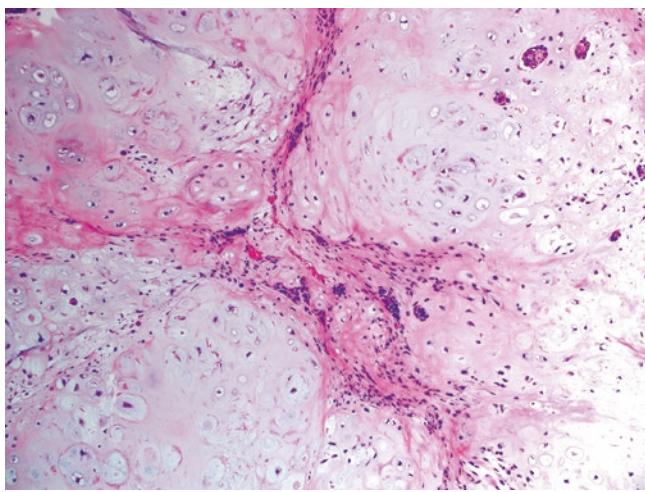


Fig. 22.19 (H&E, 100×) Pleomorphic adenoma, chondroid differentiation

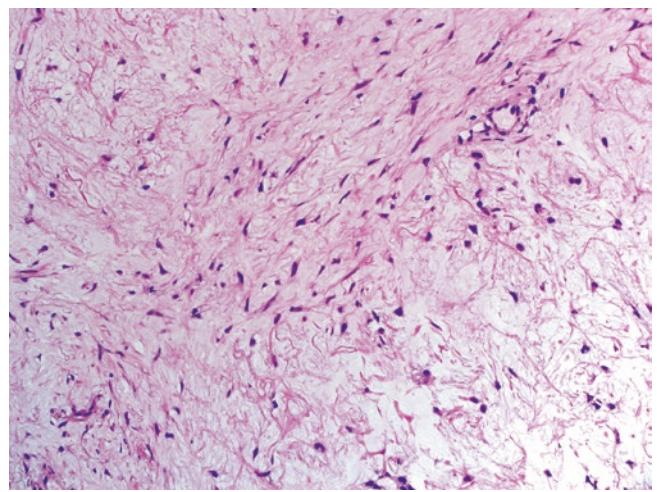


Fig. 22.22 (H&E, 200×) Pleomorphic adenoma, myxoid

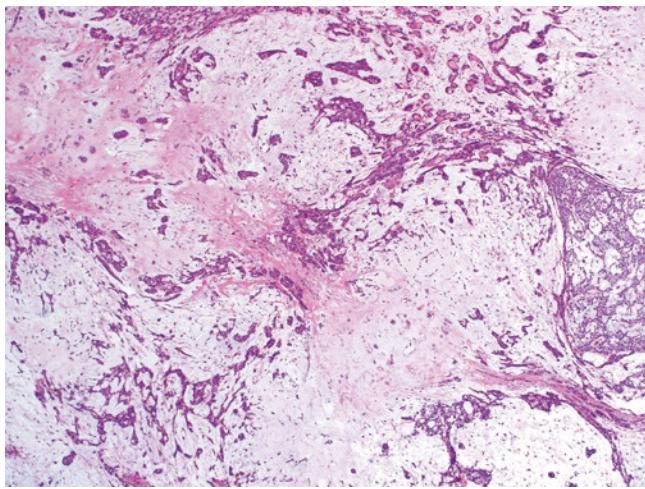


Fig. 22.20 (H&E, 40×) Pleomorphic adenoma, myxoid

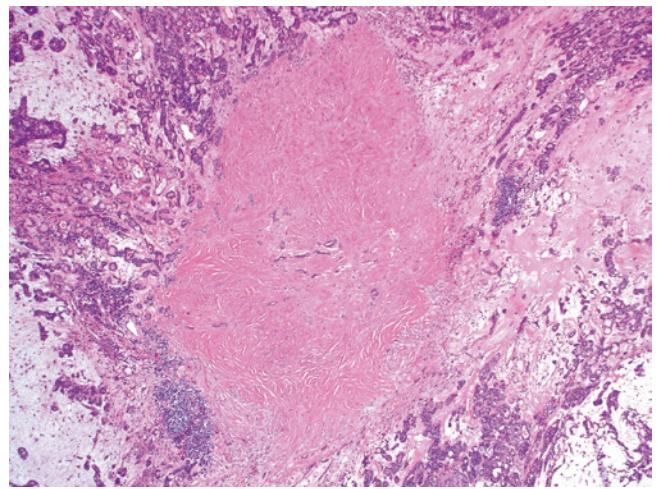


Fig. 22.23 (H&E, 40×) Pleomorphic adenoma, hyalinized

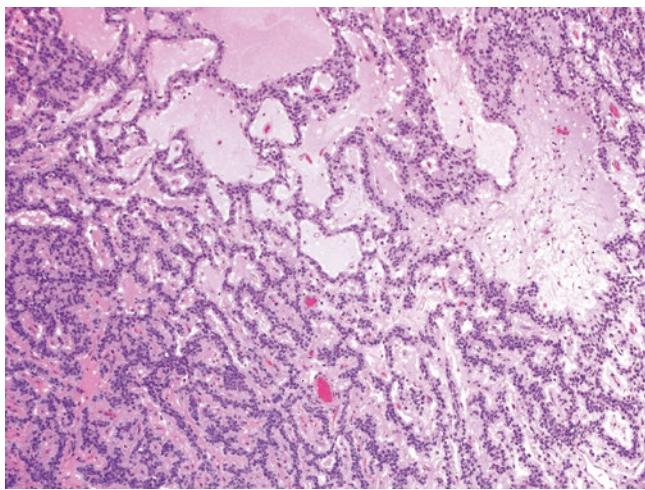


Fig. 22.21 (H&E, 100×) Pleomorphic adenoma, myxoid

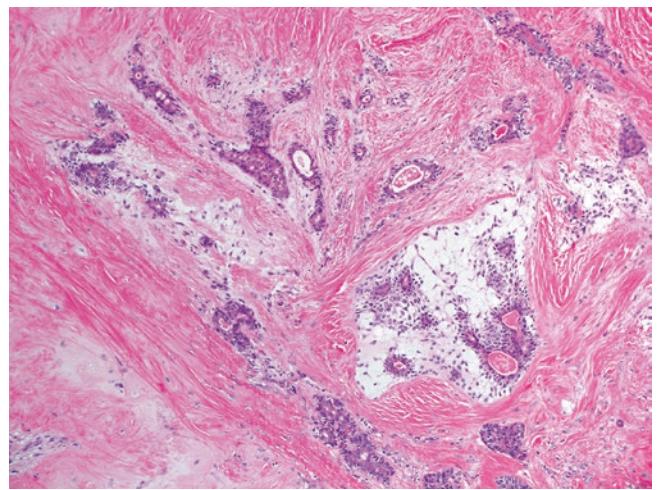


Fig. 22.24 (H&E, 100×) Pleomorphic adenoma, hyalinized

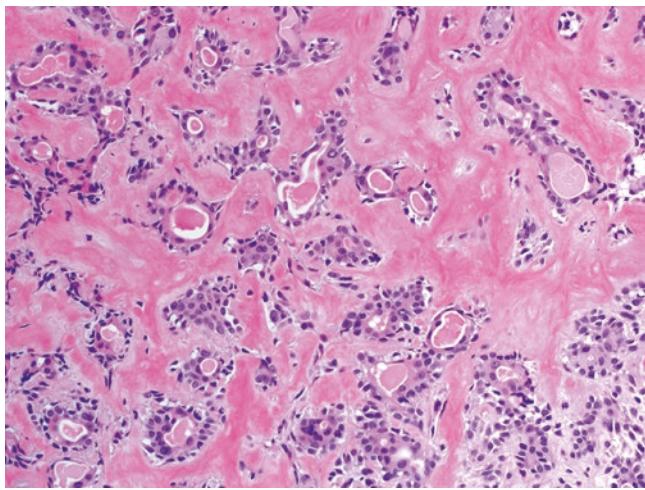


Fig. 22.25 (H&E, 200×) Pleomorphic adenoma, basement membrane-like material

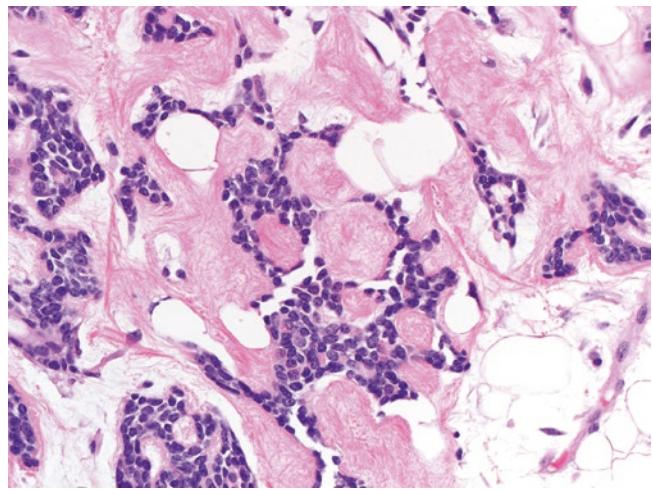


Fig. 22.28 (H&E, 400×) Pleomorphic adenoma, pseudo-vascular

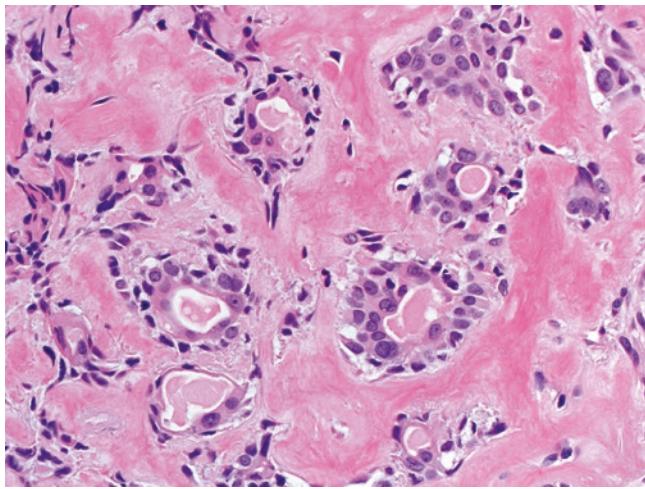


Fig. 22.26 (H&E, 400×) Pleomorphic adenoma, basement membrane-like material

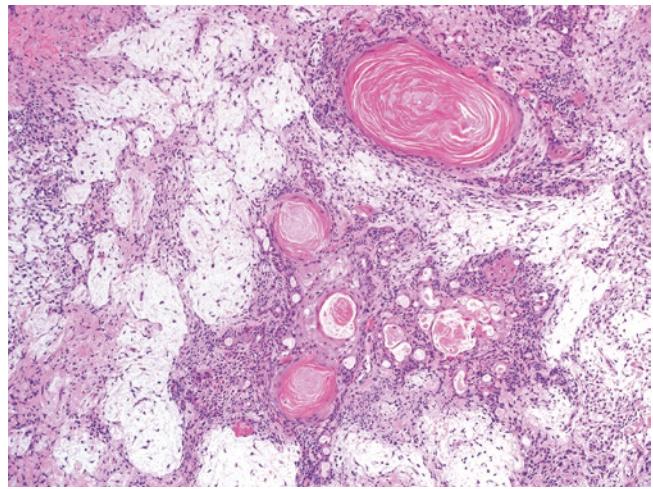


Fig. 22.29 (H&E, 100×) Pleomorphic adenoma, squamous metaplasia and keratinization

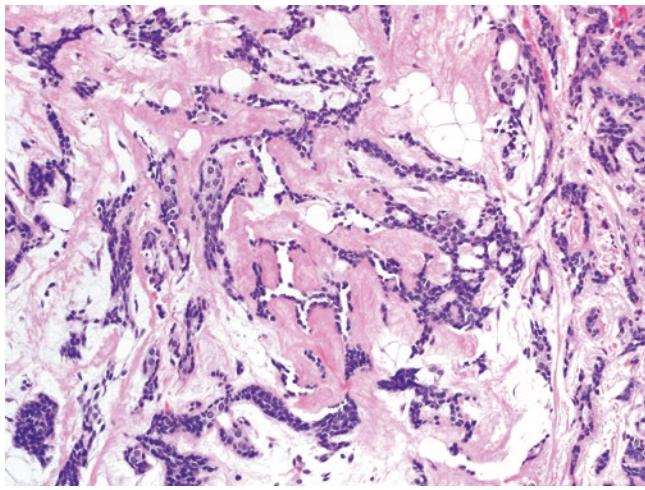


Fig. 22.27 (H&E, 200×) Pleomorphic adenoma, pseudo-vascular

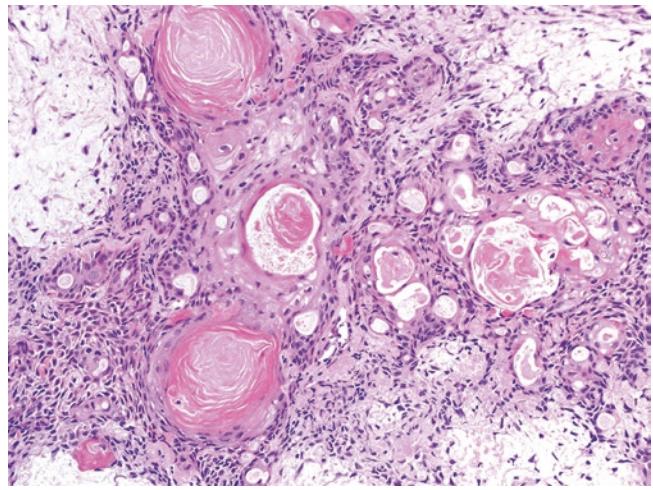


Fig. 22.30 (H&E, 200×) Pleomorphic adenoma, squamous metaplasia and keratinization

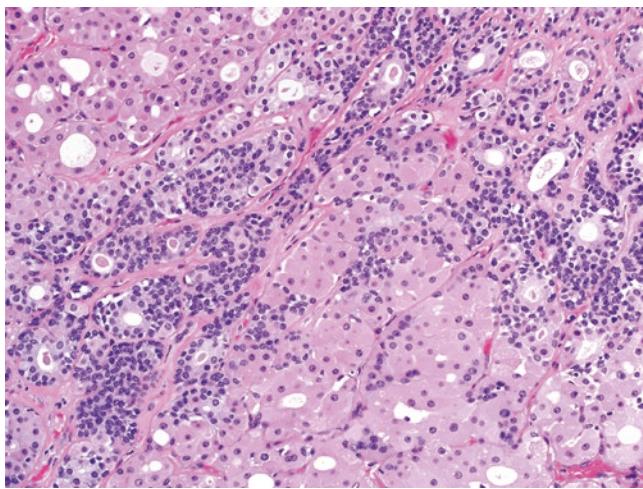


Fig. 22.31 (H&E, 200×) Pleomorphic adenoma, oncocytic metaplasia

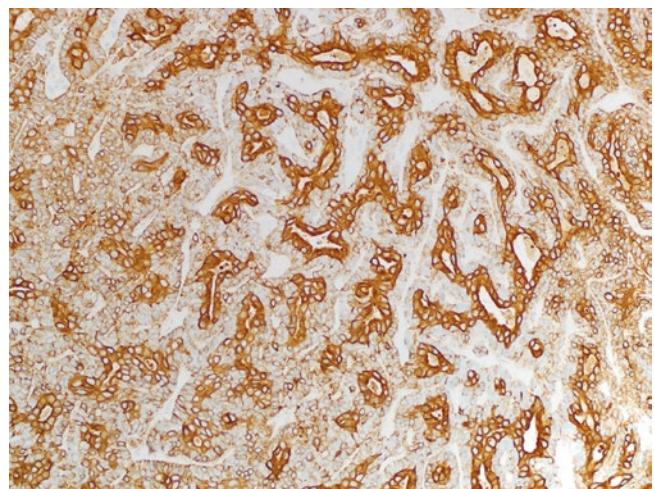


Fig. 22.34 (AE1/AE3, 200×) Pleomorphic adenoma, diffuse immunoreactivity

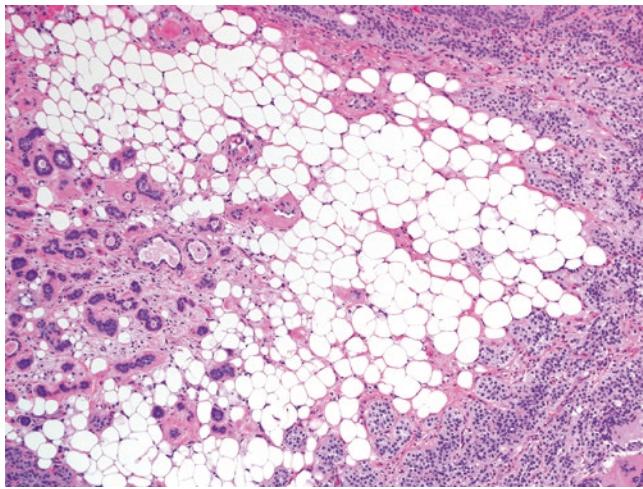


Fig. 22.32 (H&E, 100×) Pleomorphic adenoma, adipocytic metaplasia

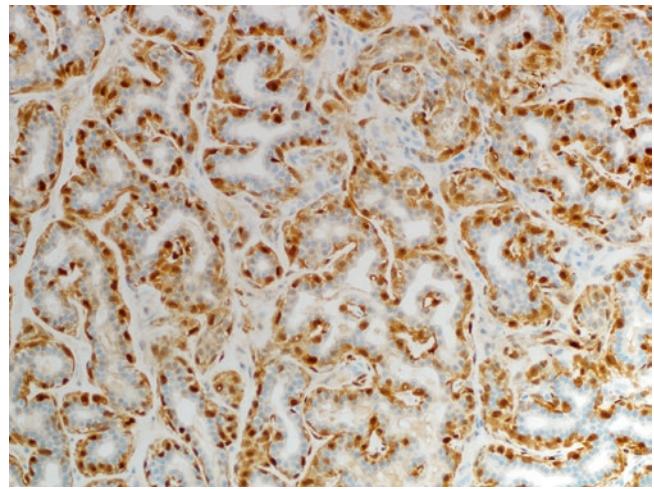


Fig. 22.35 (S-100, 200×) Pleomorphic adenoma, myoepithelial immunoreactivity

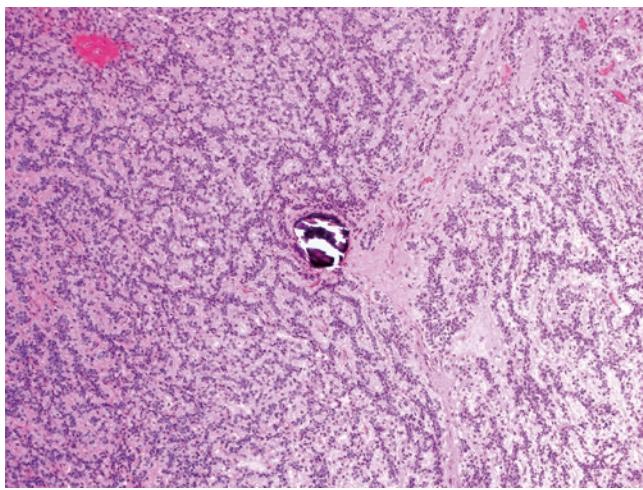


Fig. 22.33 (H&E, 100×) Pleomorphic adenoma, microcalcifications

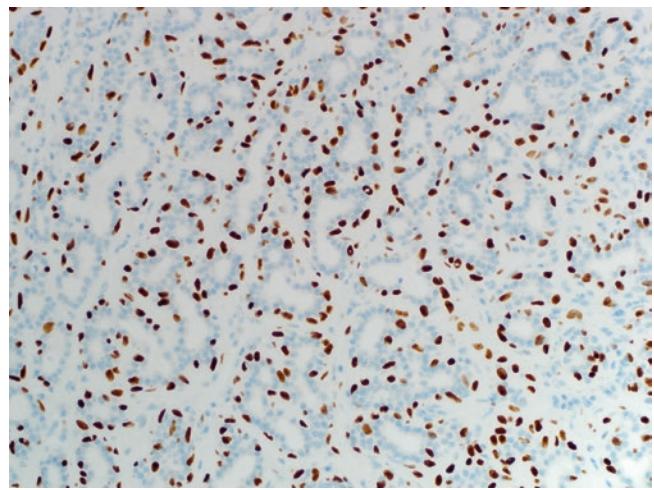


Fig. 22.36 (p63, 200×) Pleomorphic adenoma, myoepithelial immunoreactivity

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Pleomorphic Adenoma, Carcinoma Ex

23

Carcinoma ex pleomorphic adenoma is the malignant counterpart of pleomorphic adenoma. Carcinoma ex pleomorphic adenoma affects primarily adults and presents at a mean age of approximately 60 years. Women are involved more than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Carcinoma

ex pleomorphic adenoma may be circumscribed (*non-invasive*) or infiltrative (*invasive*), comprised of multiple cell types (ductal, myoepithelial, and mesenchymal), and exhibit a variety of architectural patterns (solid, trabecular, and cystic) (Figs. 23.1–23.40).

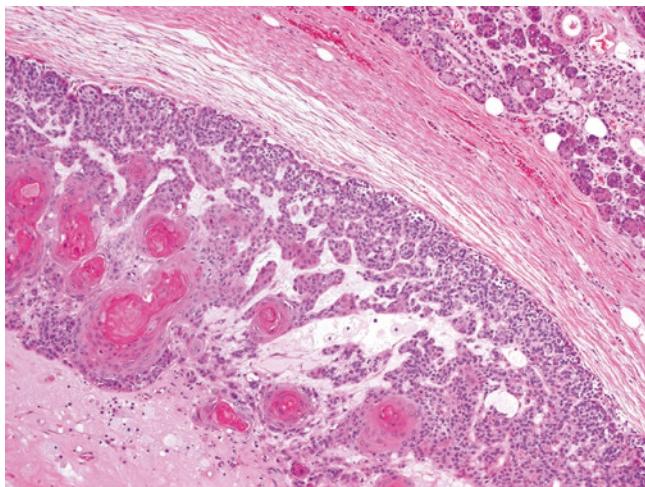


Fig. 23.1 (H&E, 100×) Carcinoma ex pleomorphic adenoma, encapsulated

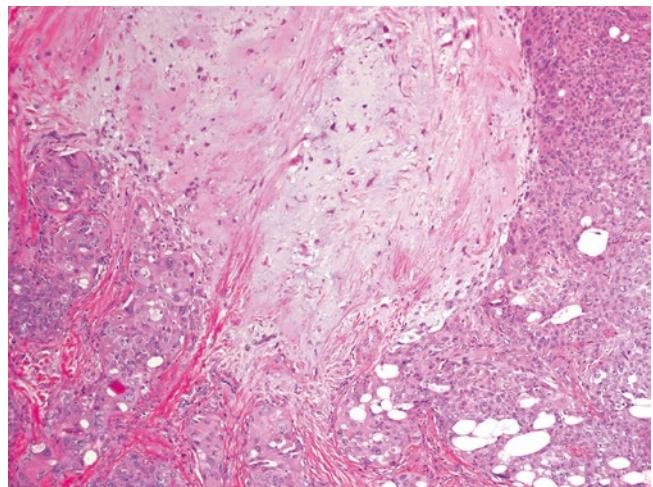


Fig. 23.4 (H&E, 100×) Carcinoma ex pleomorphic adenoma, triphasic or more

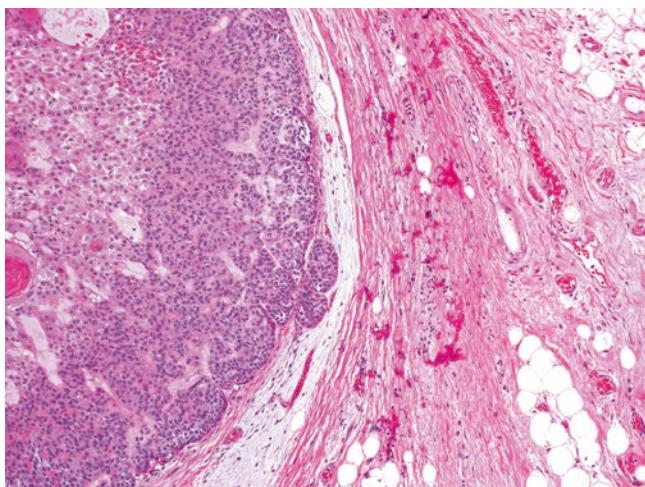


Fig. 23.2 (H&E, 100×) Carcinoma ex pleomorphic adenoma, circumscribed

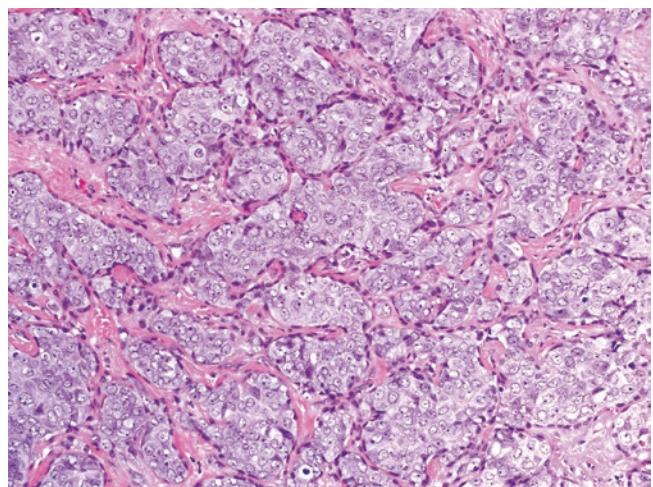


Fig. 23.5 (H&E, 200×) Carcinoma ex pleomorphic adenoma, ducts

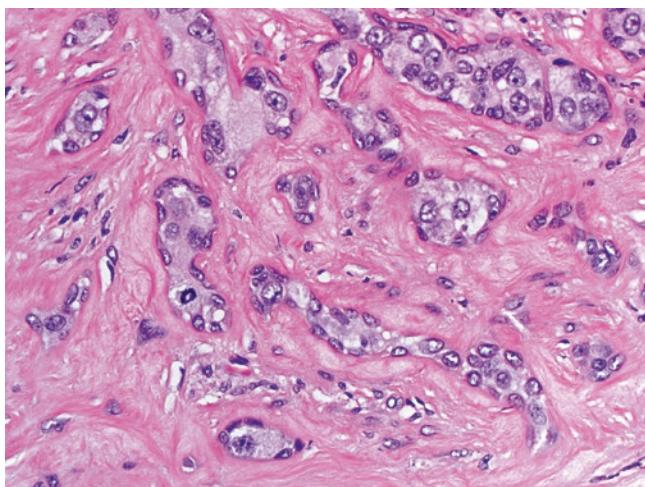


Fig. 23.3 (H&E, 400×) Carcinoma ex pleomorphic adenoma, infiltrative

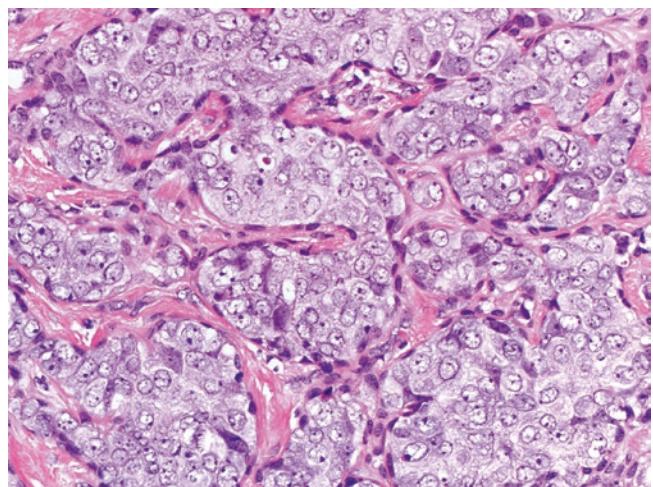


Fig. 23.6 (H&E, 400×) Carcinoma ex pleomorphic adenoma, ducts

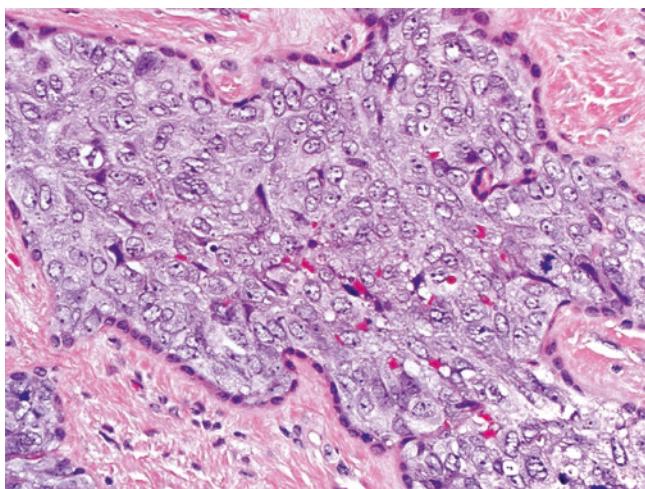


Fig. 23.7 (H&E, 400x) Carcinoma ex pleomorphic adenoma, ducts

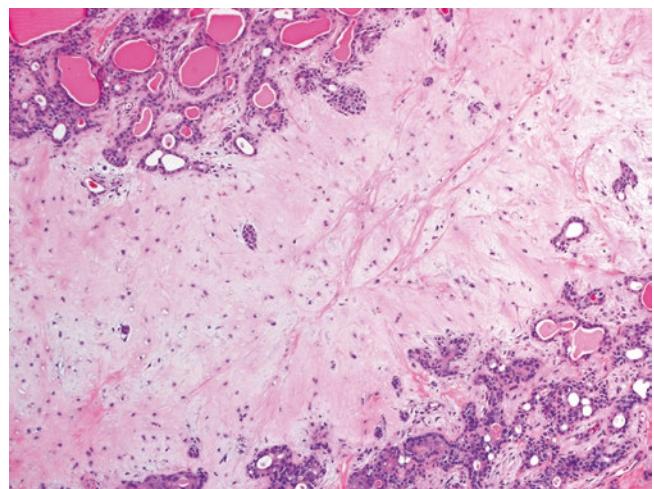


Fig. 23.10 (H&E, 100x) Carcinoma ex pleomorphic adenoma, chondroid differentiation

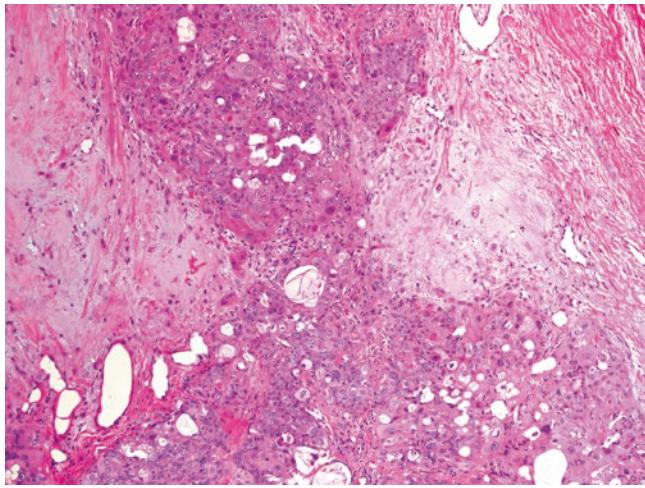


Fig. 23.8 (H&E, 100x) Carcinoma ex pleomorphic adenoma, chondroid differentiation

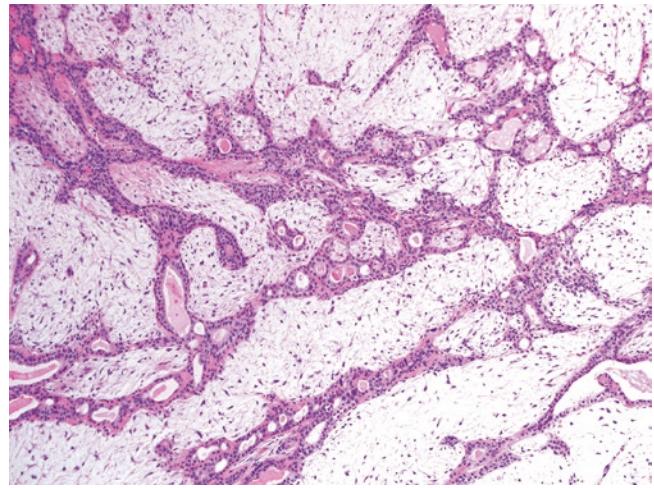


Fig. 23.11 (H&E, 100x) Carcinoma ex pleomorphic adenoma, myxoid

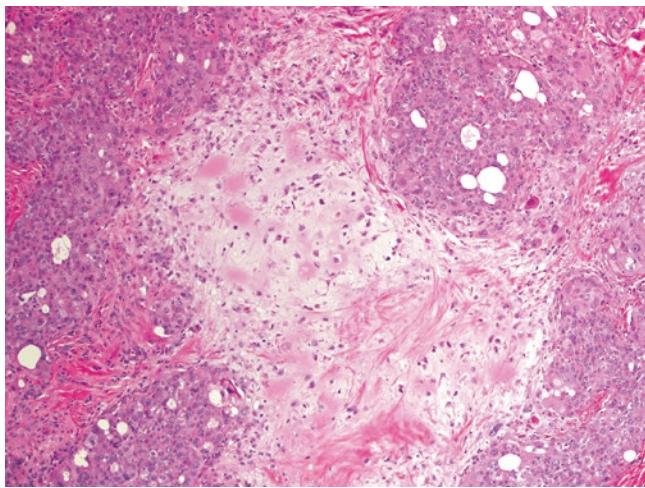


Fig. 23.9 (H&E, 100x) Carcinoma ex pleomorphic adenoma, chondroid differentiation

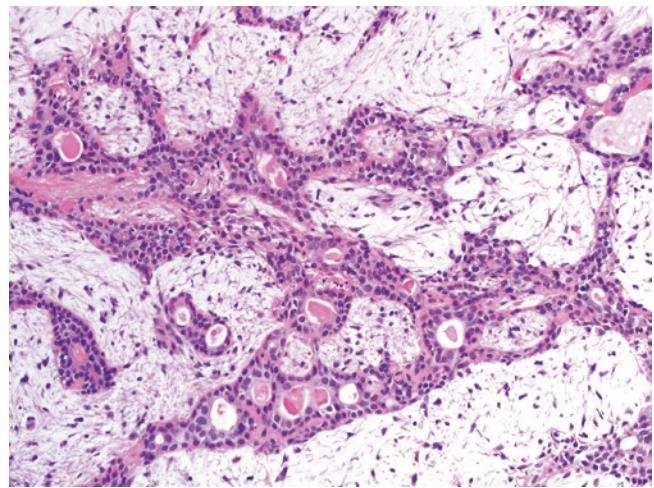


Fig. 23.12 (H&E, 200x) Carcinoma ex pleomorphic adenoma, myxoid

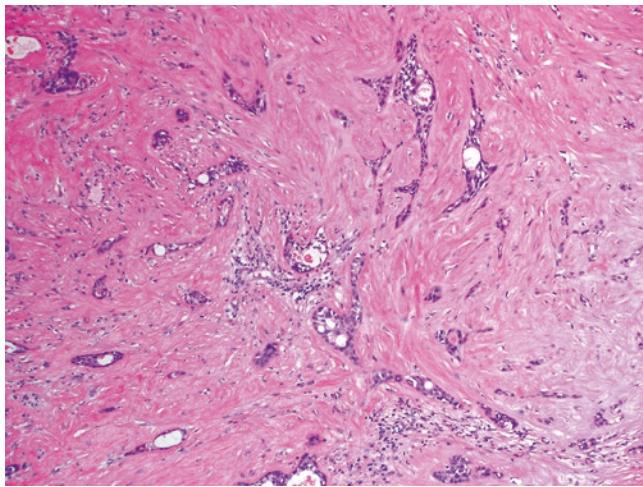


Fig. 23.13 (H&E, 100×) Carcinoma ex pleomorphic adenoma, hyalinized

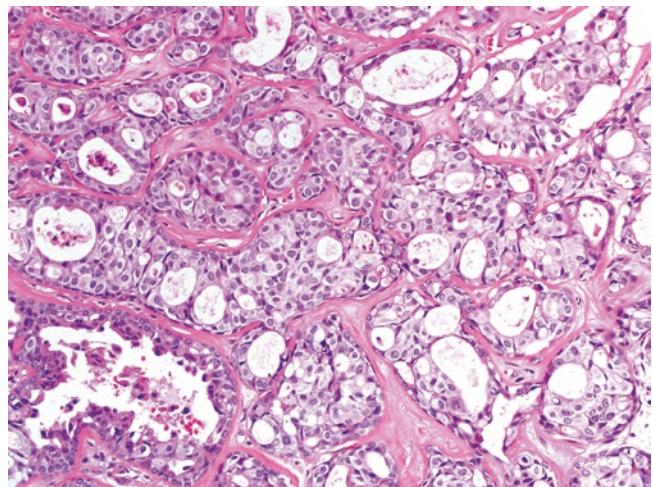


Fig. 23.16 (H&E, 200×) Carcinoma ex pleomorphic adenoma, salivary duct carcinoma

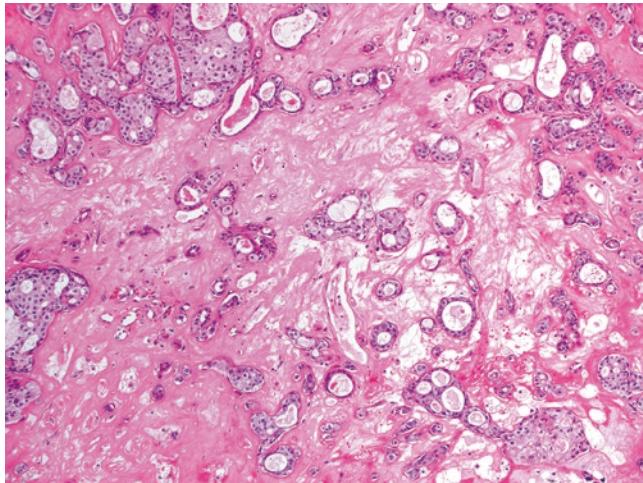


Fig. 23.14 (H&E, 100×) Carcinoma ex pleomorphic adenoma, salivary duct carcinoma

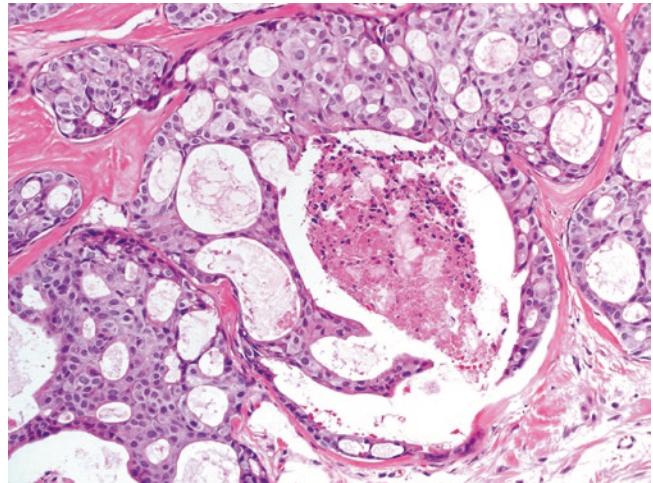


Fig. 23.17 (H&E, 200×) Carcinoma ex pleomorphic adenoma, salivary duct carcinoma

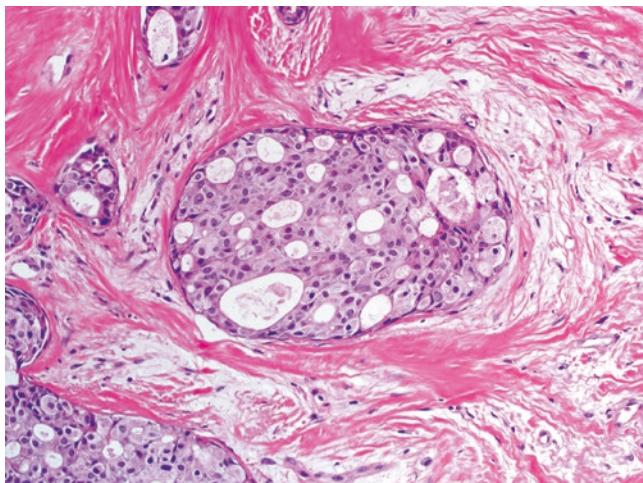


Fig. 23.15 (H&E, 200×) Carcinoma ex pleomorphic adenoma, salivary duct carcinoma

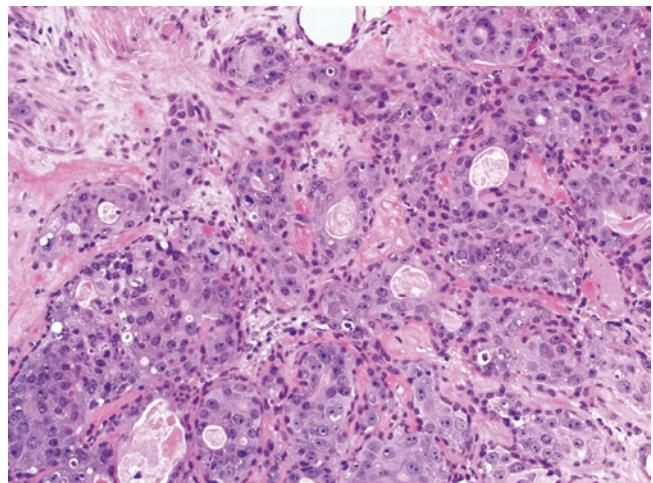


Fig. 23.18 (H&E, 200×) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

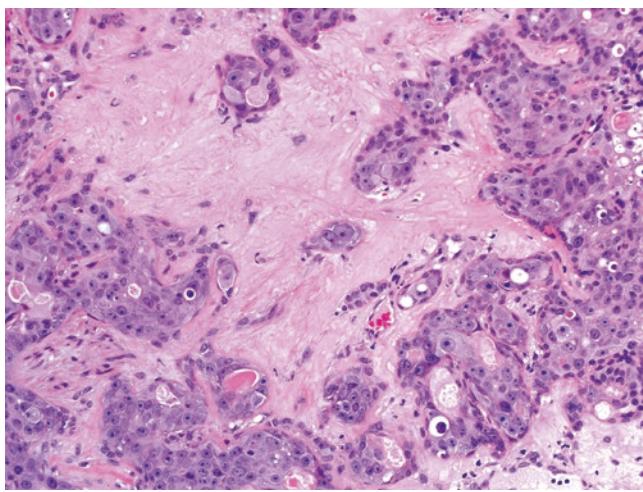


Fig. 23.19 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

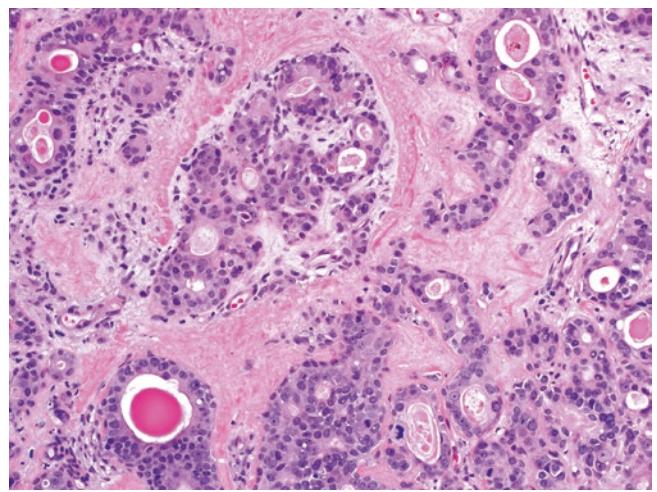


Fig. 23.22 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

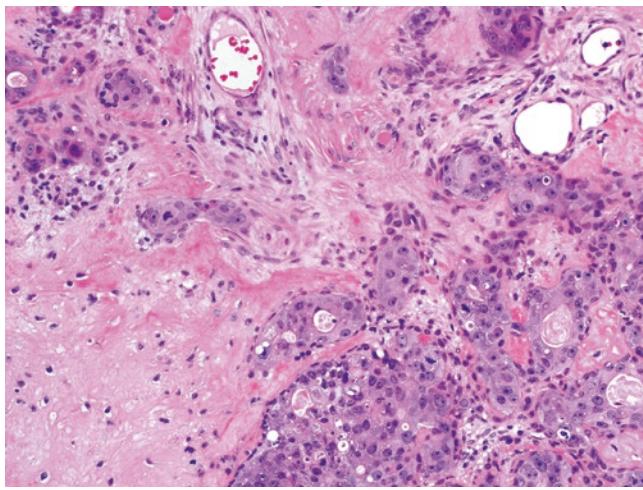


Fig. 23.20 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

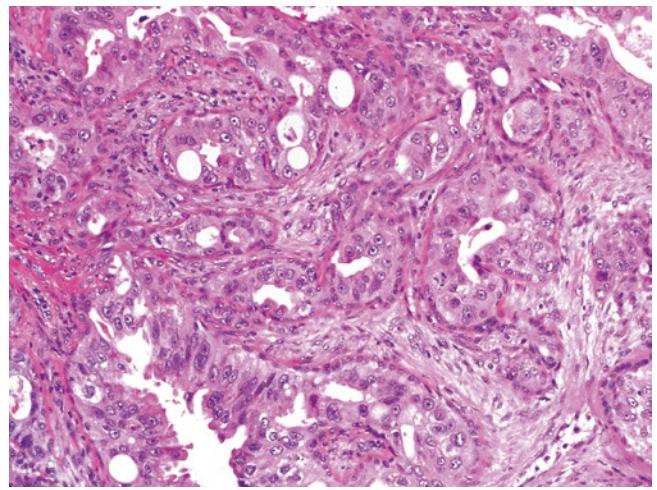


Fig. 23.23 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

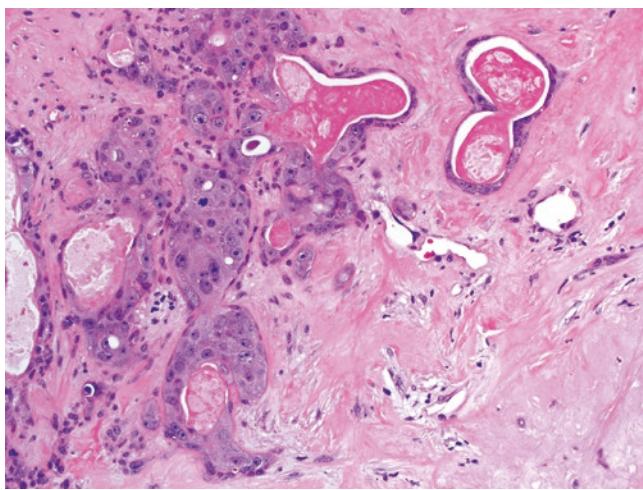


Fig. 23.21 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

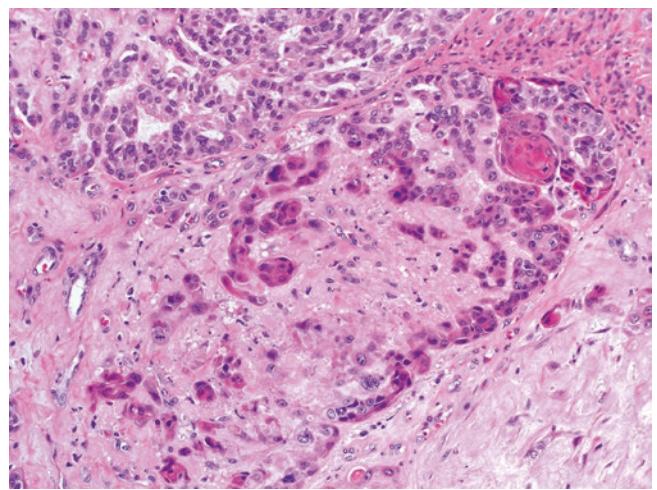


Fig. 23.24 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

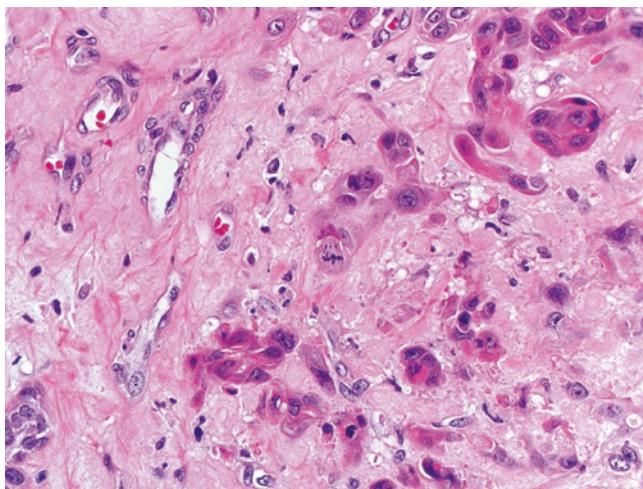


Fig. 23.25 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

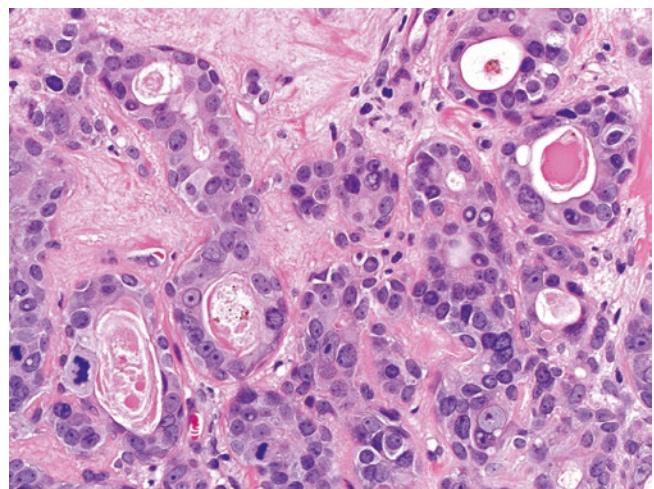


Fig. 23.28 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, mitotic activity

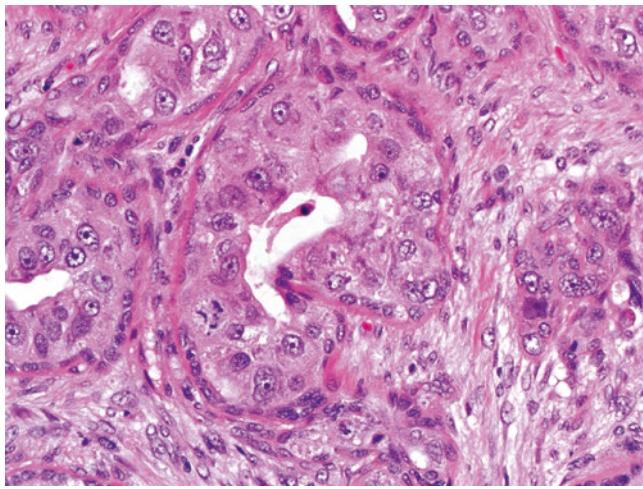


Fig. 23.26 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

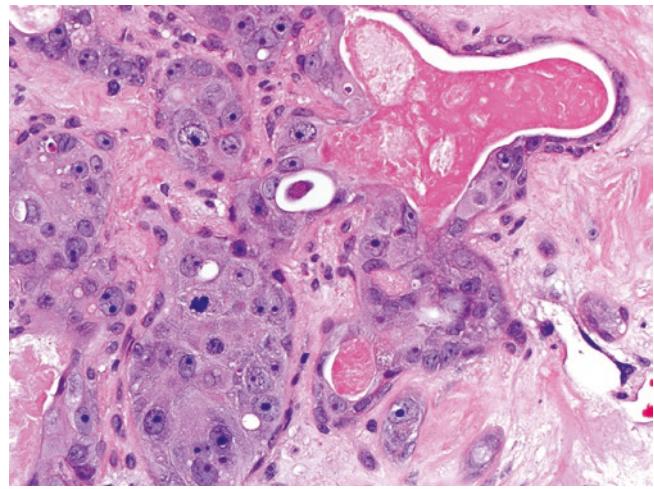


Fig. 23.29 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, mitotic activity

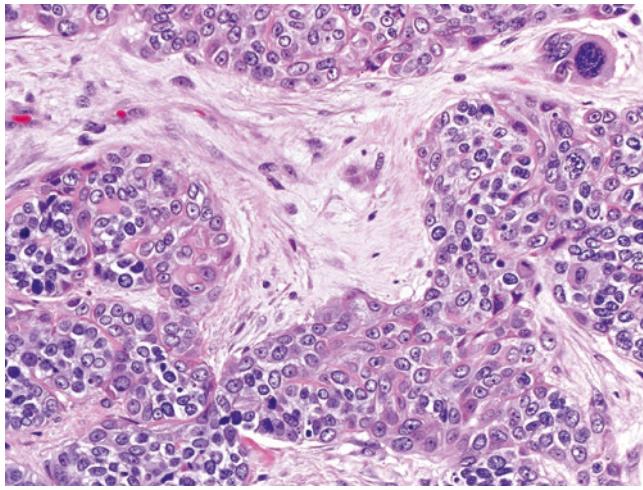


Fig. 23.27 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, cytomorphic atypia

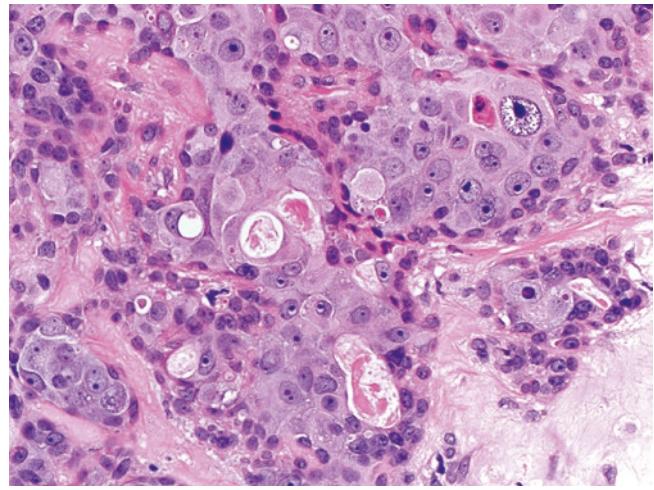


Fig. 23.30 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, mitotic activity

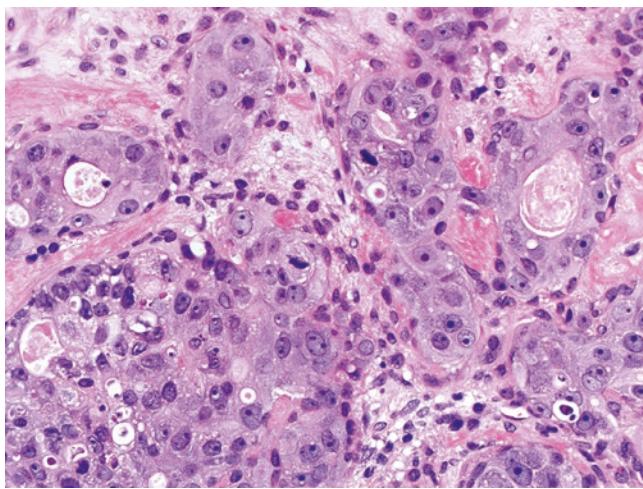


Fig. 23.31 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, mitotic activity

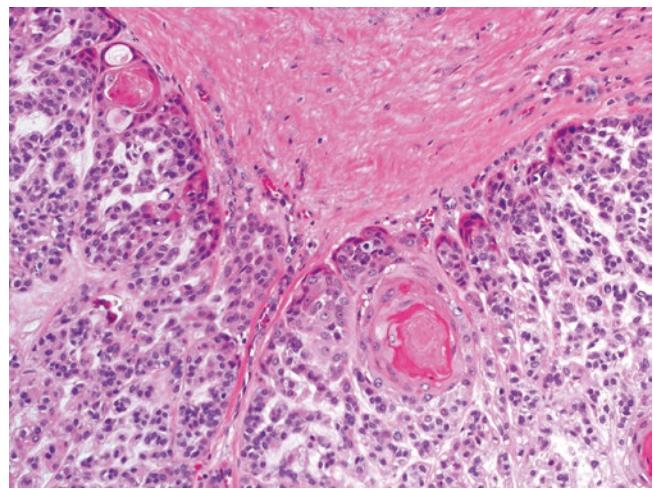


Fig. 23.34 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, squamous metaplasia and keratinization

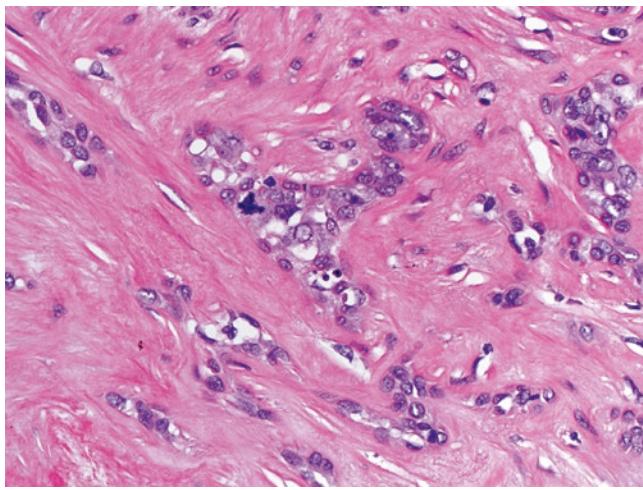


Fig. 23.32 (H&E, 400 \times) Carcinoma ex pleomorphic adenoma, mitotic activity

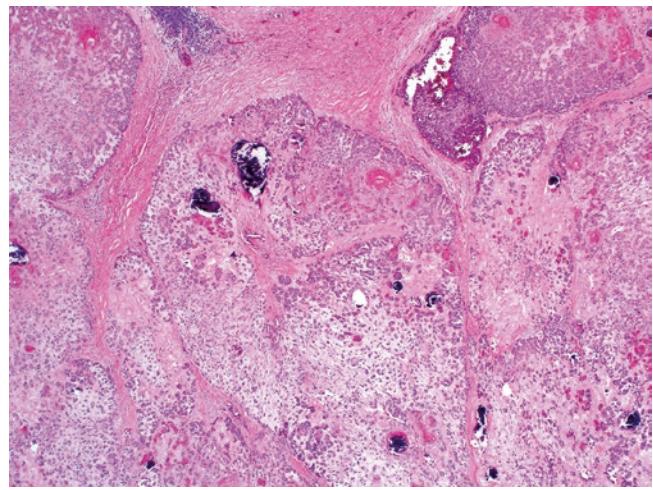


Fig. 23.35 (H&E 40 \times) Carcinoma ex pleomorphic adenoma, microcalcifications

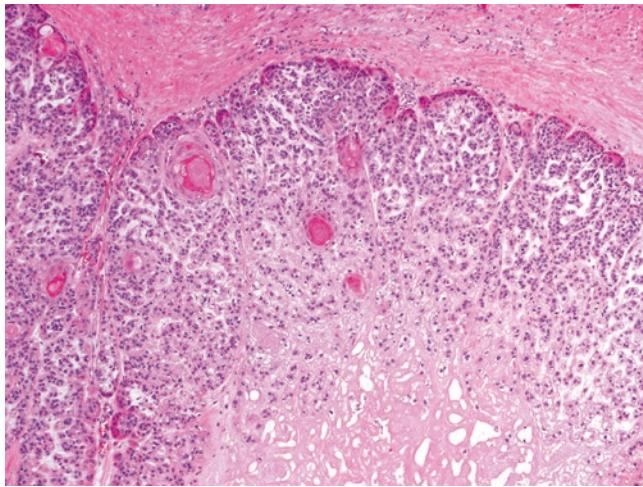


Fig. 23.33 (H&E, 100 \times) Carcinoma ex pleomorphic adenoma, squamous metaplasia and keratinization

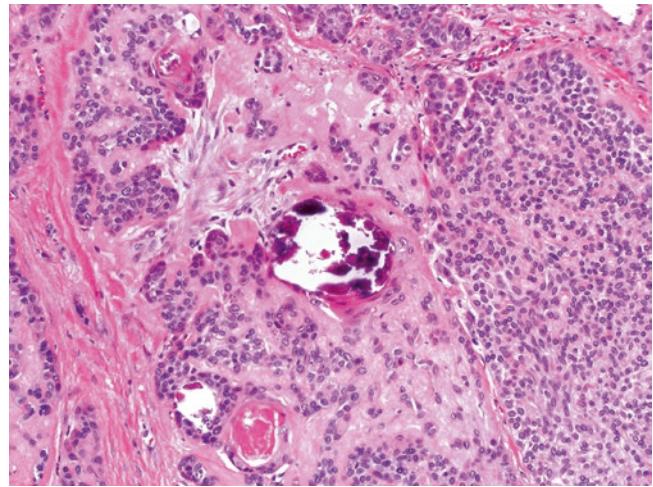


Fig. 23.36 (H&E, 200 \times) Carcinoma ex pleomorphic adenoma, microcalcifications

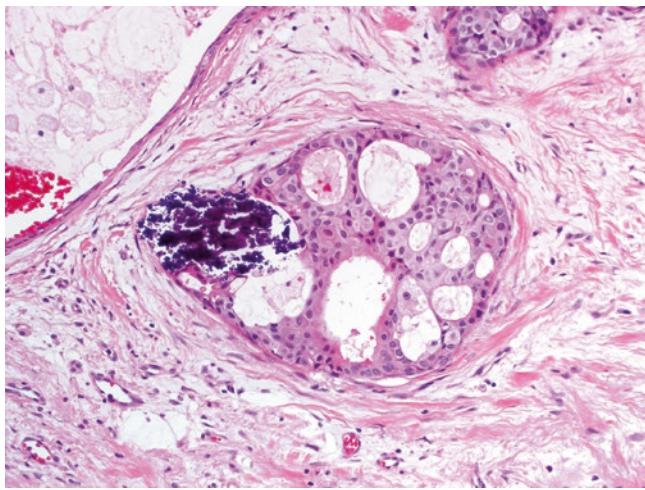


Fig. 23.37 (H&E, 200×) Carcinoma ex pleomorphic adenoma, microcalcifications

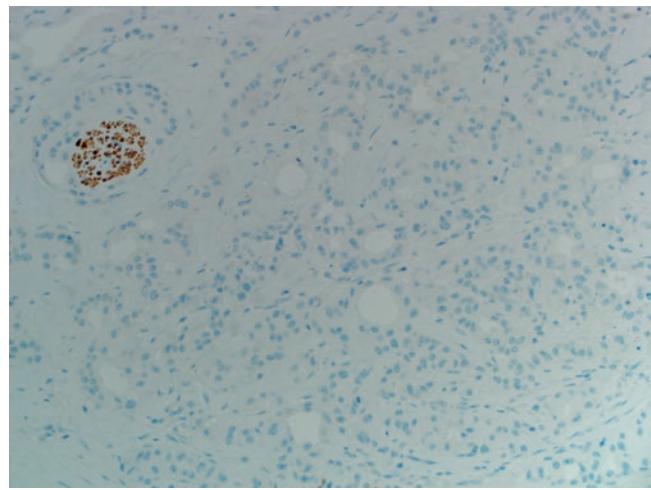


Fig. 23.39 (S-100, 200×) Carcinoma ex pleomorphic adenoma, negative immunoreactivity

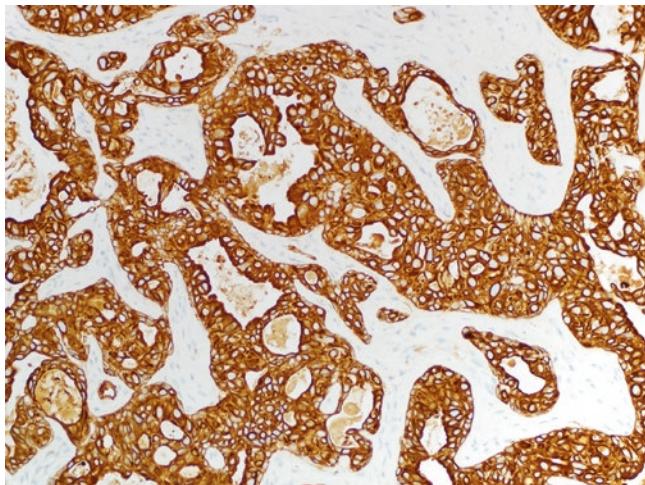


Fig. 23.38 (AE1/AE3, 200×) Carcinoma ex pleomorphic adenoma, diffuse immunoreactivity

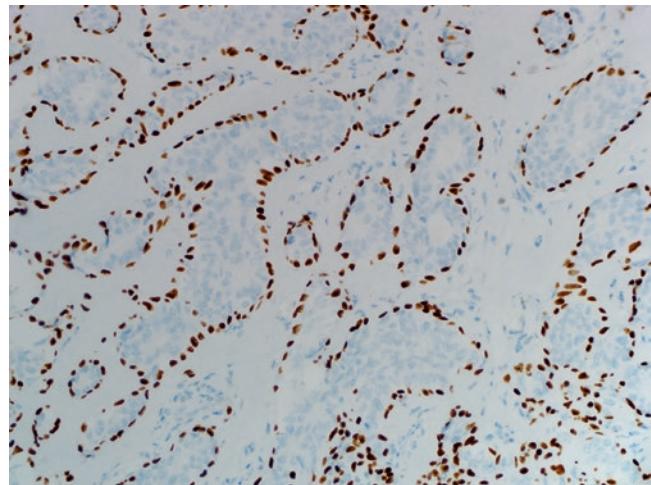


Fig. 23.40 (p63, 200×) Carcinoma ex pleomorphic adenoma, myoepithelial immunoreactivity

Suggested Reading

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Polymorphous Adenocarcinoma

24

Polymorphous adenocarcinoma affects children and adults and presents at a mean age of approximately 60 years. Women are involved more than men. The majority of cases involve minor salivary glands, presenting as single or multiple masses. Most cases of polymorphous adenocarcinoma behave as low

to intermediate-grade malignancies. Polymorphous adenocarcinoma may be circumscribed or infiltrative, comprised almost exclusively of one cell type (ductal), and exhibit a variety of architectural patterns (solid, trabecular, cribriform, and cystic) (Figs. 24.1–24.28).

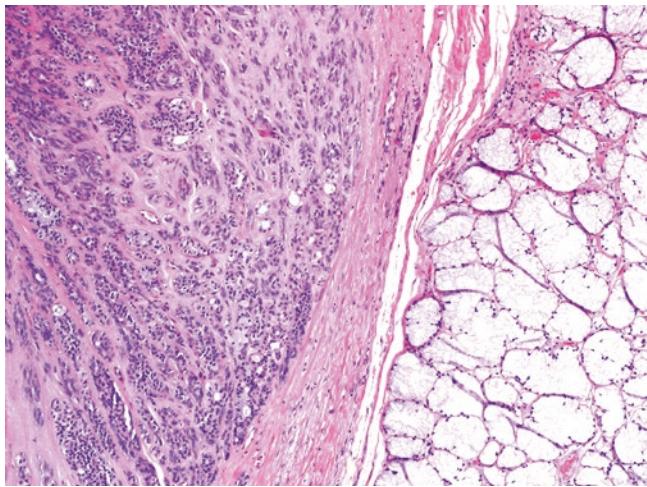


Fig. 24.1 (H&E, 100×) Polymorphous adenocarcinoma, circumscribed

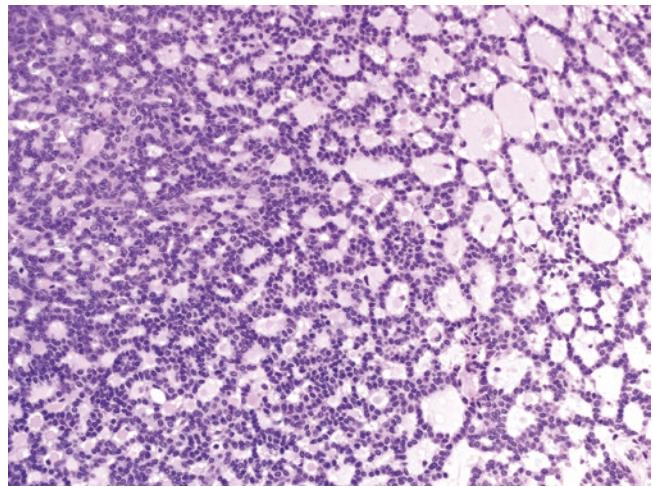


Fig. 24.4 (H&E, 200×) Polymorphous adenocarcinoma, ducts

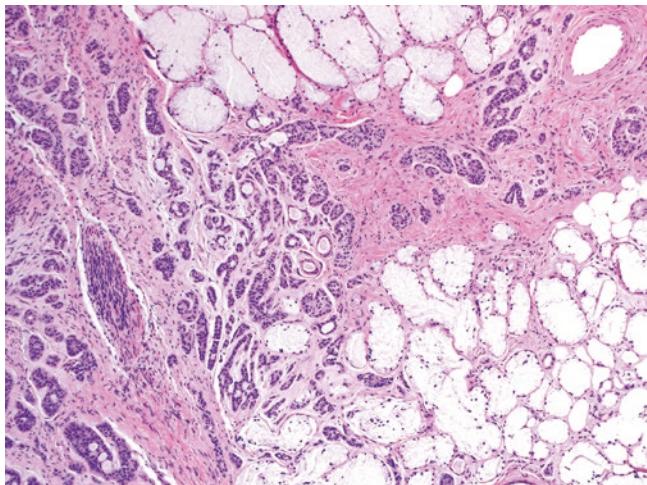


Fig. 24.2 (H&E, 100×) Polymorphous adenocarcinoma, infiltrative

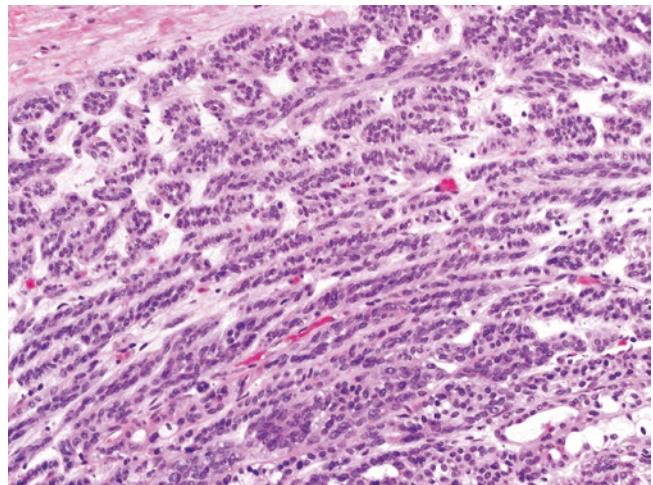


Fig. 24.5 (H&E, 200×) Polymorphous adenocarcinoma, ducts

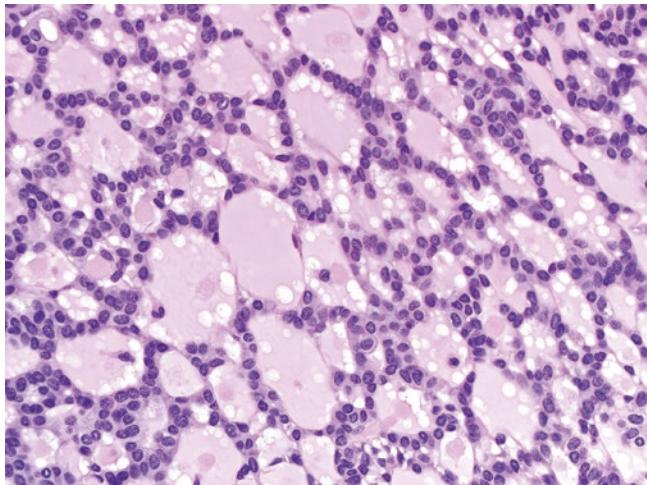


Fig. 24.3 (H&E, 400×) Polymorphous adenocarcinoma, monophasic

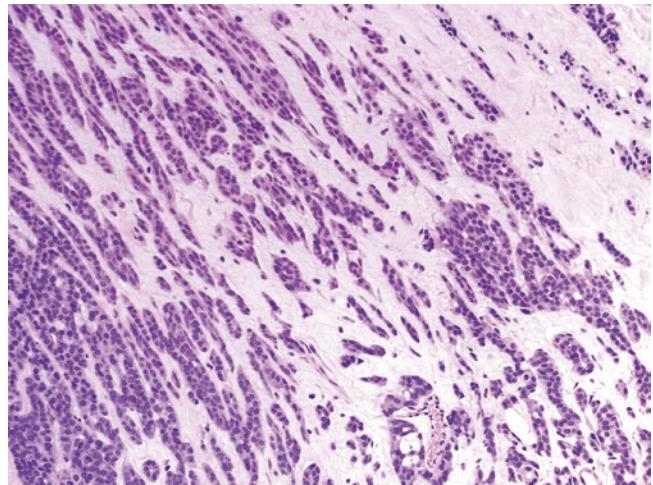


Fig. 24.6 (H&E, 200×) Polymorphous adenocarcinoma, ducts

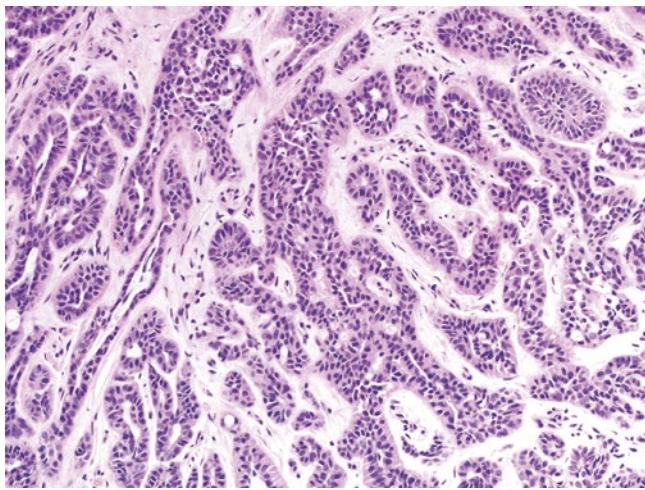


Fig. 24.7 (H&E, 200x) Polymorphous adenocarcinoma, ducts

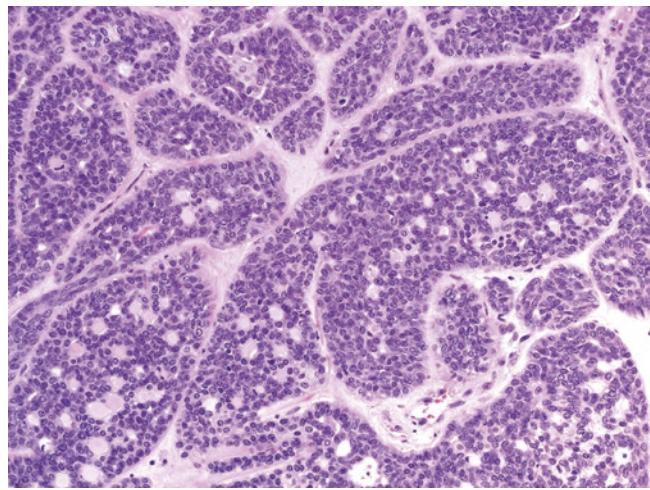


Fig. 24.10 (H&E, 100x) Polymorphous adenocarcinoma, cribriform

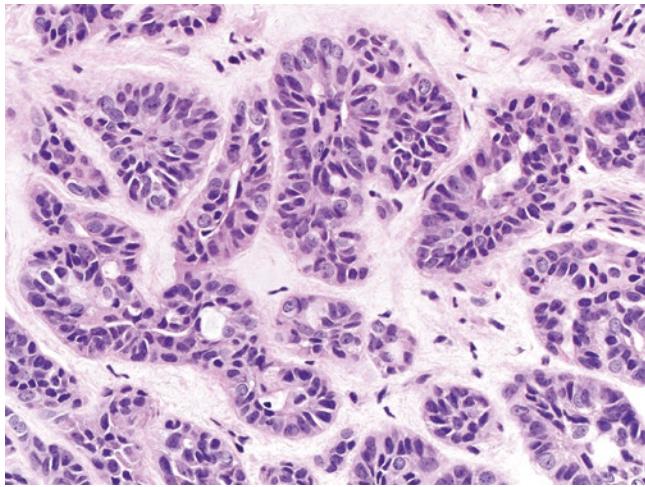


Fig. 24.8 (H&E, 400x) Polymorphous adenocarcinoma, ducts

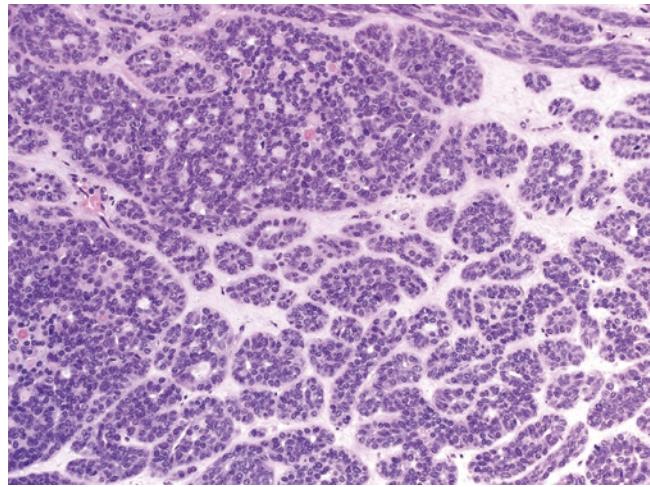


Fig. 24.11 (H&E, 200x) Polymorphous adenocarcinoma, cribriform

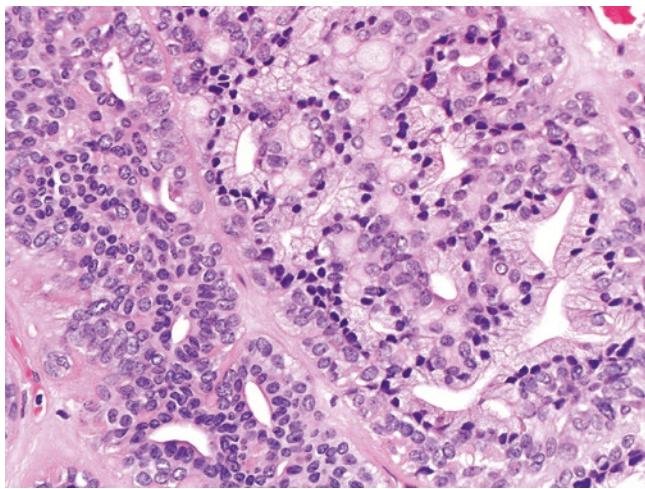


Fig. 24.9 (H&E, 400x) Polymorphous adenocarcinoma, ducts

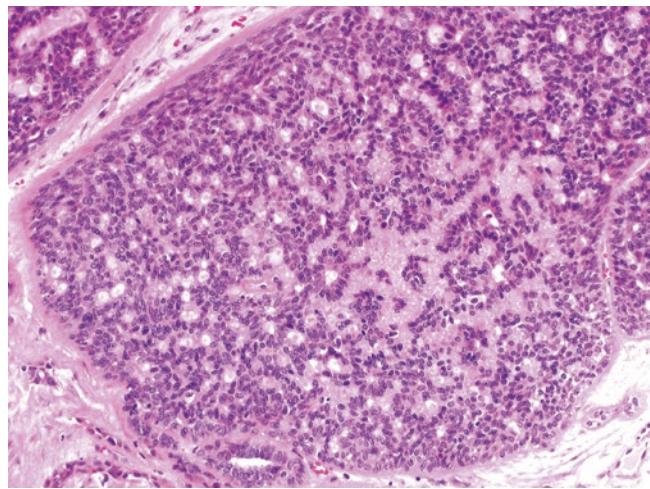


Fig. 24.12 (H&E, 200x) Polymorphous adenocarcinoma, cribriform

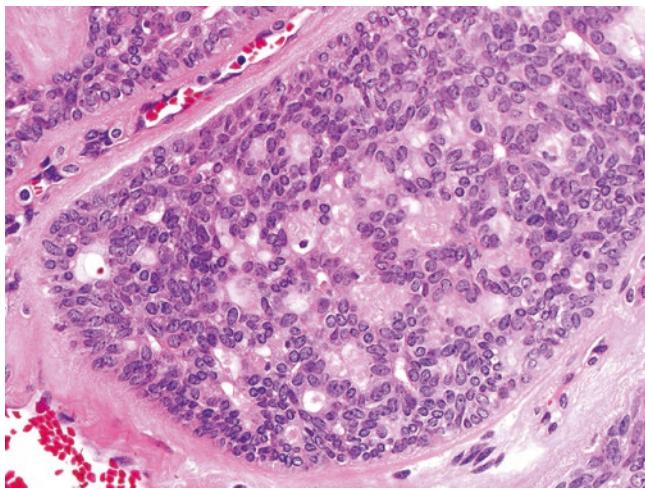


Fig. 24.13 (H&E, 400 \times) Polymorphous adenocarcinoma, cribriform

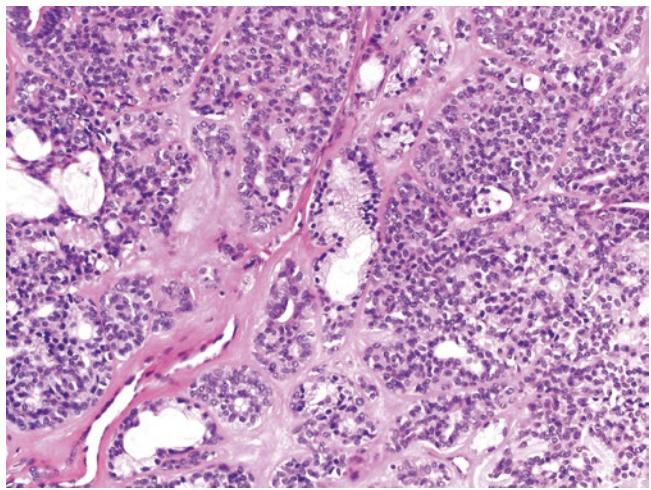


Fig. 24.16 (H&E, 200 \times) Polymorphous adenocarcinoma, mucinous metaplasia

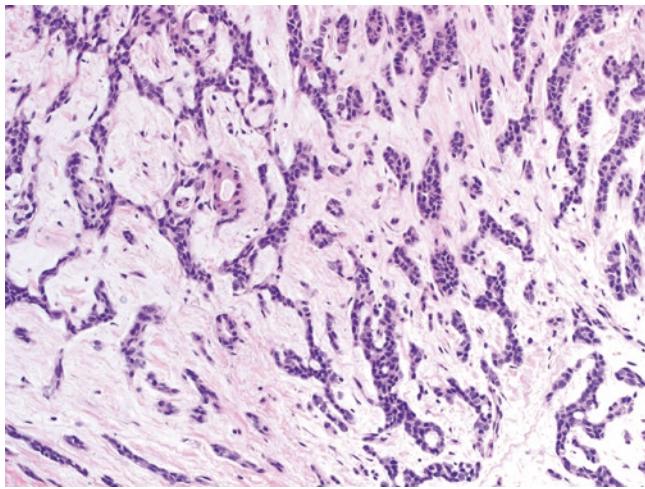


Fig. 24.14 (H&E, 200 \times) Polymorphous adenocarcinoma, myxoid

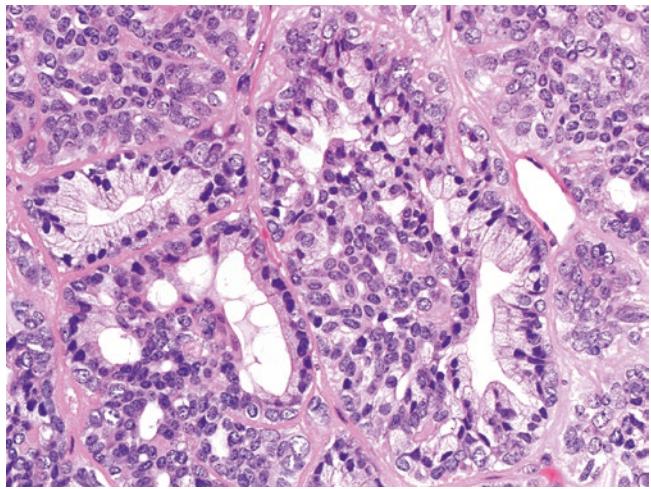


Fig. 24.17 (H&E, 400 \times) Polymorphous adenocarcinoma, mucinous metaplasia

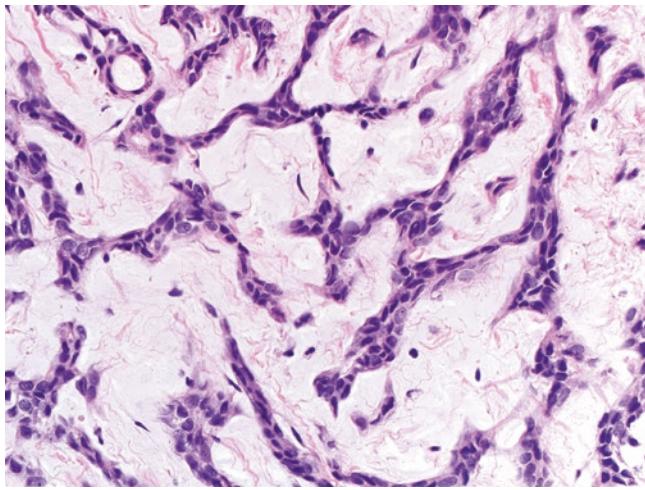


Fig. 24.15 (H&E, 400 \times) Polymorphous adenocarcinoma, myxoid

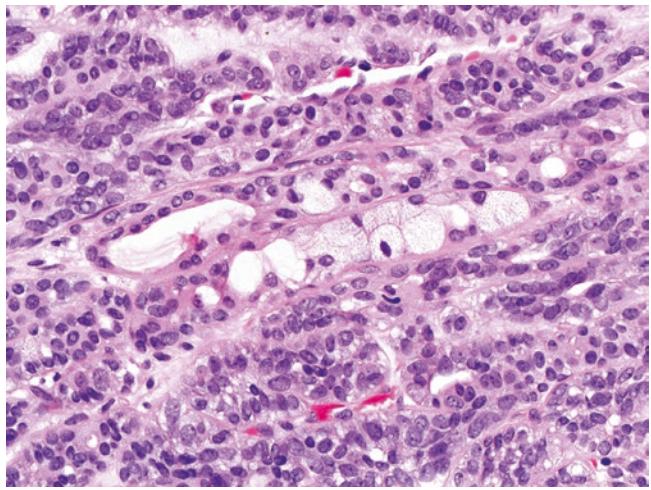


Fig. 24.18 (H&E, 400 \times) Polymorphous adenocarcinoma, mucinous metaplasia

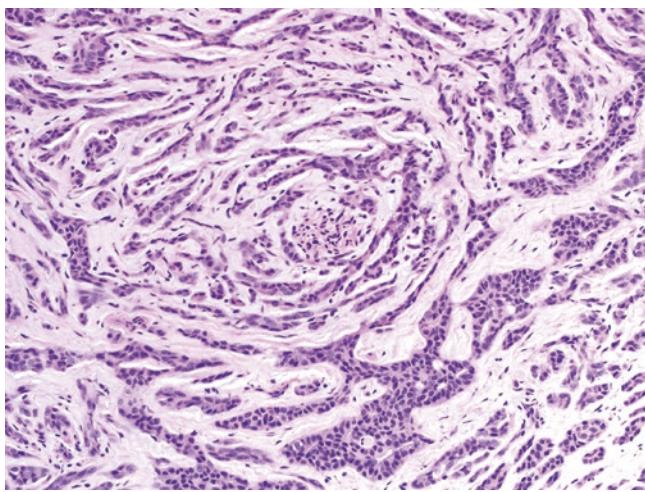


Fig. 24.19 (H&E, 200 \times) Polymorphous adenocarcinoma, neurotropism

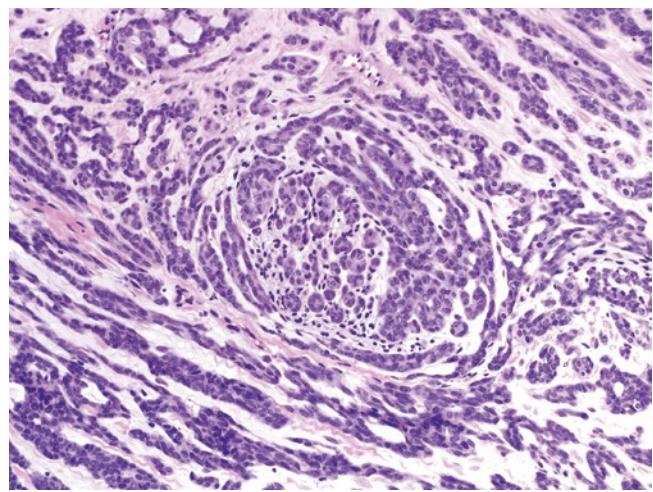


Fig. 24.22 (H&E, 200 \times) Polymorphous adenocarcinoma, perineural invasion

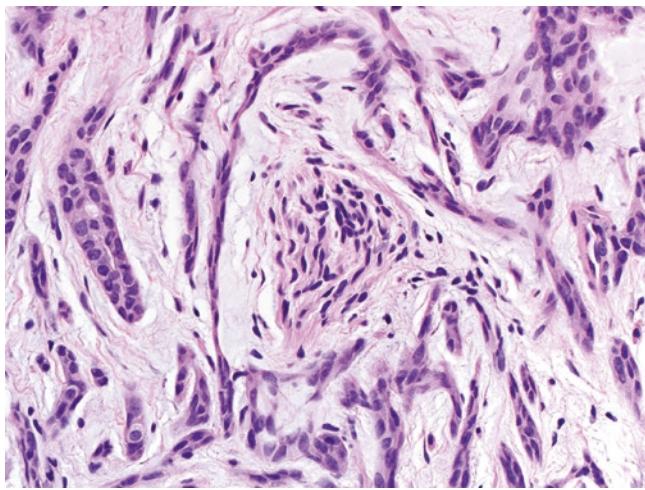


Fig. 24.20 (H&E, 400 \times) Polymorphous adenocarcinoma, neurotropism

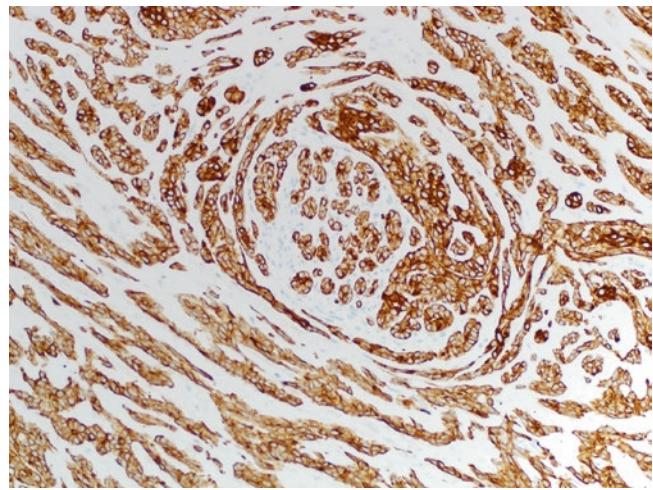


Fig. 24.23 (AE1/AE3, 200 \times) Polymorphous adenocarcinoma, diffuse immunoreactivity

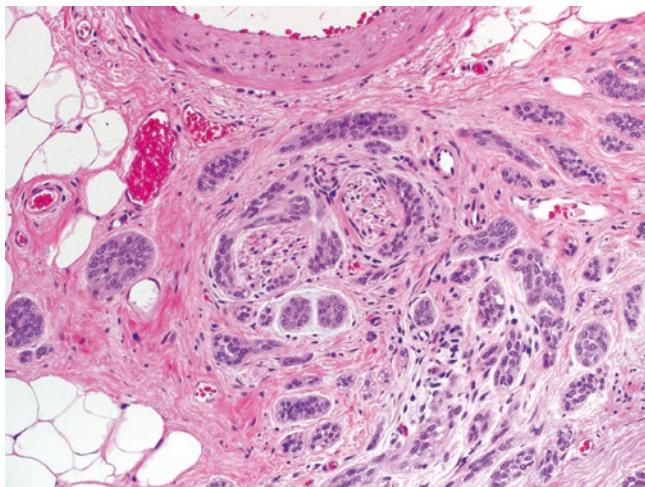


Fig. 24.21 (H&E, 200 \times) Polymorphous adenocarcinoma, perineural invasion

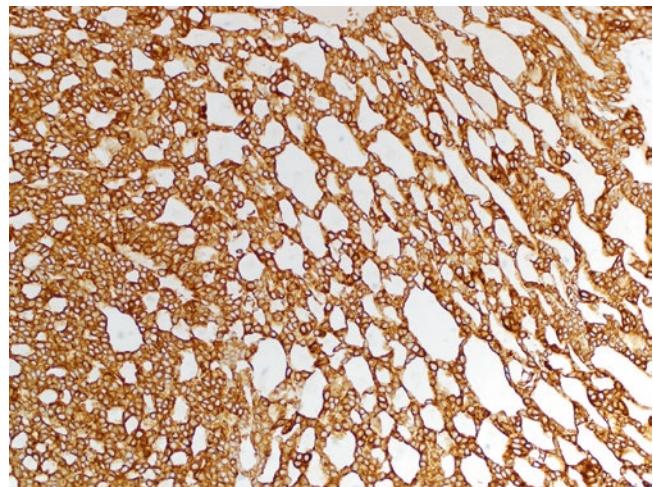


Fig. 24.24 (AE1/AE3, 200 \times) Polymorphous adenocarcinoma, diffuse immunoreactivity

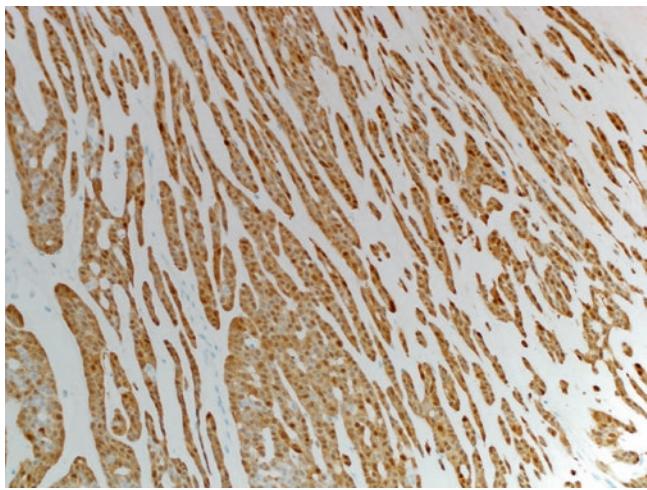


Fig. 24.25 (S-100, 200 \times) Polymorphous adenocarcinoma, diffuse immunoreactivity

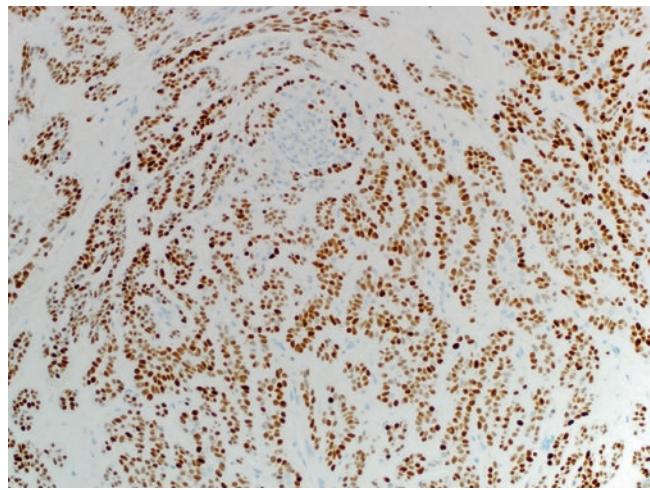


Fig. 24.27 (p63, 200 \times) Polymorphous adenocarcinoma, diffuse immunoreactivity

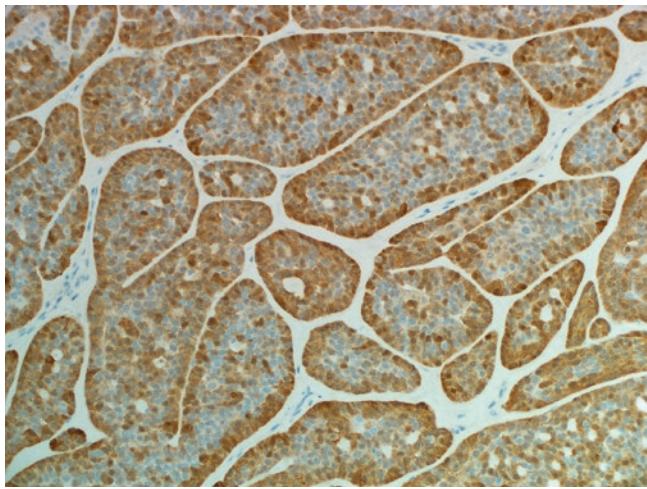


Fig. 24.26 (S-100, 200 \times) Polymorphous adenocarcinoma, diffuse immunoreactivity

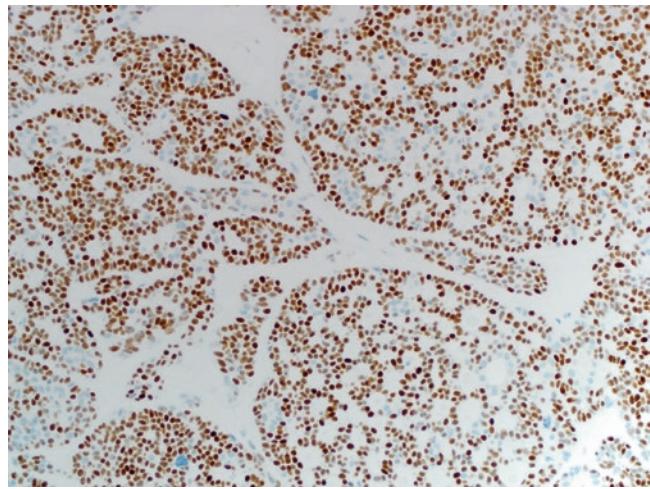


Fig. 24.28 (p63, 200 \times) Polymorphous adenocarcinoma, focal immunoreactivity

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Salivary Duct Carcinoma

25

Salivary duct carcinoma affects primarily adults and presents at a mean age of approximately 60 years. Women are involved less than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of salivary duct carcinoma behave as high-grade malignancies.

Salivary duct carcinoma is infiltrative, comprised almost exclusively of one cell type (ductal), and may exhibit a variety of architectural patterns (solid, trabecular, cribriform, papillary, and cystic) (Figs. 25.1–25.27).

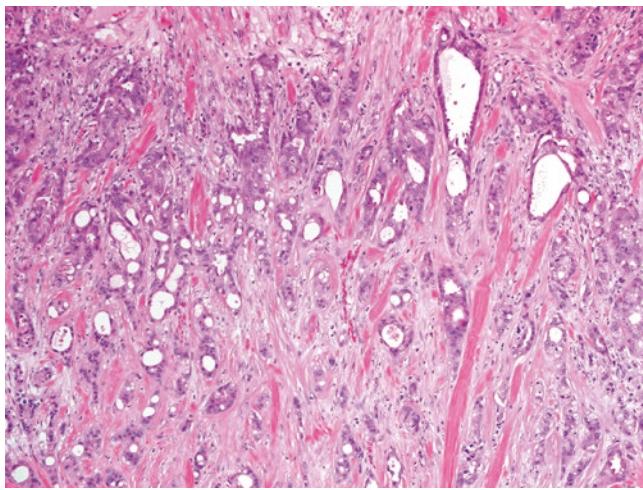


Fig. 25.1 (H&E, 100×) Salivary duct carcinoma, infiltrative

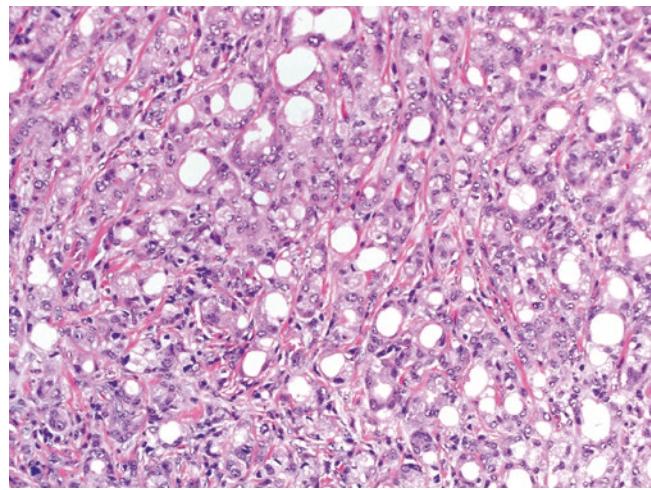


Fig. 25.4 (H&E, 200×) Salivary duct carcinoma, microcystic

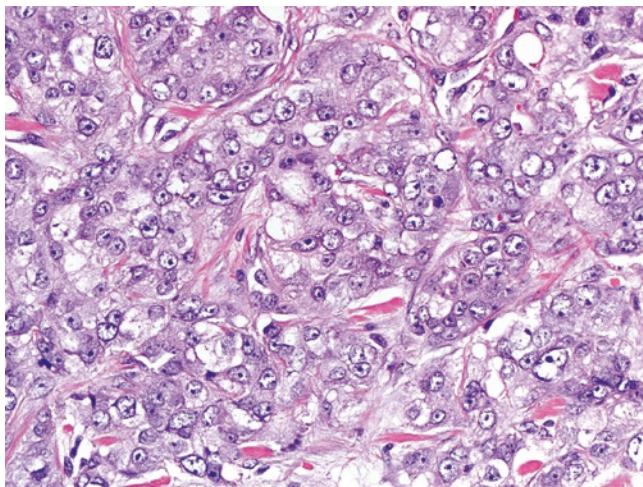


Fig. 25.2 (H&E, 400×) Salivary duct carcinoma, monophasic

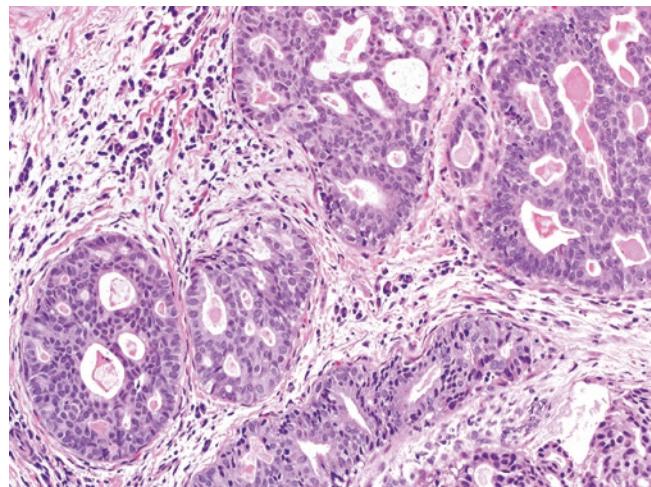


Fig. 25.5 (H&E, 200×) Salivary duct carcinoma, cribriform

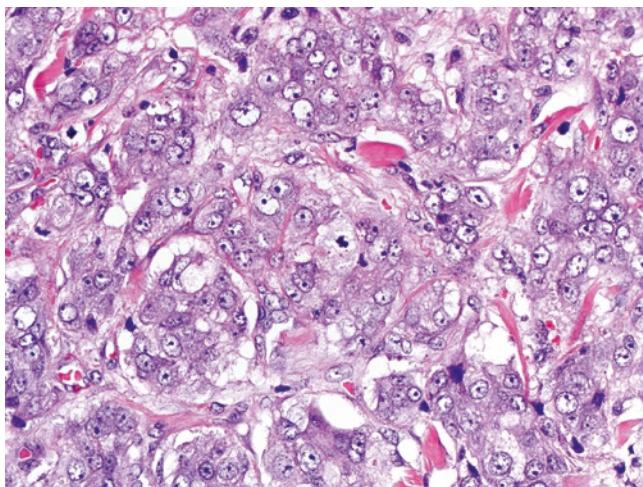


Fig. 25.3 (H&E, 400×) Salivary duct carcinoma, solid

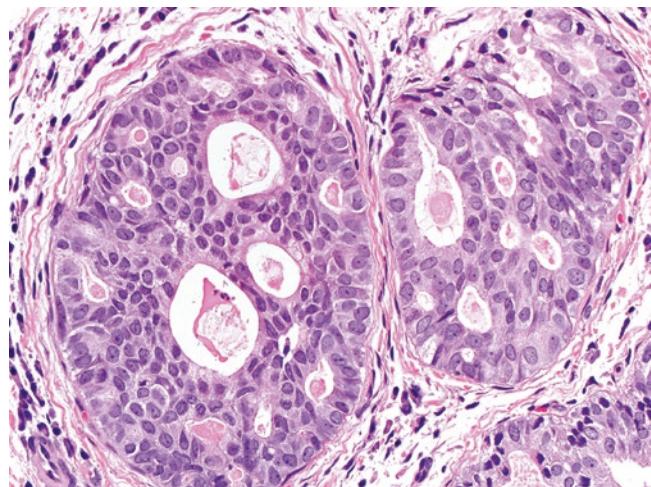


Fig. 25.6 (H&E, 400×) Salivary duct carcinoma, cribriform

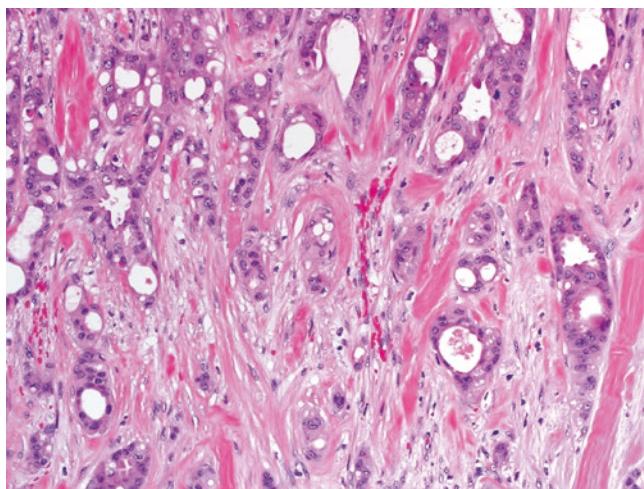


Fig. 25.7 (H&E, 200 \times) Salivary duct carcinoma, trabecular

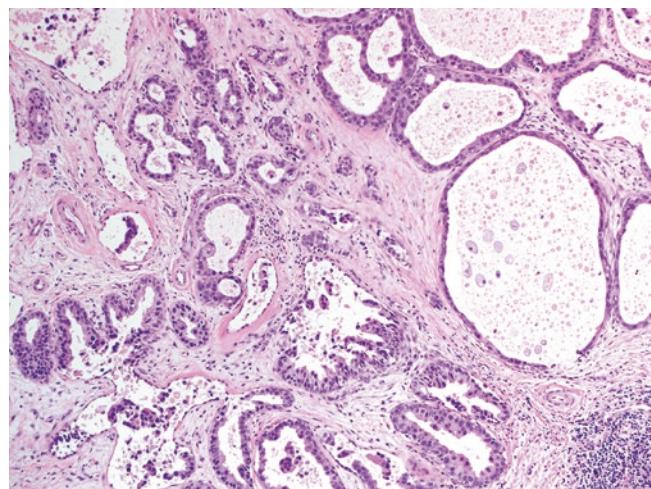


Fig. 25.10 (H&E, 100 \times) Salivary duct carcinoma, micropapillary

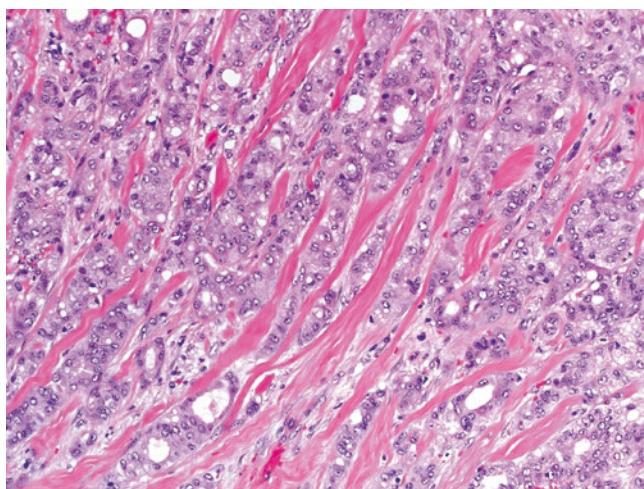


Fig. 25.8 (H&E, 200 \times) Salivary duct carcinoma, trabecular

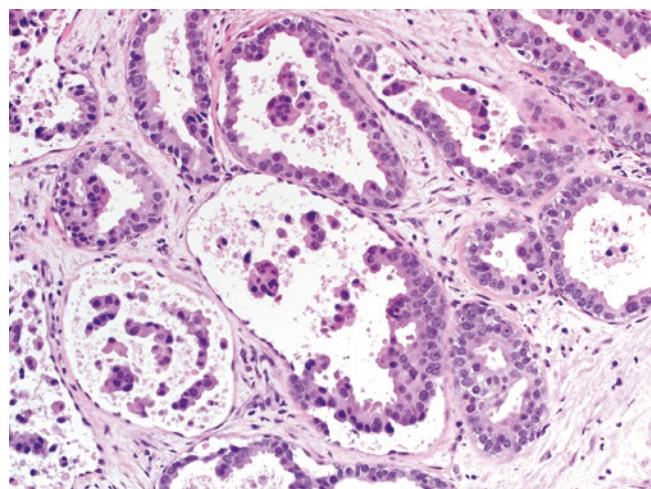


Fig. 25.11 (H&E, 200 \times) Salivary duct carcinoma, micropapillary

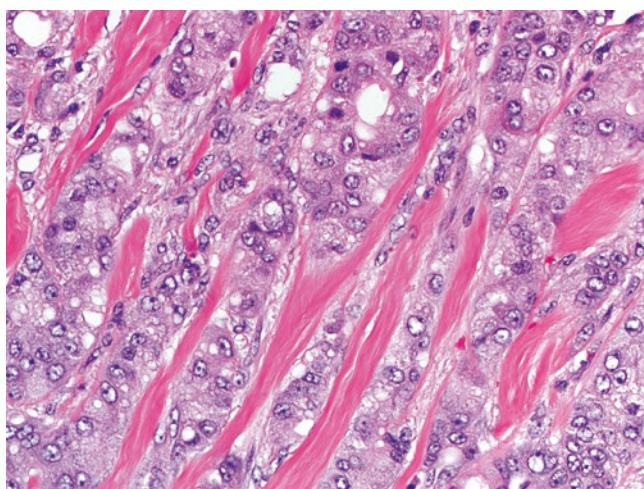


Fig. 25.9 (H&E, 400 \times) Salivary duct carcinoma, trabecular

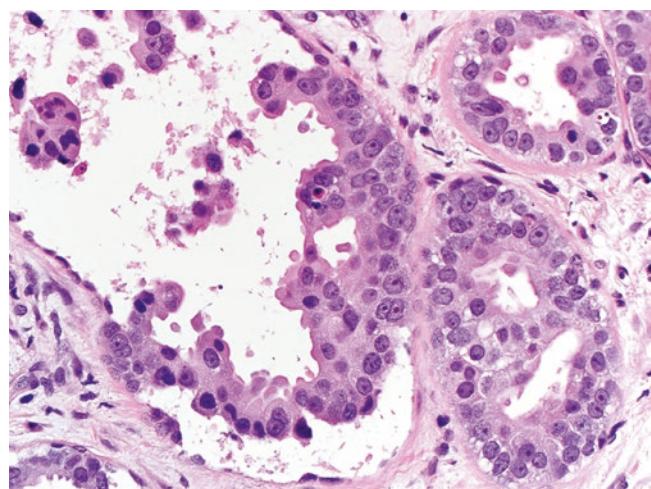


Fig. 25.12 (H&E, 400 \times) Salivary duct carcinoma, micropapillary

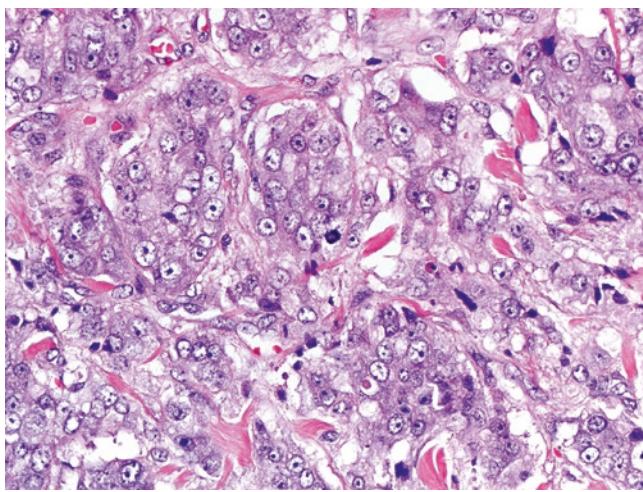


Fig. 25.13 (H&E, 400×) Salivary duct carcinoma, mitotic activity

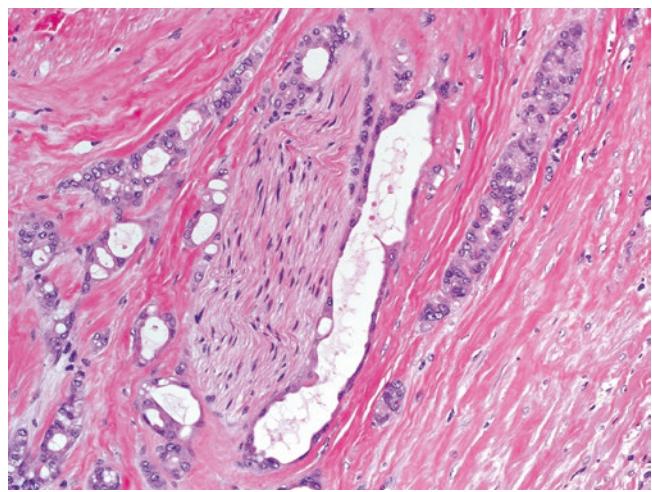


Fig. 25.16 (H&E, 200×) Salivary duct carcinoma, perineural invasion

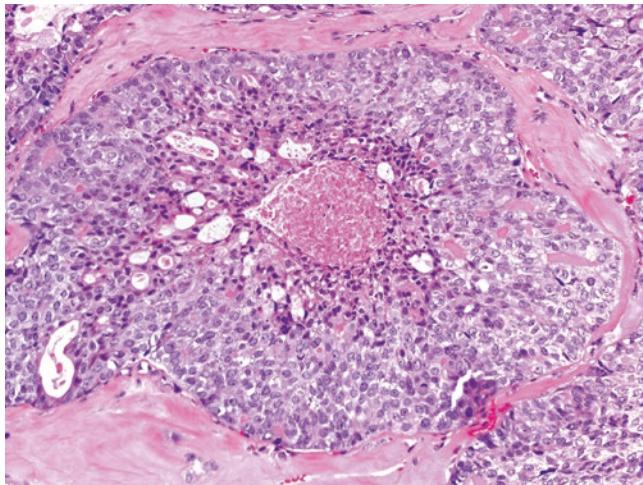


Fig. 25.14 (H&E, 200×) Salivary duct carcinoma, necrosis

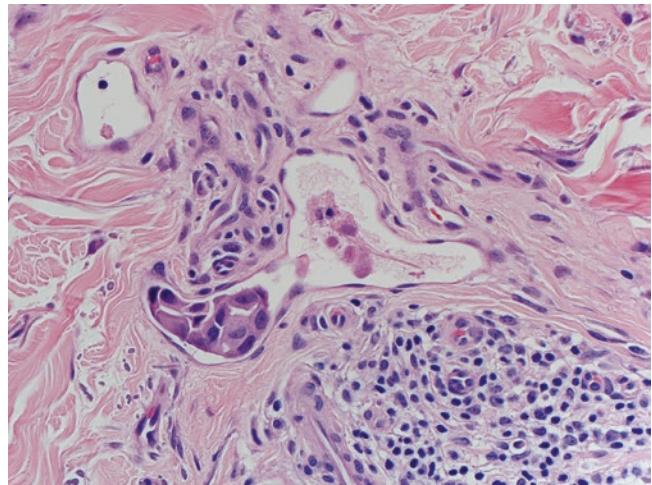


Fig. 25.17 (H&E, 400×) Salivary duct carcinoma, angiolympathic invasion

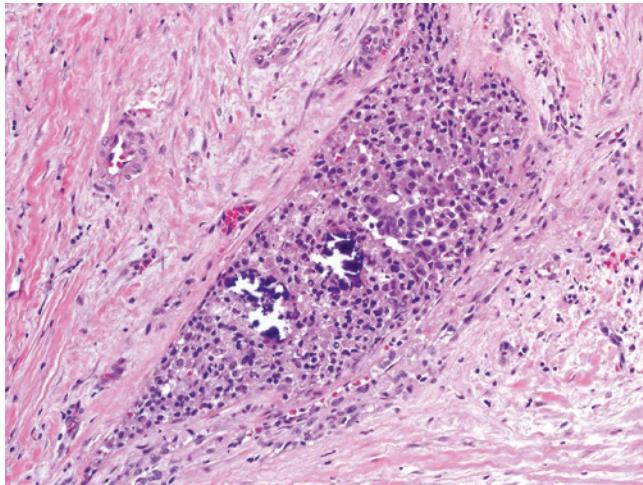


Fig. 25.15 (H&E, 200×) Salivary duct carcinoma, microcalcifications

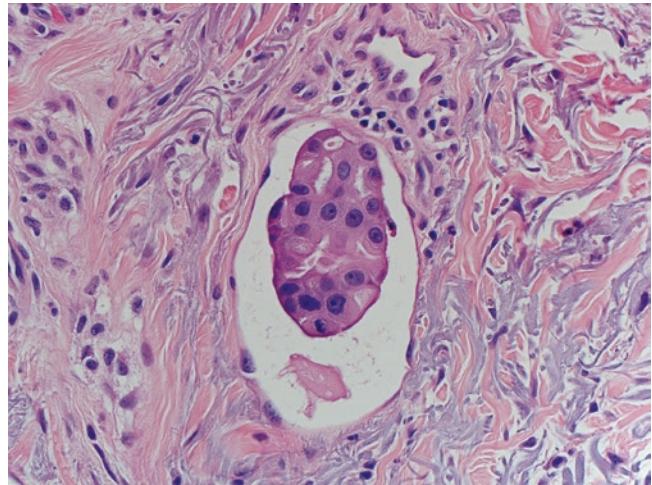


Fig. 25.18 (H&E, 400×) Salivary duct carcinoma, angiolympathic invasion

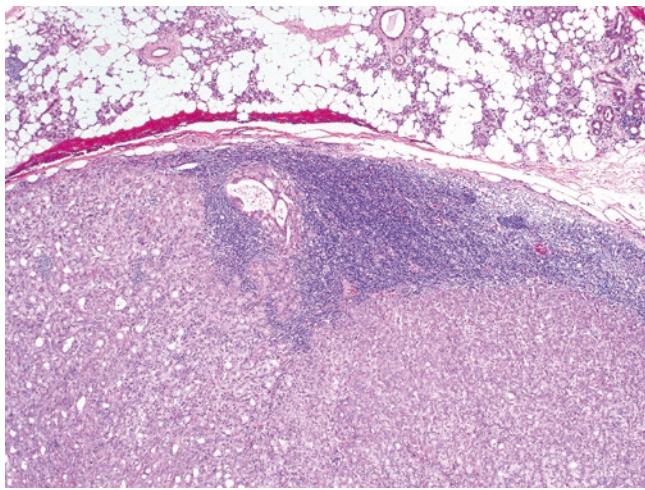


Fig. 25.19 (H&E, 40 \times) Salivary duct carcinoma, intraparotid lymph node metastasis

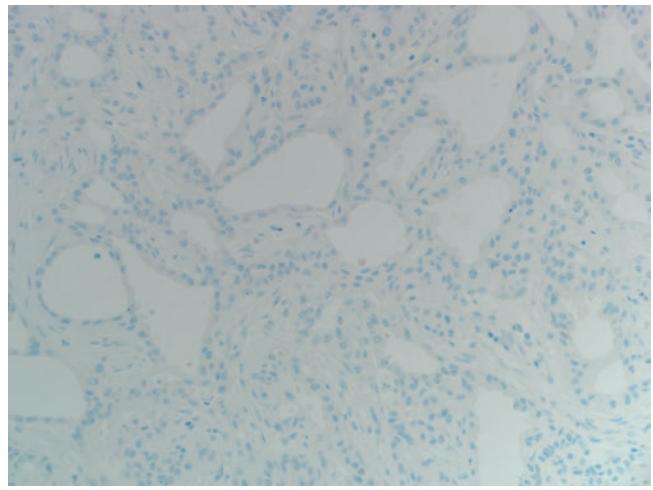


Fig. 25.22 (S-100, 200 \times) Salivary duct carcinoma, negative immunoreactivity

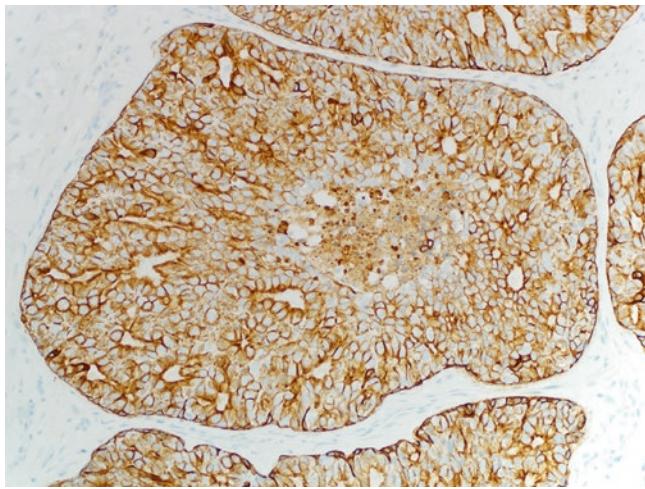


Fig. 25.20 (AE1/AE3, 200 \times) Salivary duct carcinoma, diffuse immunoreactivity

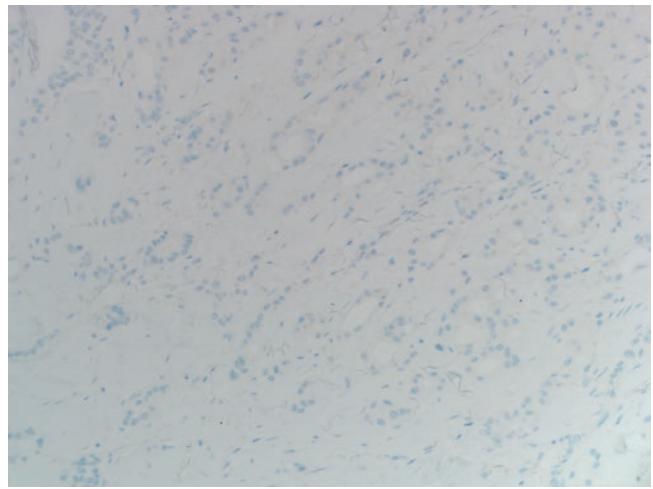


Fig. 25.23 (p63, 200 \times) Salivary duct carcinoma, negative immunoreactivity

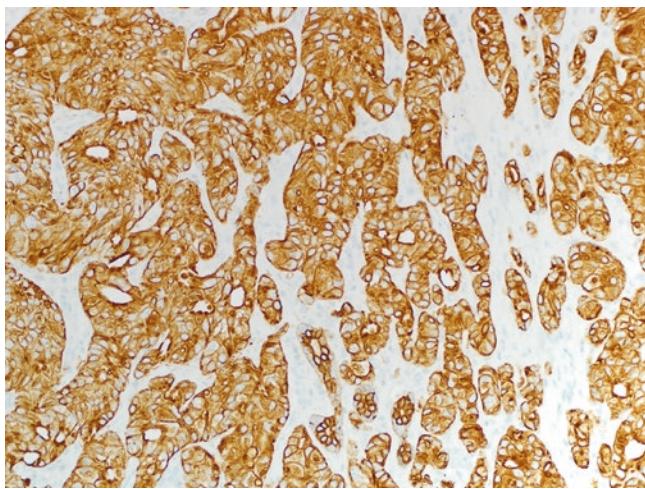


Fig. 25.21 (AE1/AE3, 200 \times) Salivary duct carcinoma, diffuse immunoreactivity

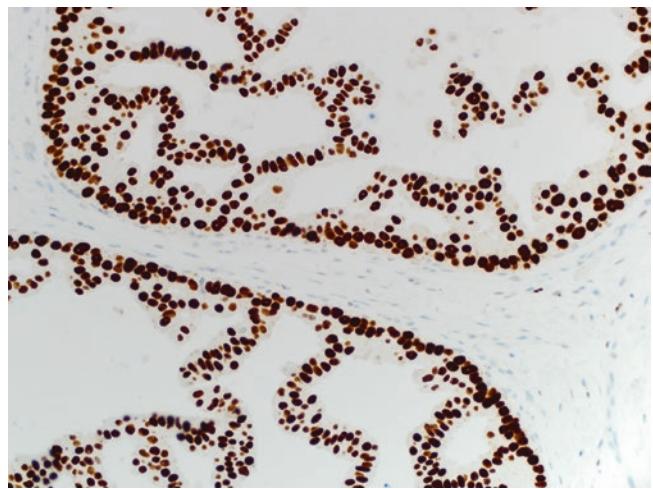


Fig. 25.24 (Androgen receptor, 200 \times) Salivary duct carcinoma, diffuse immunoreactivity

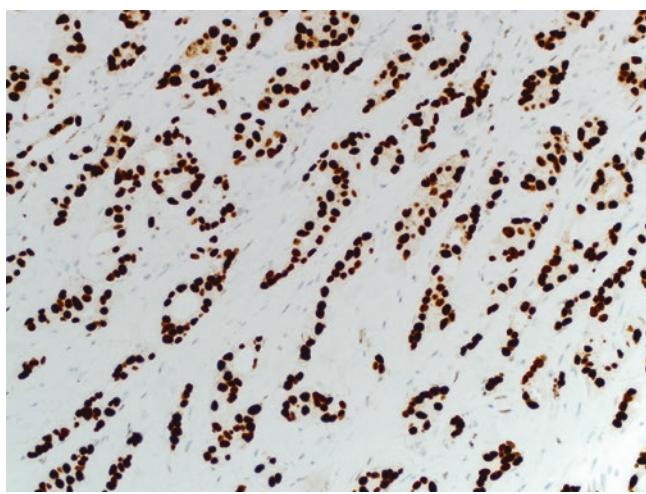


Fig. 25.25 (Androgen receptor, 200×) Salivary duct carcinoma, diffuse immunoreactivity

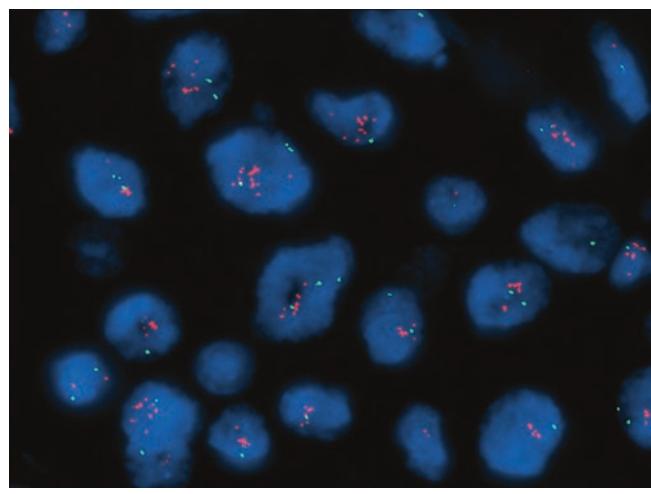


Fig. 25.27 (Fluorescent in situ hybridization, 600X) Salivary duct carcinoma, *HER2* amplification

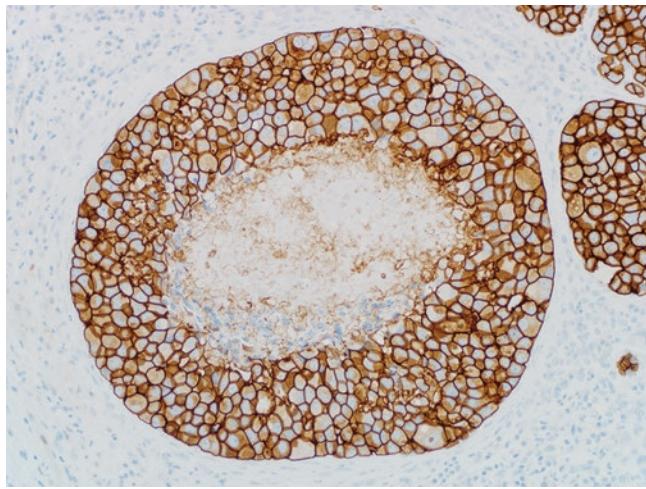


Fig. 25.26 (HER2, 200×) Salivary duct carcinoma, membranous immunoreactivity

Suggested Reading

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Secretory Carcinoma

26

Secretory carcinoma affects children and adults and presents at a mean age of approximately 45 years. Women and men are involved with similar frequency. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of secretory carcinoma behave as low to intermediate-grade malignancies; however, a subset of cases with high-grade transformation (necrosis, elevated mitotic

activity, and cytomorphologic atypia) are predisposed to recurrence, lymph node involvement, and distant metastasis. Secretory carcinoma may be circumscribed or infiltrative, comprised of multiple cell types, and exhibit a variety of architectural patterns (solid, follicular, papillary, and cystic) (Figs. 26.1–26.30).

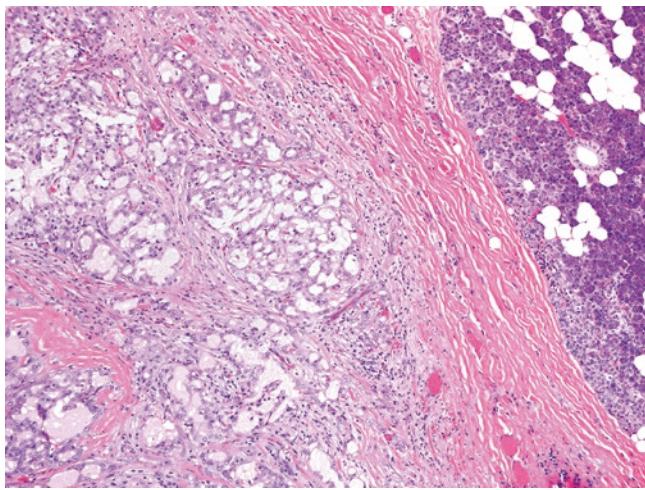


Fig. 26.1 (H&E, 100×) Secretory carcinoma, circumscribed

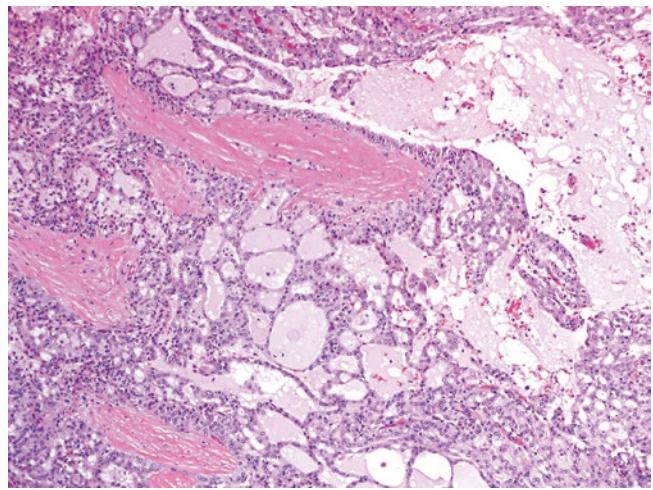


Fig. 26.4 (H&E, 100×) Secretory carcinoma, follicular

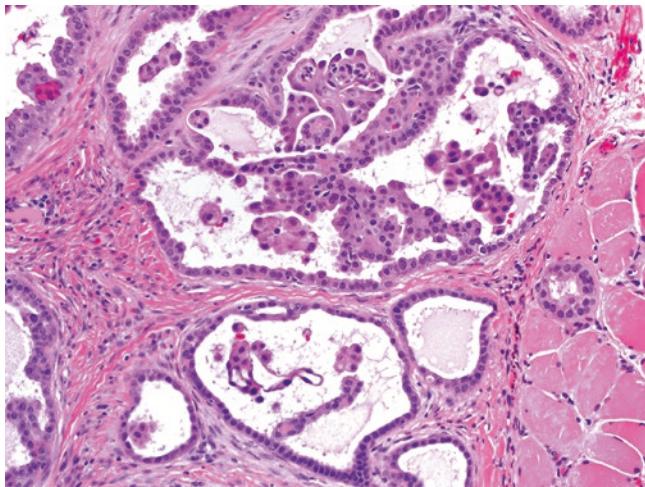


Fig. 26.2 (H&E, 200×) Secretory carcinoma, infiltrative

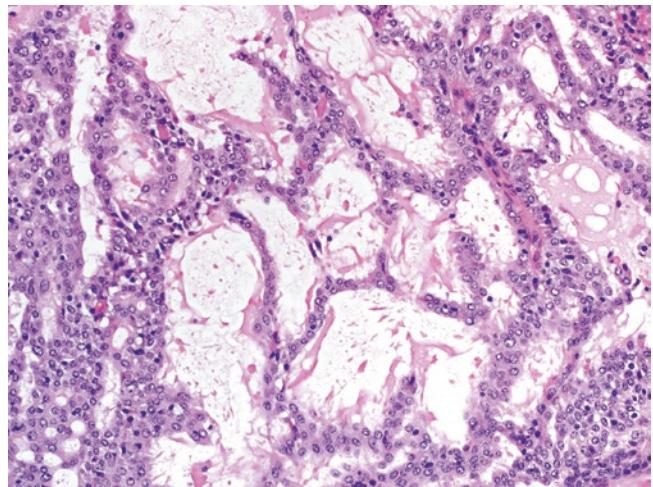


Fig. 26.5 (H&E, 200×) Secretory carcinoma, follicular

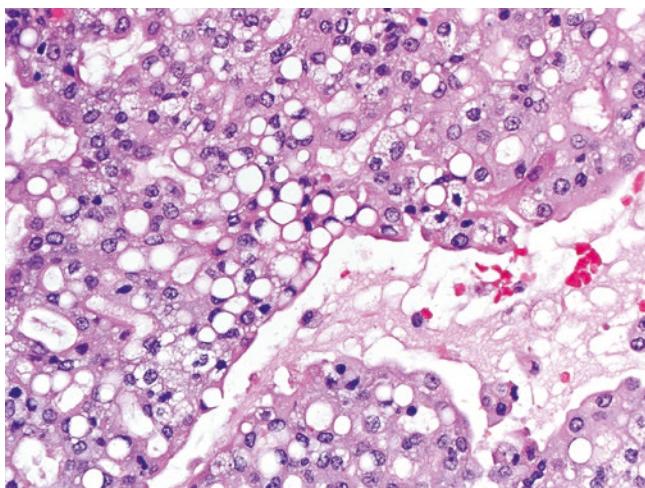


Fig. 26.3 (H&E, 400×) Secretory carcinoma, triphasic or more

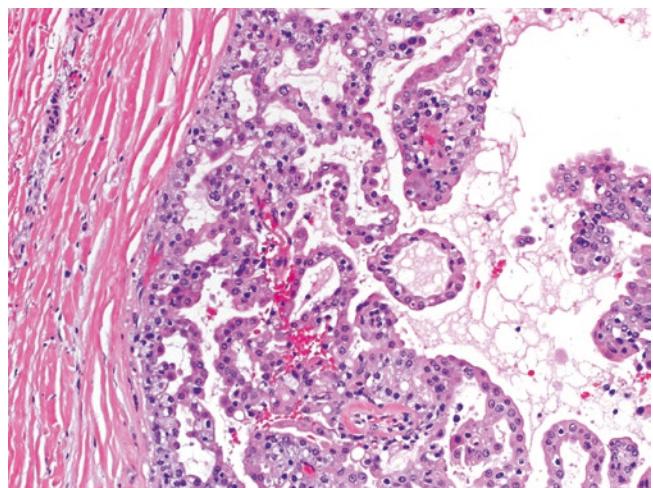


Fig. 26.6 (H&E, 200×) Secretory carcinoma, micropapillary

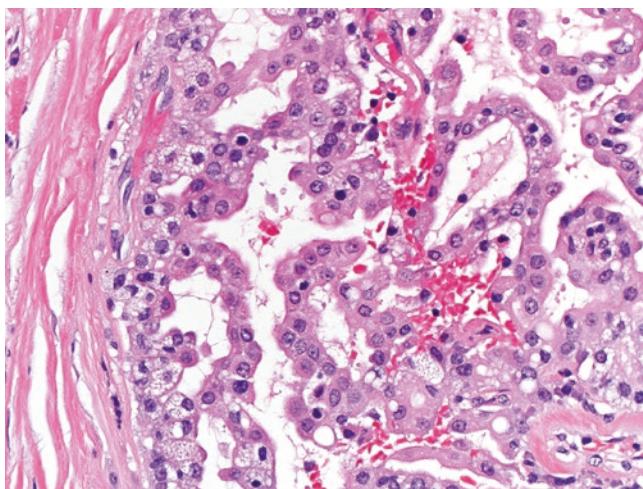


Fig. 26.7 (H&E, 400 \times) Secretory carcinoma, micropapillary

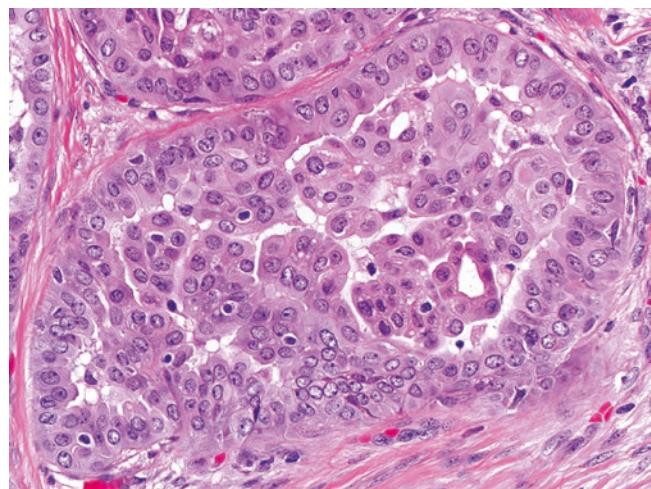


Fig. 26.10 (H&E, 400 \times) Secretory carcinoma, micropapillary

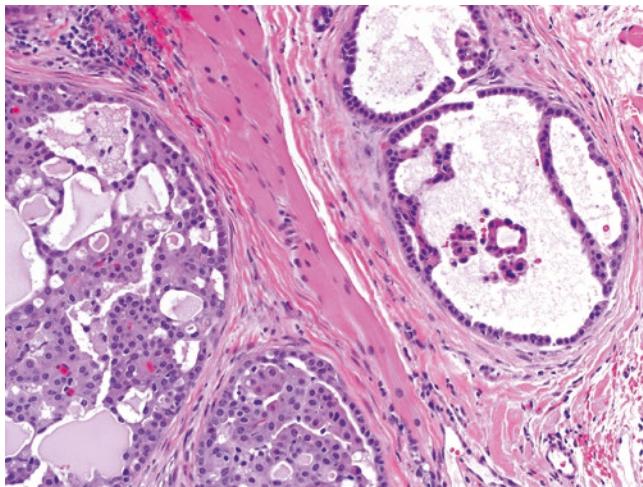


Fig. 26.8 (H&E, 200 \times) Secretory carcinoma, micropapillary

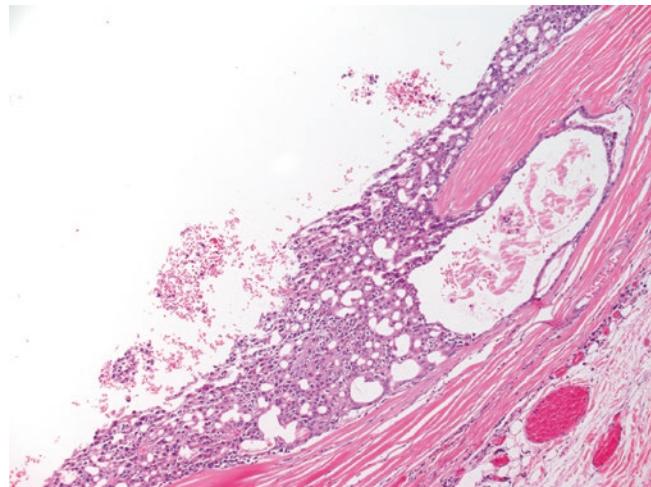


Fig. 26.11 (H&E, 100 \times) Secretory carcinoma, cystic

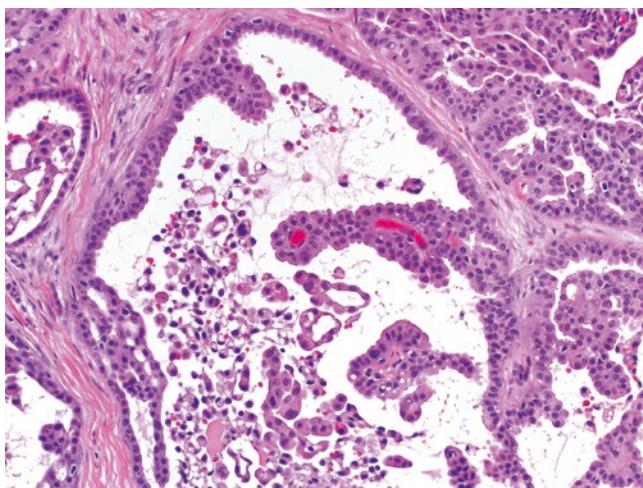


Fig. 26.9 (H&E, 200 \times) Secretory carcinoma, micropapillary

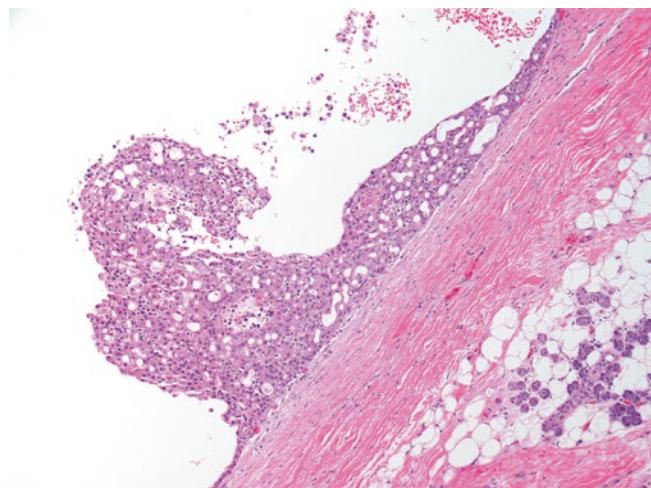


Fig. 26.12 (H&E, 100 \times) Secretory carcinoma, cystic

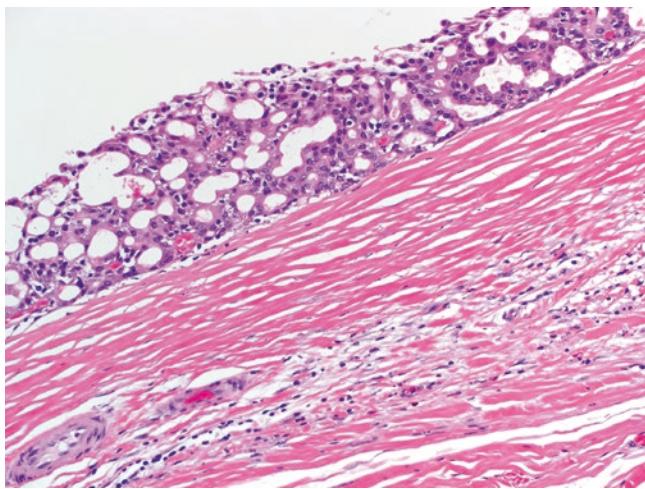


Fig. 26.13 (H&E, 200×) Secretory carcinoma, cystic

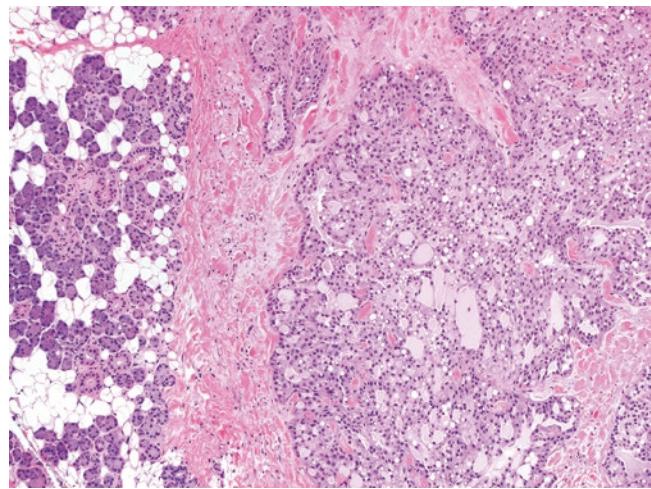


Fig. 26.16 (H&E, 100×) Secretory carcinoma, microcystic

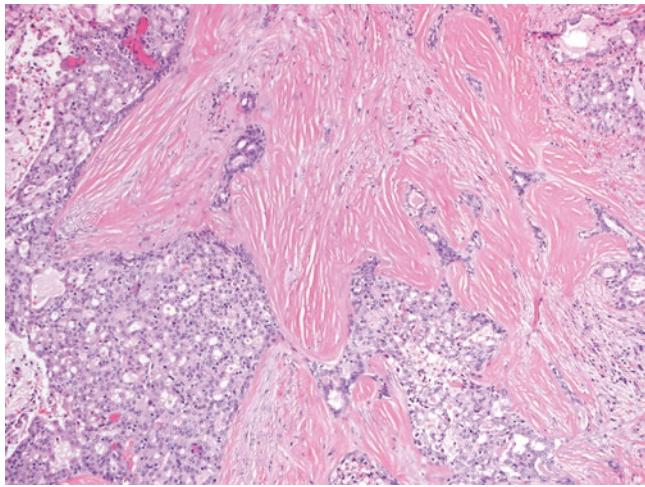


Fig. 26.14 (H&E, 100×) Secretory carcinoma, microcystic

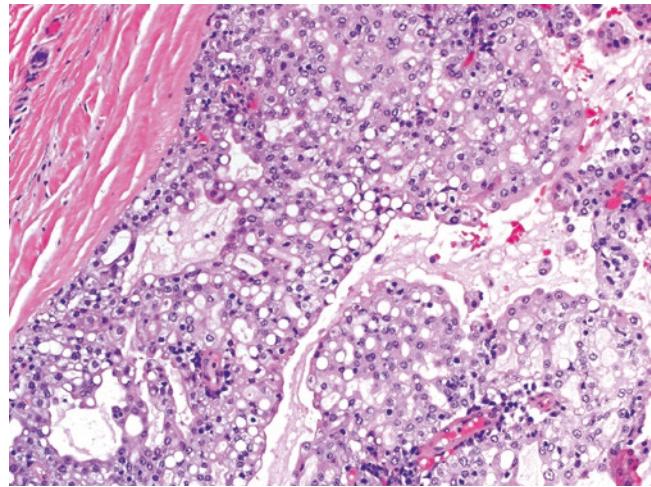


Fig. 26.17 (H&E, 200×) Secretory carcinoma, microcystic

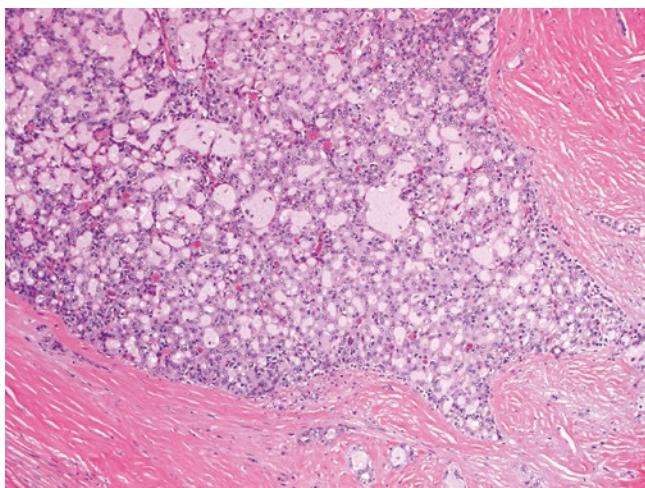


Fig. 26.15 (H&E, 100×) Secretory carcinoma, microcystic

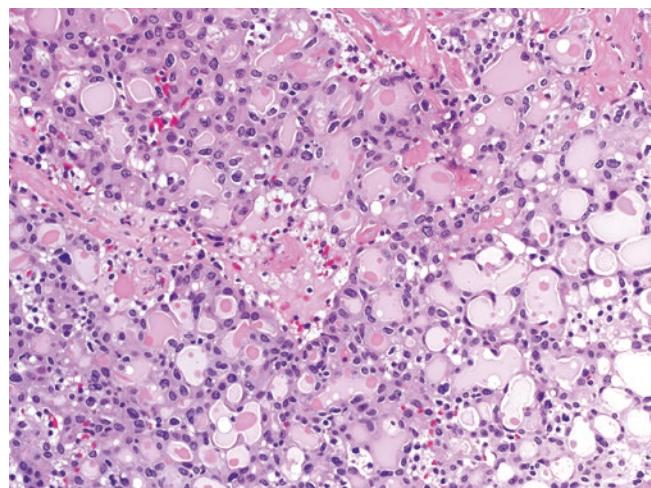


Fig. 26.18 (H&E, 200×) Secretory carcinoma, microcystic

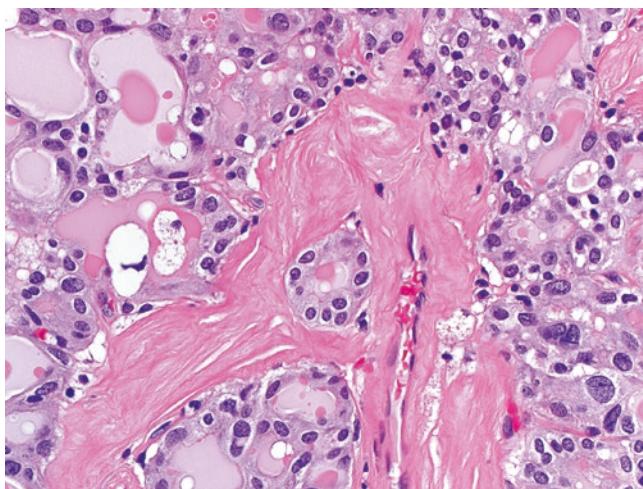


Fig. 26.19 (H&E, 400 \times) Secretory carcinoma, microcystic

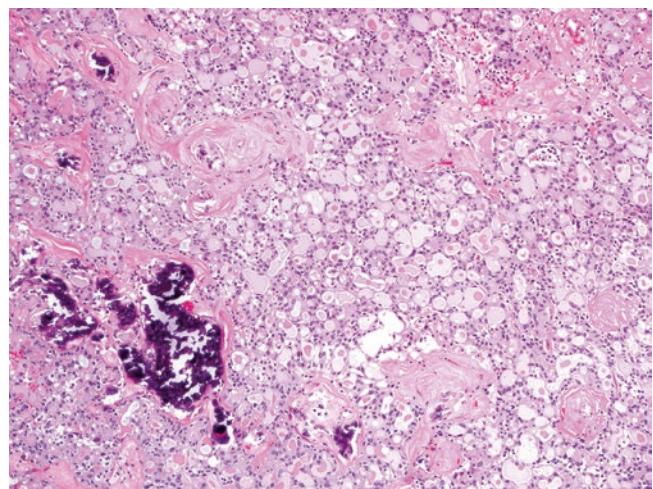


Fig. 26.22 (H&E, 100 \times) Secretory carcinoma, microcalcifications

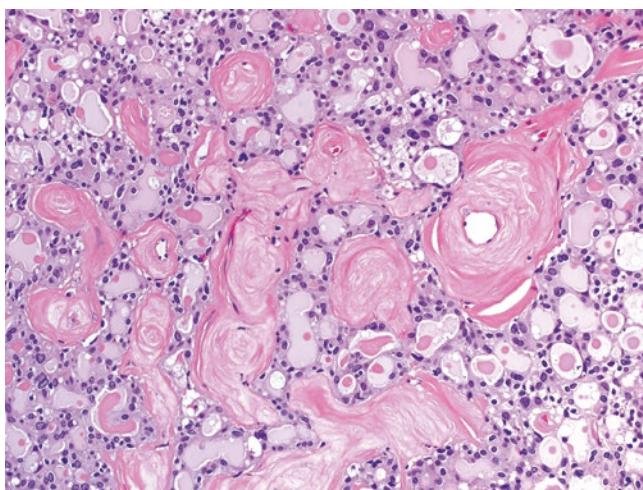


Fig. 26.20 (H&E, 200 \times) Secretory carcinoma, hyalinized

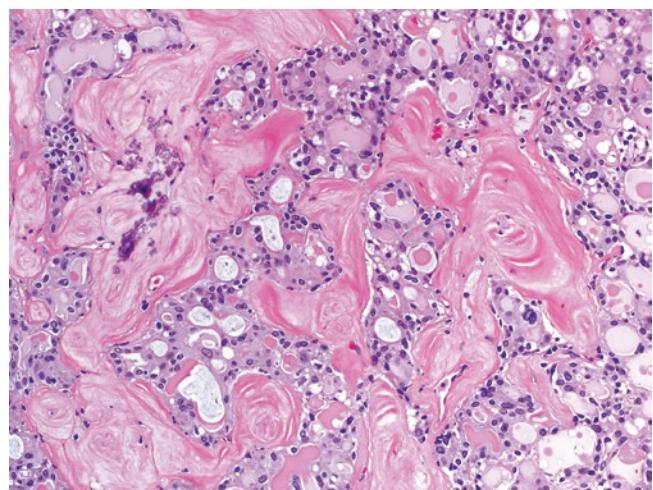


Fig. 26.23 (H&E, 200 \times) Secretory carcinoma, microcalcifications

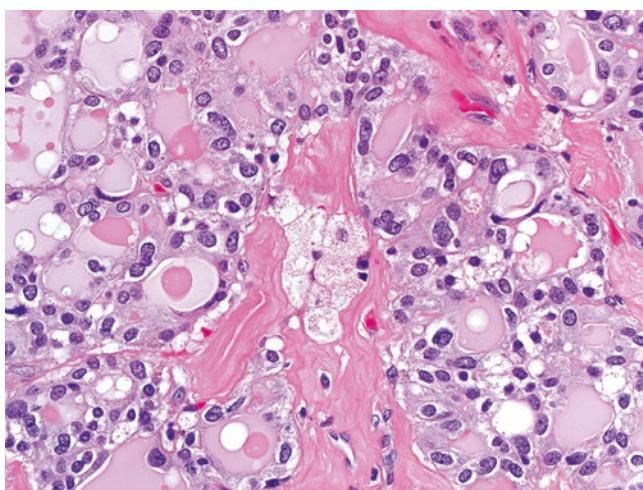


Fig. 26.21 (H&E, 400 \times) Secretory carcinoma, hyalinized

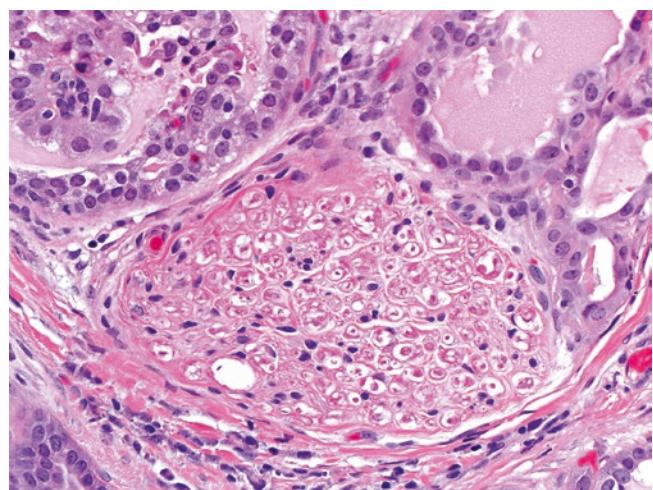


Fig. 26.24 (H&E, 400 \times) Secretory carcinoma, perineural invasion

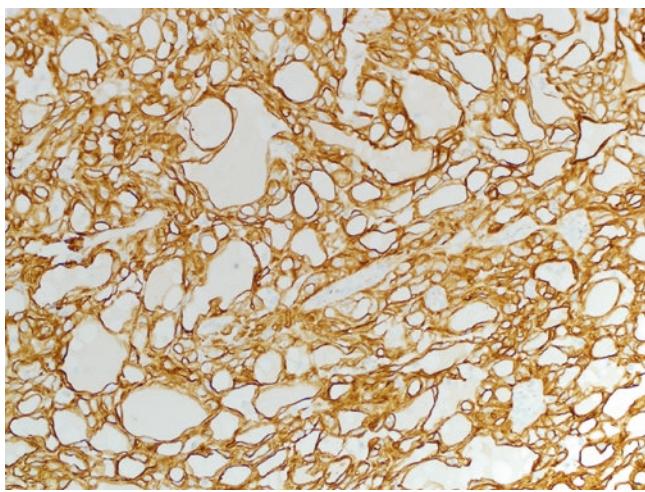


Fig. 26.25 (AE1/AE3, 200×) Secretory carcinoma, diffuse immunoreactivity

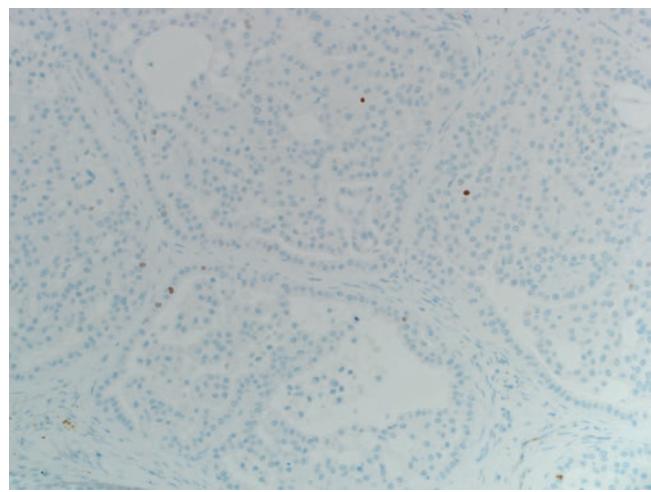


Fig. 26.28 (p63, 200×) Secretory carcinoma, rare immunoreactivity

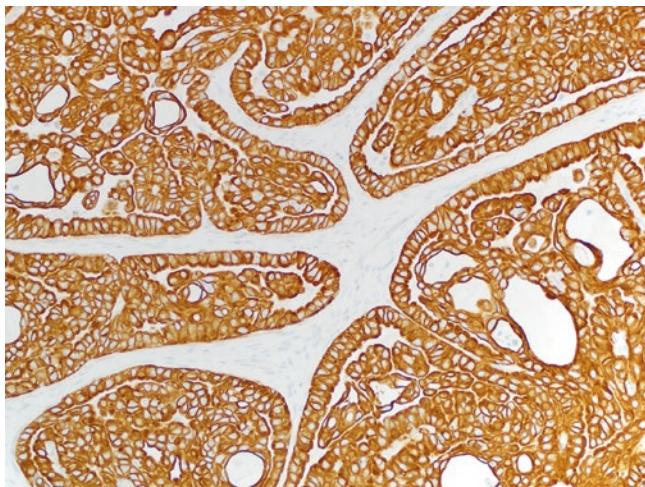


Fig. 26.26 (AE1/AE3, 200×) Secretory carcinoma, diffuse immunoreactivity

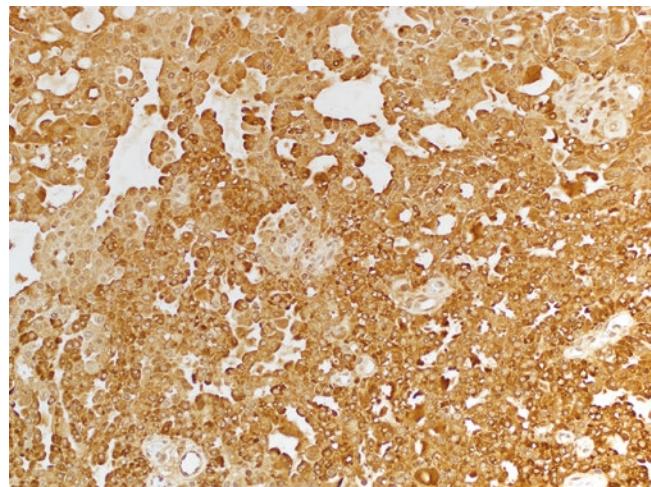


Fig. 26.29 (Mammaglobin, 200×) Secretory carcinoma, diffuse immunoreactivity

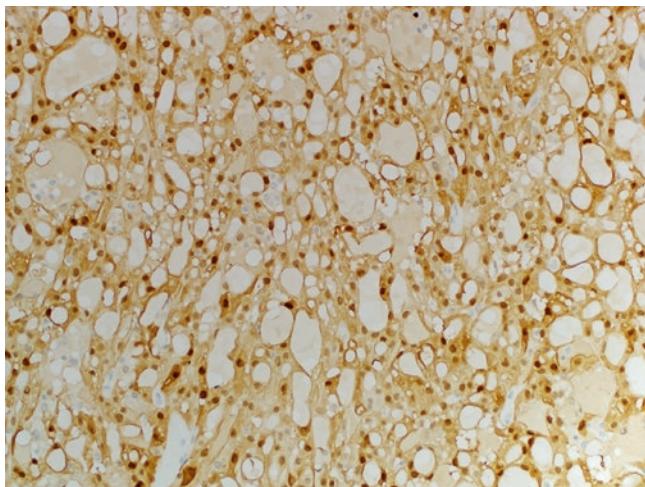


Fig. 26.27 (S-100, 200×) Secretory carcinoma, diffuse immunoreactivity

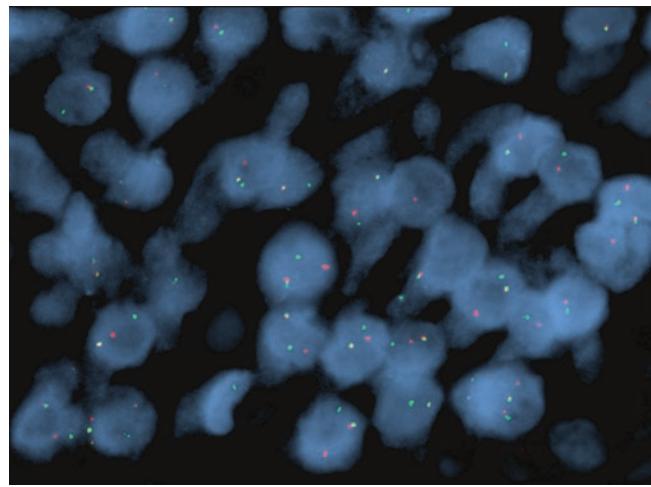


Fig. 26.30 (Fluorescent in situ hybridization, 600×) Secretory carcinoma, *ETV6* rearrangement

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Small Cell Neuroendocrine Carcinoma

27

Small cell neuroendocrine carcinoma affects children and adults and presents at a mean age of approximately 65 years. Women are involved more than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Most cases of small cell neuroendocrine carcinoma

behave as high-grade malignancies. Small cell neuroendocrine carcinoma may be circumscribed or infiltrative, comprised almost exclusively of one cell type (neuroendocrine), and may exhibit a variety of architectural patterns (solid, organoid, and cords) (Figs. 27.1–27.25).

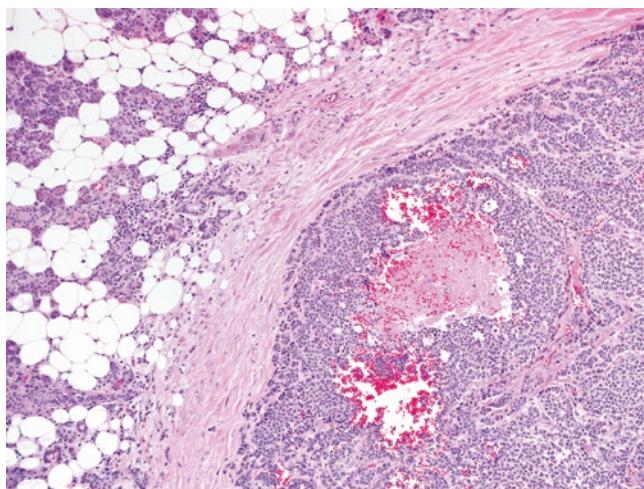


Fig. 27.1 (H&E, 100×) Small cell neuroendocrine carcinoma, circumscribed

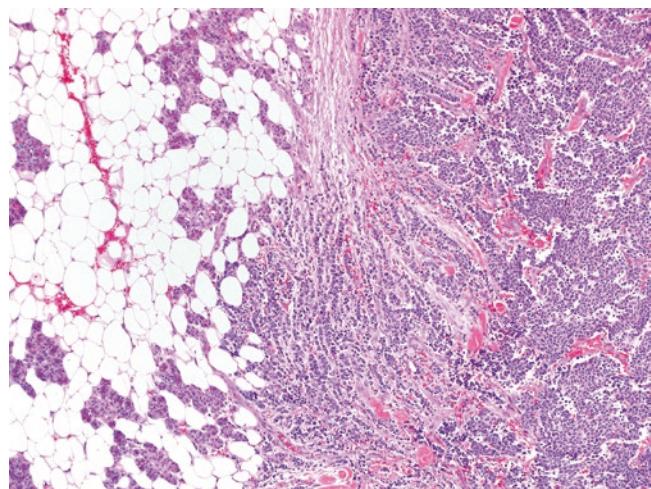


Fig. 27.4 (H&E, 100×) Small cell neuroendocrine carcinoma, cords

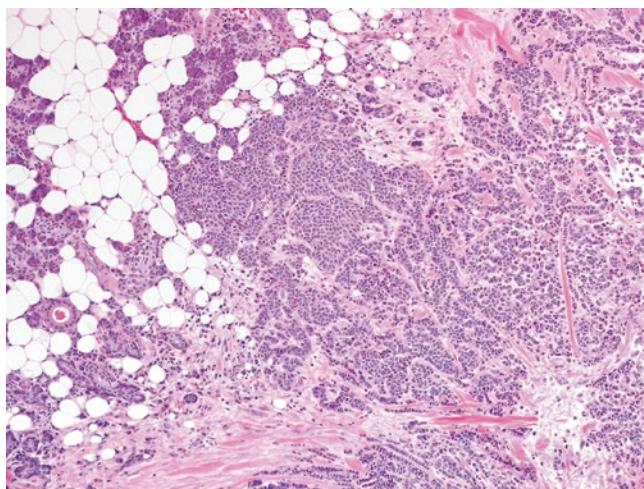


Fig. 27.2 (H&E, 100×) Small cell neuroendocrine carcinoma, infiltrative

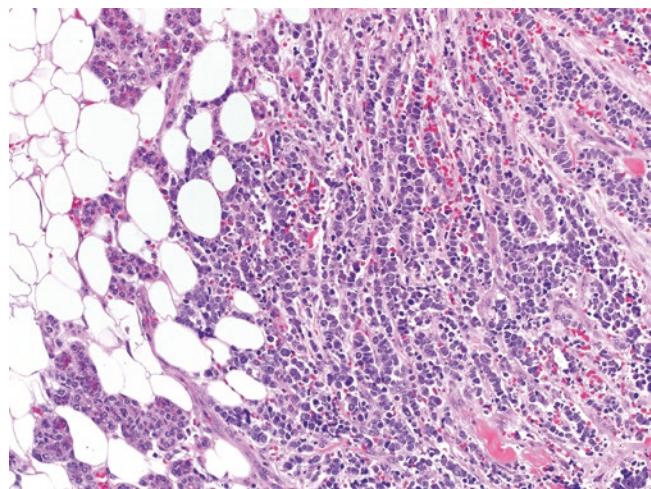


Fig. 27.5 (H&E, 200×) Small cell neuroendocrine carcinoma, cords

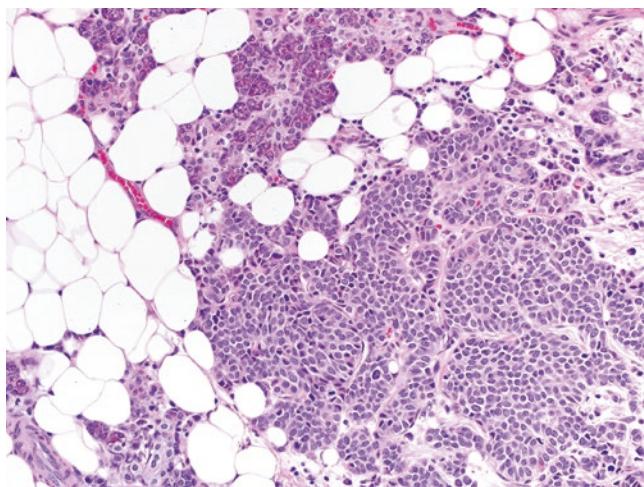


Fig. 27.3 (H&E, 200×) Small cell neuroendocrine carcinoma, monophasic

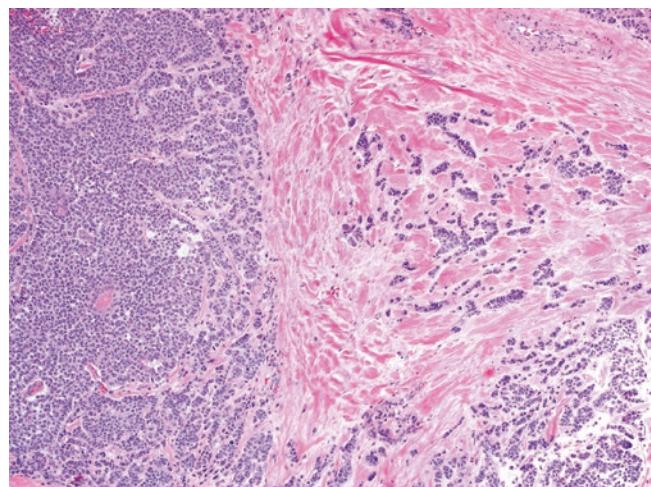


Fig. 27.6 (H&E, 100×) Small cell neuroendocrine carcinoma, cords

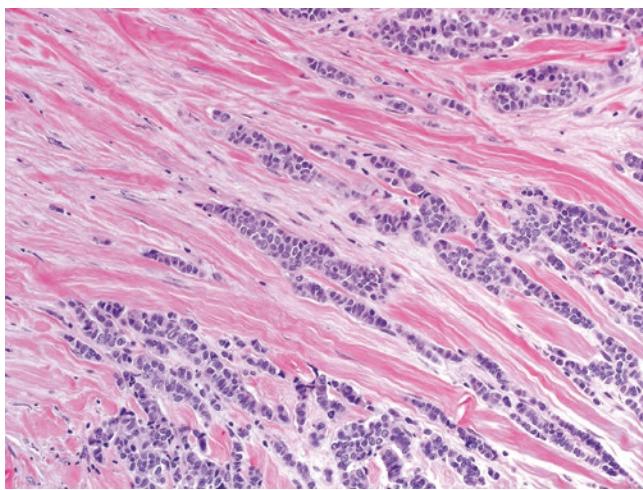


Fig. 27.7 (H&E, 200 \times) Small cell neuroendocrine carcinoma, cords

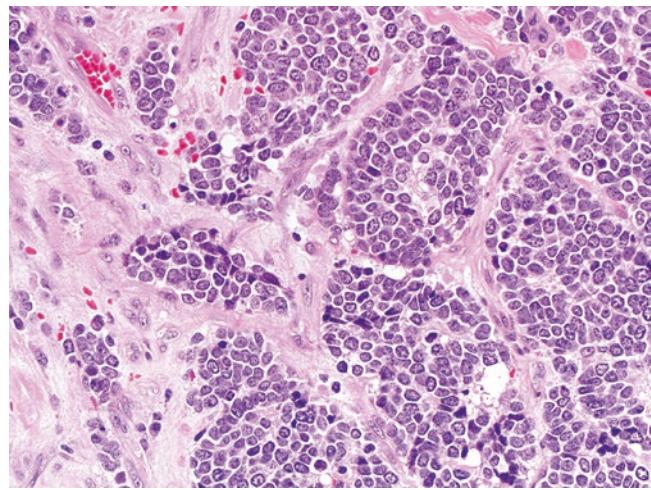


Fig. 27.10 (H&E, 400 \times) Small cell neuroendocrine carcinoma, cytomorphic atypia

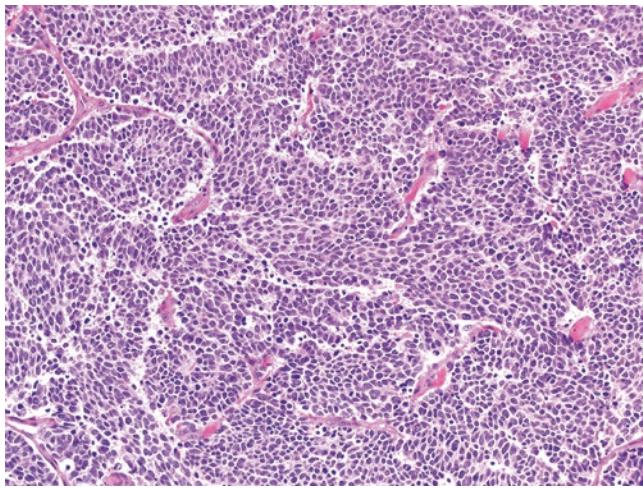


Fig. 27.8 (H&E, 200 \times) Small cell neuroendocrine carcinoma, solid

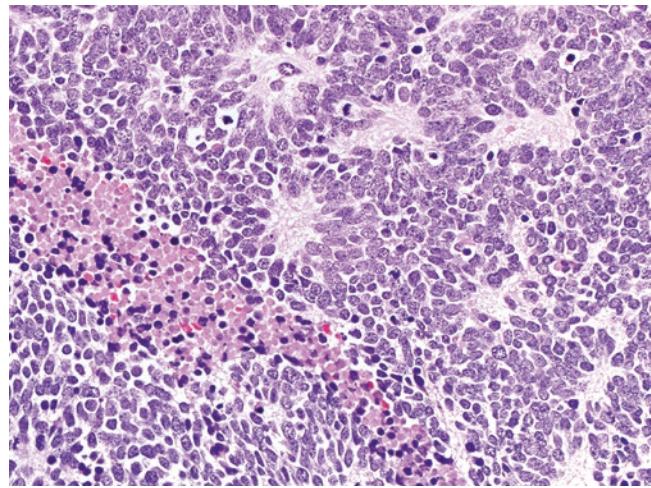


Fig. 27.11 (H&E, 400 \times) Small cell neuroendocrine carcinoma, mitotic activity

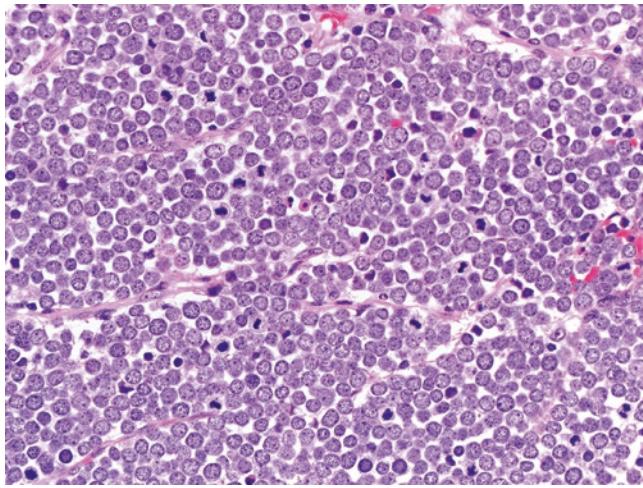


Fig. 27.9 (H&E, 400 \times) Small cell neuroendocrine carcinoma, solid

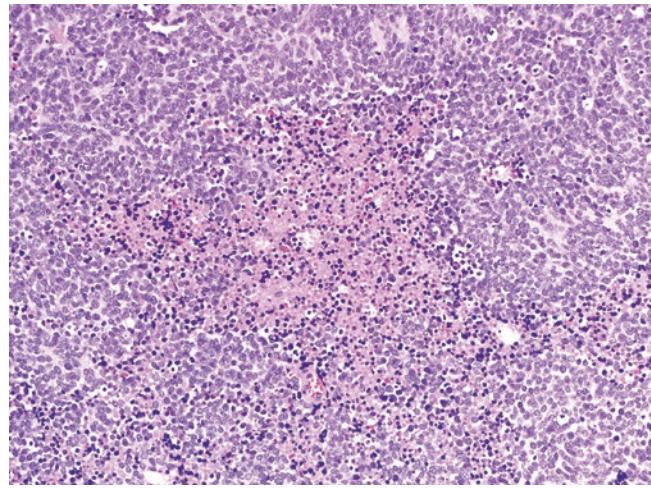


Fig. 27.12 (H&E, 200 \times) Small cell neuroendocrine carcinoma, necrosis

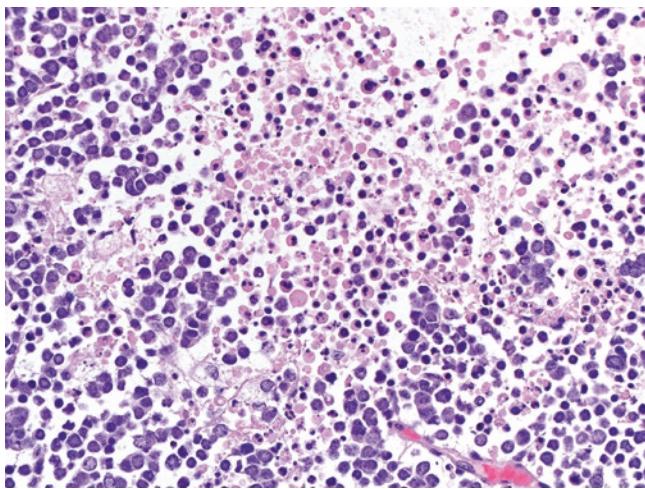


Fig. 27.13 (H&E, 400 \times) Small cell neuroendocrine carcinoma, necrosis

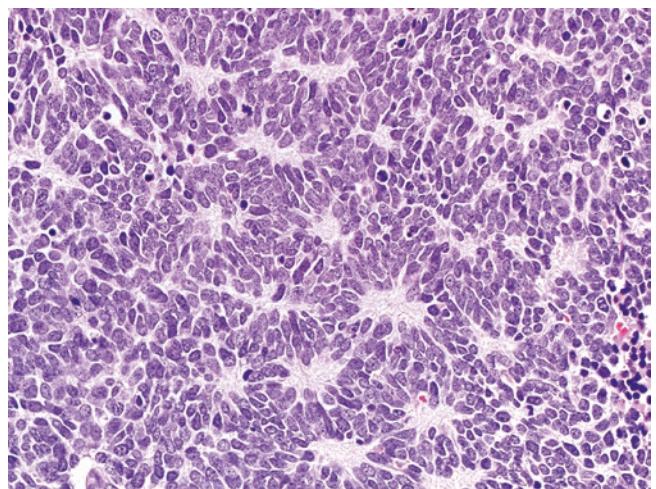


Fig. 27.16 (H&E, 400 \times) Small cell neuroendocrine carcinoma, Homer Wright pseudorosettes

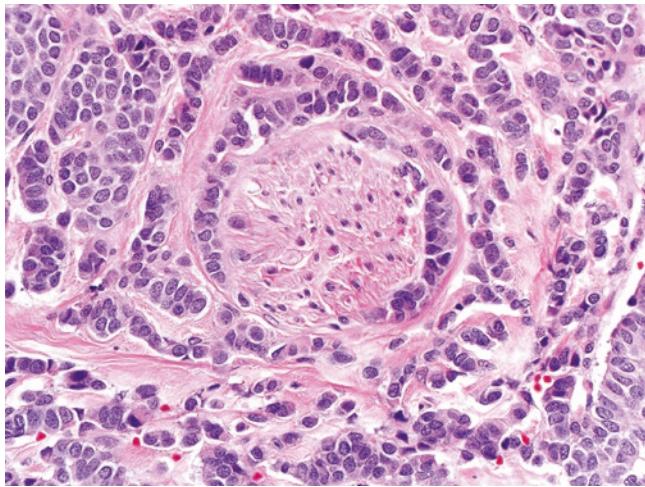


Fig. 27.14 (H&E, 400 \times) Small cell neuroendocrine carcinoma, perineural invasion

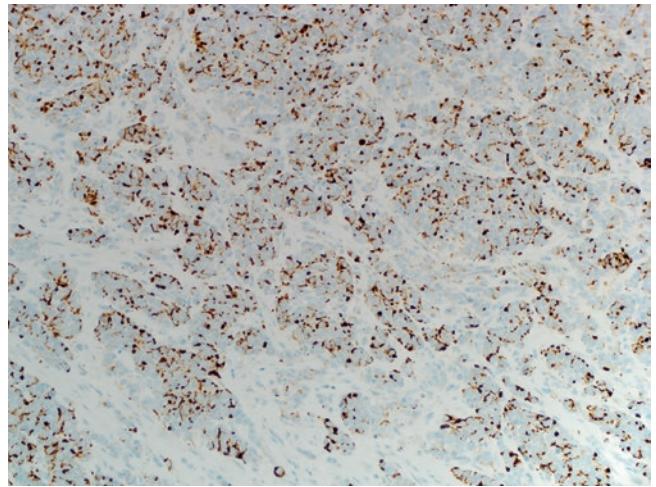


Fig. 27.17 (AE1/AE3, 400 \times) Small cell neuroendocrine carcinoma, diffuse immunoreactivity

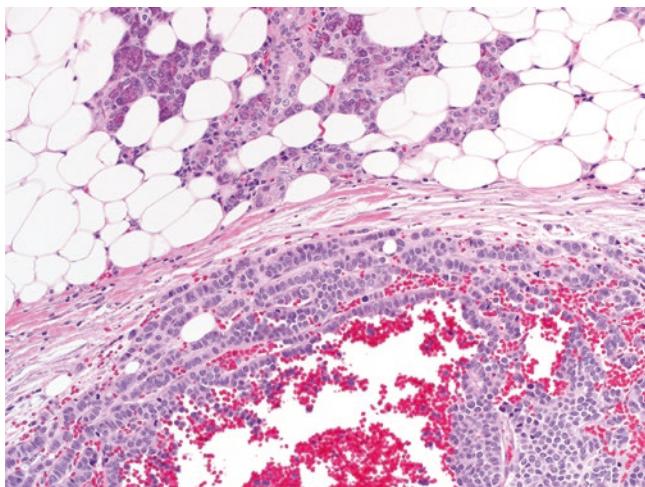


Fig. 27.15 (H&E, 200 \times) Small cell neuroendocrine carcinoma, hemorrhagic

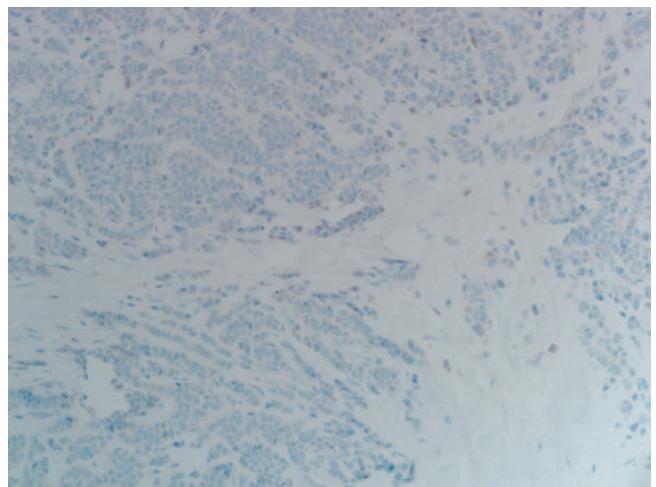


Fig. 27.18 (S-100, 200 \times) Small cell neuroendocrine carcinoma, negative immunoreactivity

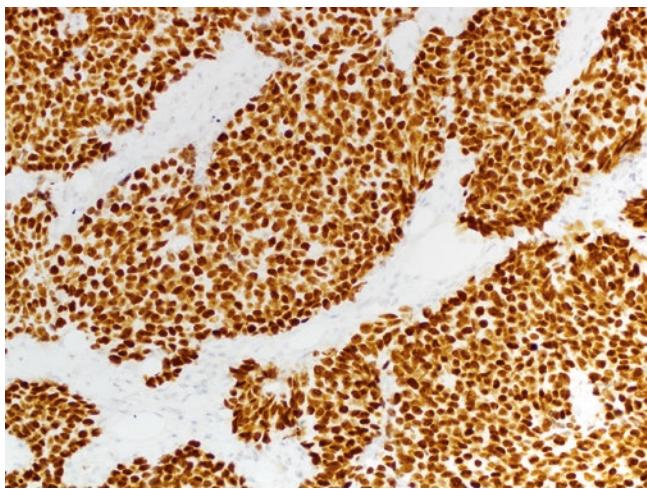


Fig. 27.19 (p63, 200×) Small cell neuroendocrine carcinoma, diffuse immunoreactivity

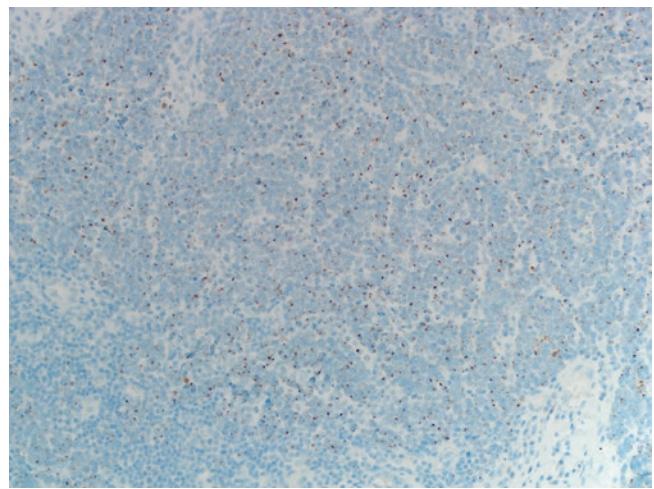


Fig. 27.22 (CK20, 200×) Small cell neuroendocrine carcinoma, diffuse immunoreactivity

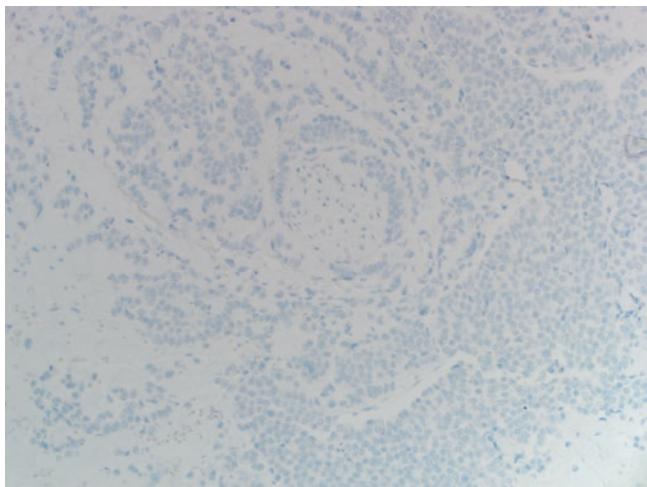


Fig. 27.20 (p63, 200×) Small cell neuroendocrine carcinoma, negative immunoreactivity

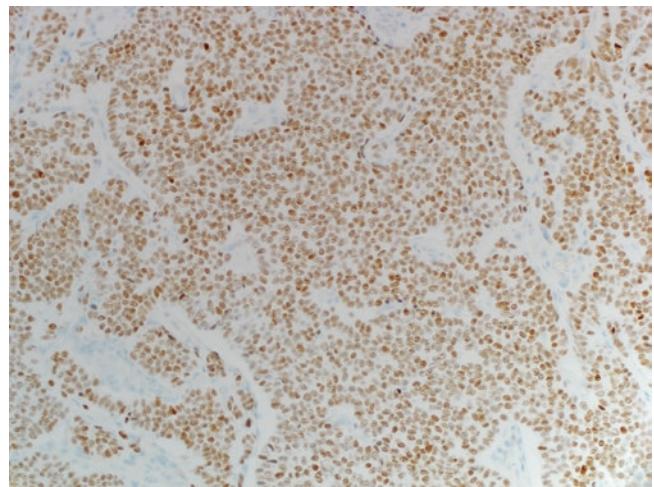


Fig. 27.23 (TTF-1, 200×) Small cell neuroendocrine carcinoma, diffuse immunoreactivity

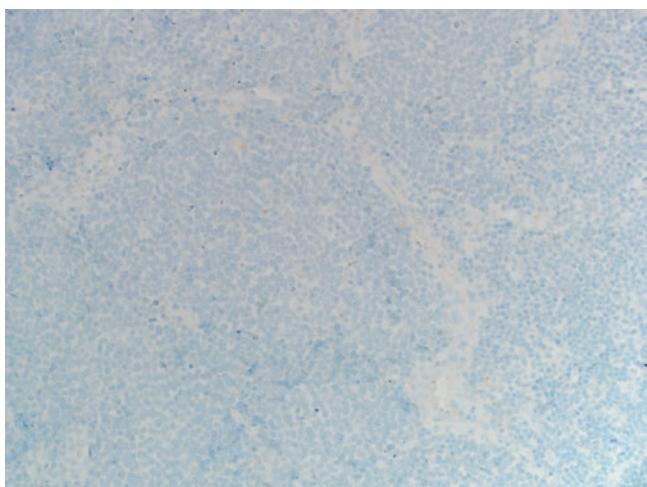


Fig. 27.21 (CK7, 200×) Small cell neuroendocrine carcinoma, negative immunoreactivity

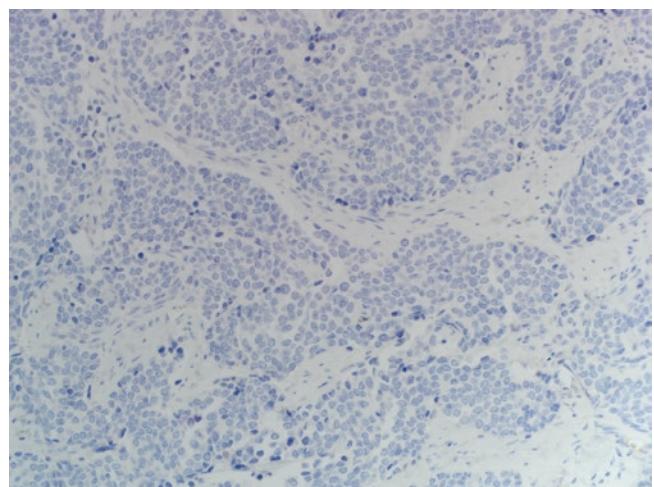


Fig. 27.24 (TTF-1, 200×) Small cell neuroendocrine carcinoma, negative immunoreactivity

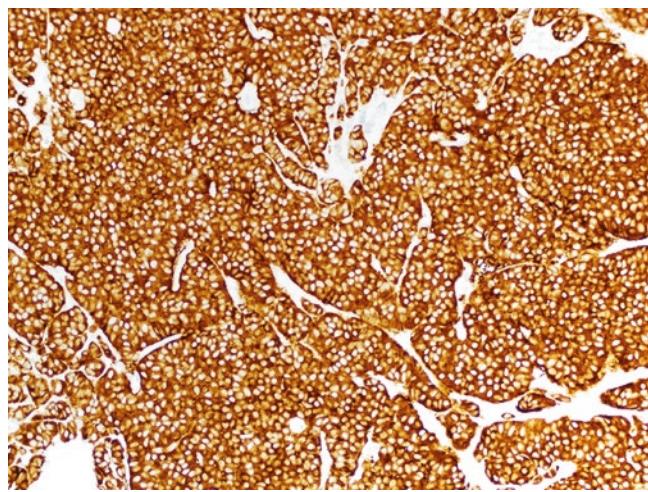


Fig. 27.25 (Synaptophysin, 200 \times) Small cell neuroendocrine carcinoma, diffuse immunoreactivity

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Warthin's Tumor

28

Warthin's tumor affects primarily adults and presents at a mean age of approximately 60 years. Women are involved less than men. The majority of cases involve the parotid gland, presenting as single or multiple masses. Warthin's

tumor may be circumscribed or multi-nodular, comprised of multiple cell types (columnar and cuboidal), and exhibit a variety of architectural patterns (solid, cystic, and papillary) (Figs. 28.1–28.19).

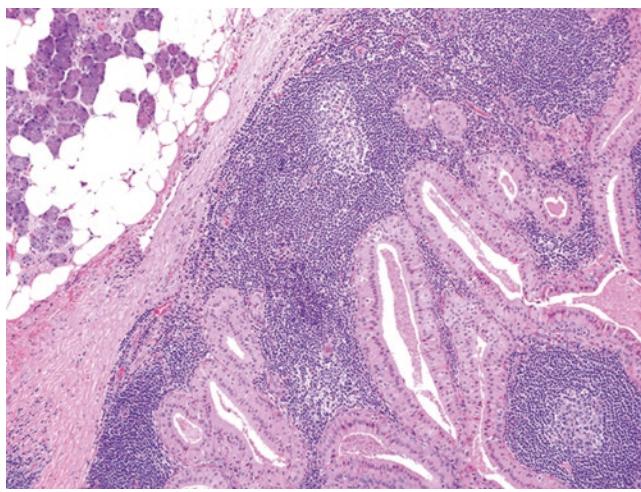


Fig. 28.1 (H&E, 100 \times) Warthin's tumor, circumscribed

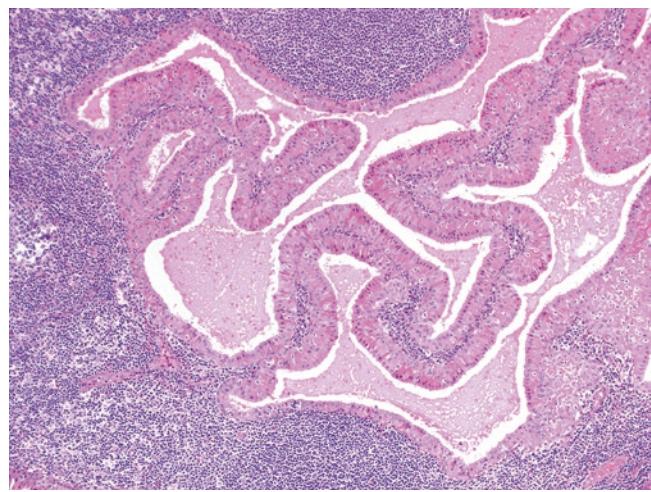


Fig. 28.4 (H&E, 100 \times) Warthin's tumor, cystic

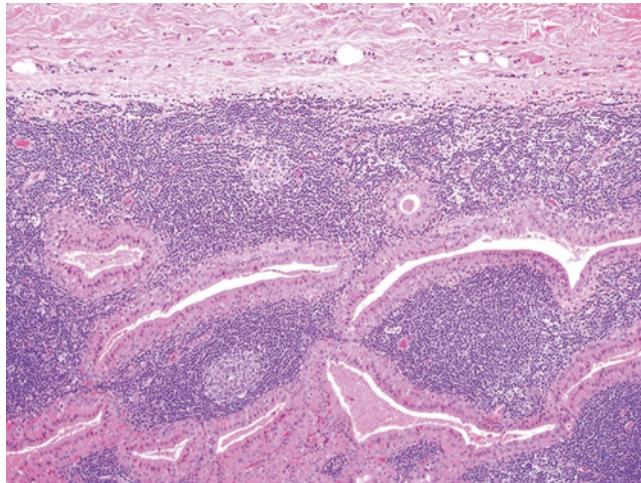


Fig. 28.2 (H&E, 100 \times) Warthin's tumor, circumscribed

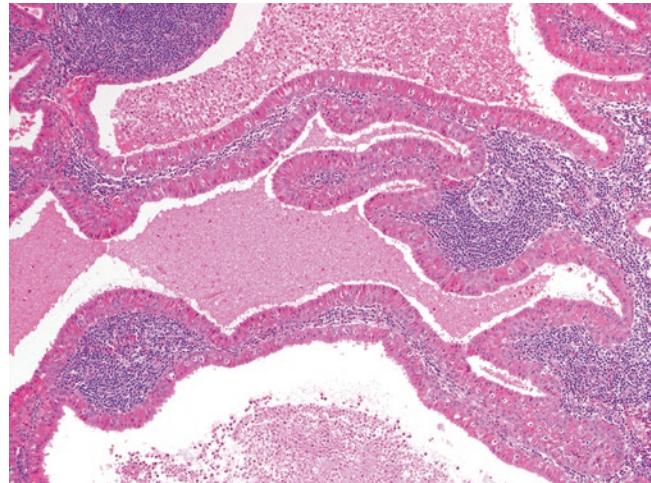


Fig. 28.5 (H&E, 100 \times) Warthin's tumor, cystic

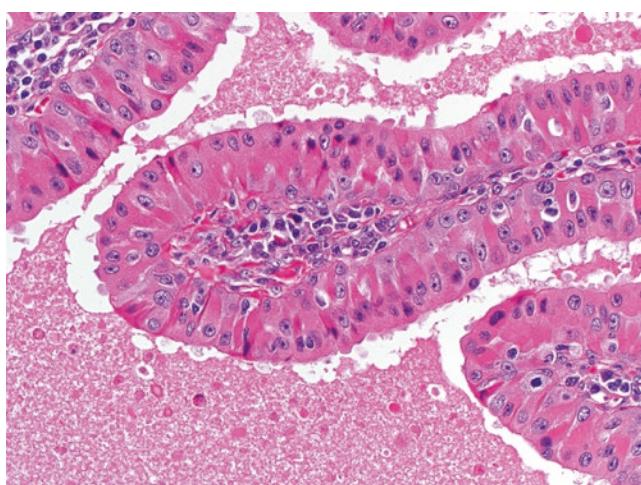


Fig. 28.3 (H&E, 400 \times) Warthin's tumor, biphasic

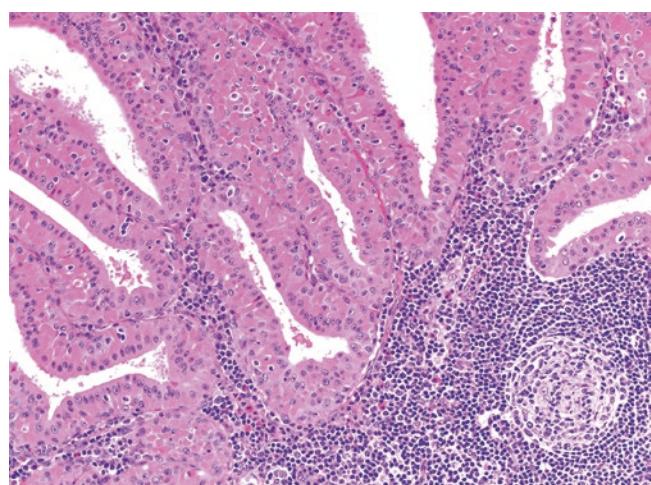


Fig. 28.6 (H&E, 200 \times) Warthin's tumor, papillary

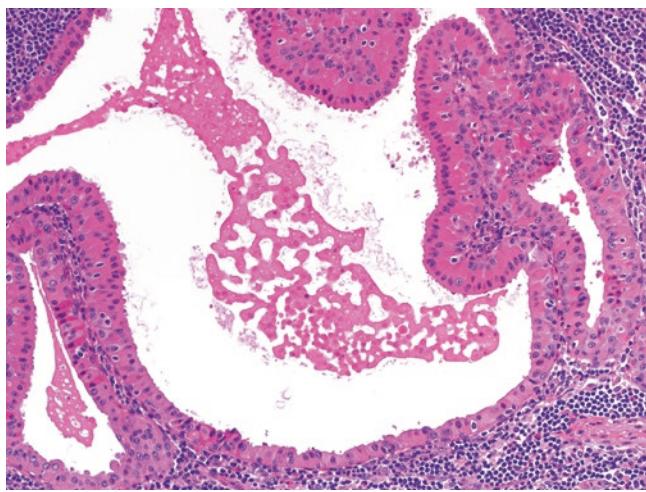


Fig. 28.7 (H&E, 200 \times) Warthin's tumor, papillary

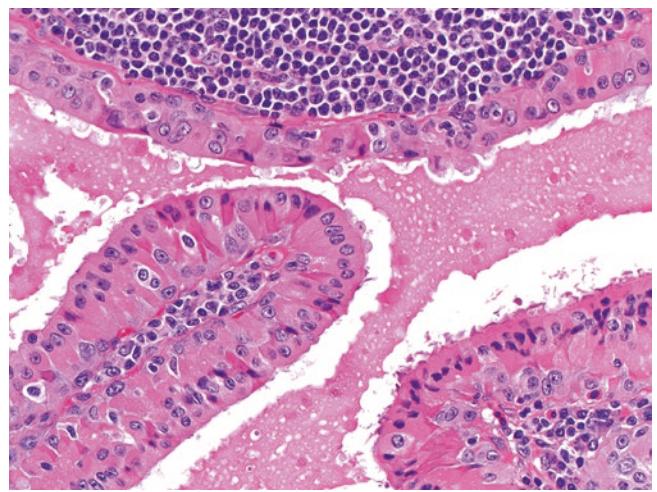


Fig. 28.10 (H&E, 400 \times) Warthin's tumor, oncocytes

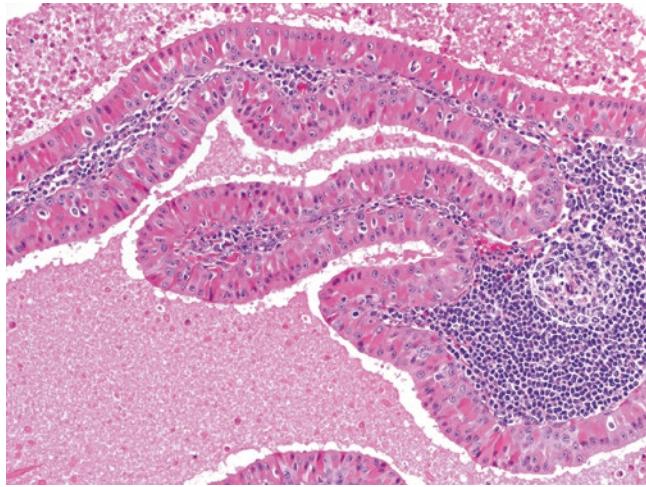


Fig. 28.8 (H&E, 200 \times) Warthin's tumor, lymphoid stroma

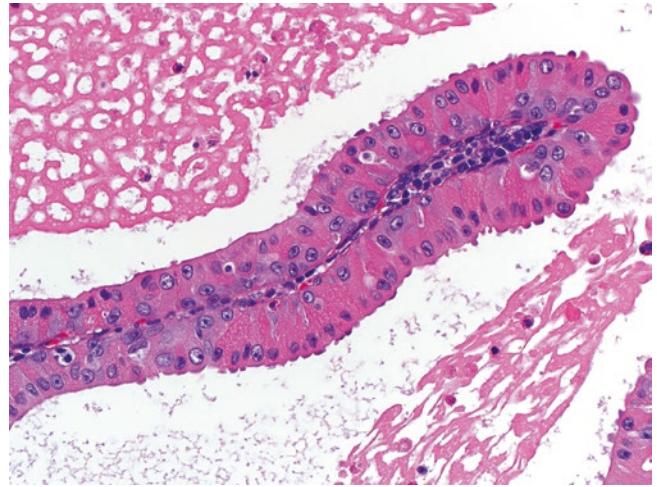


Fig. 28.11 (H&E, 400 \times) Warthin's tumor, oncocytes

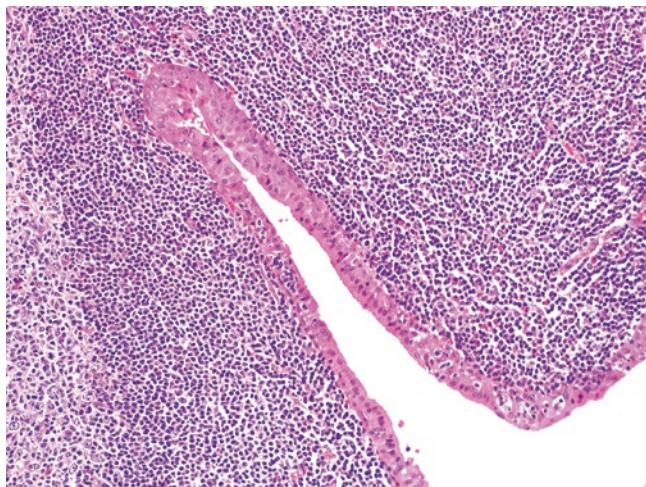


Fig. 28.9 (H&E, 200 \times) Warthin's tumor, lymphoid stroma

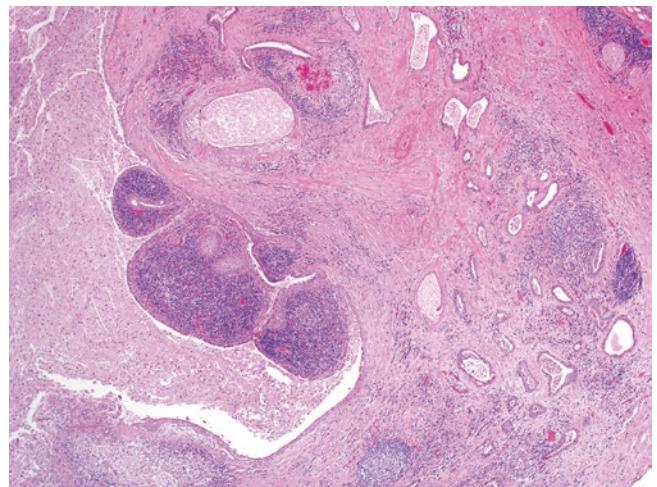


Fig. 28.12 (H&E, 40 \times) Warthin's tumor, necrosis (biopsy-related)

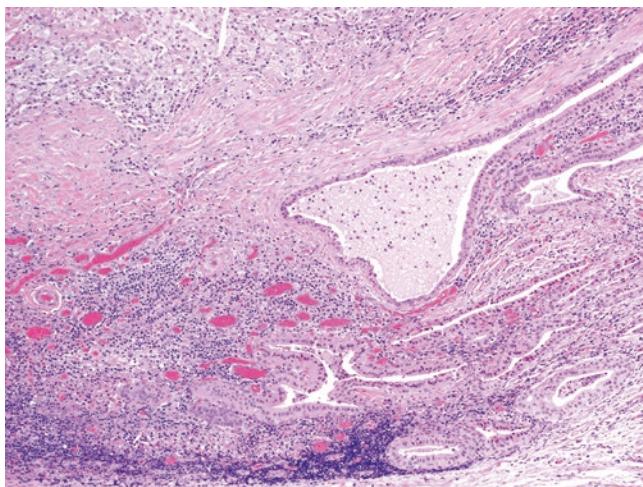


Fig. 28.13 (H&E, 100×) Warthin's tumor, necrosis (biopsy-related)

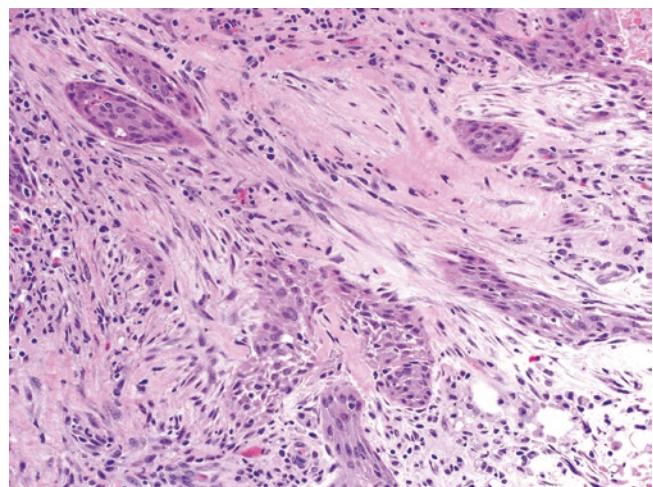


Fig. 28.16 (H&E, 200×) Warthin's tumor, cytomorphologic atypia (biopsy-related)

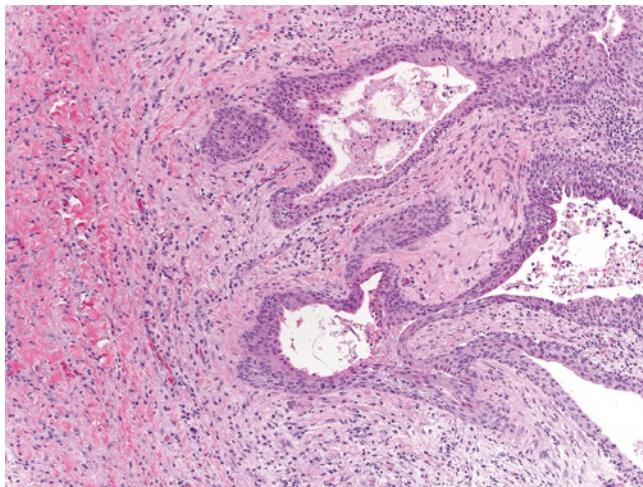


Fig. 28.14 (H&E, 100×) Warthin's tumor, squamous metaplasia (biopsy-related)

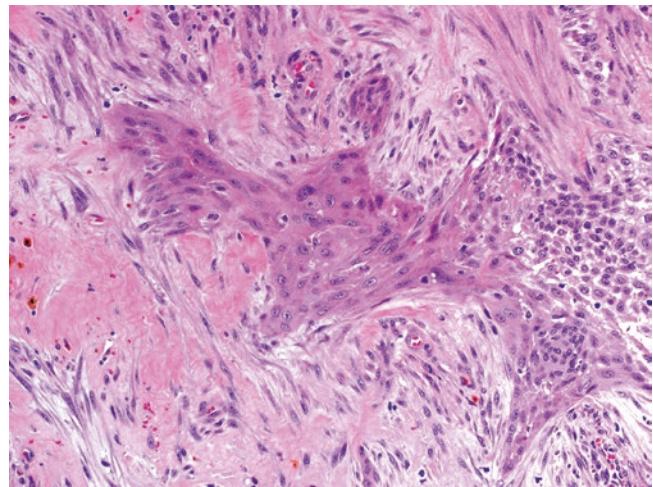


Fig. 28.17 (H&E, 200×) Warthin's tumor, cytomorphologic atypia (biopsy-related)

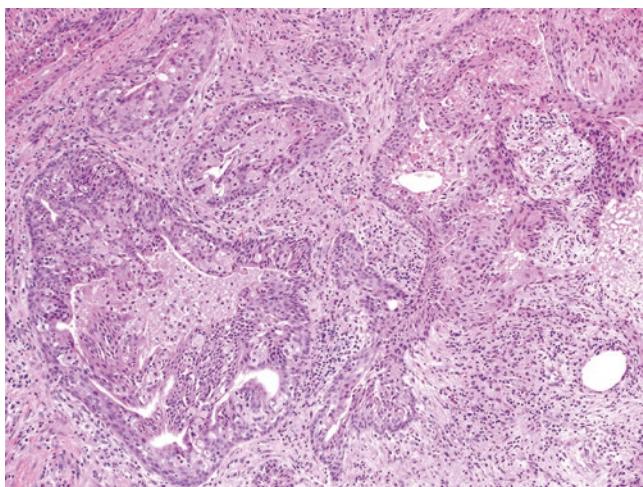


Fig. 28.15 (H&E, 100×) Warthin's tumor, squamous metaplasia (biopsy-related)

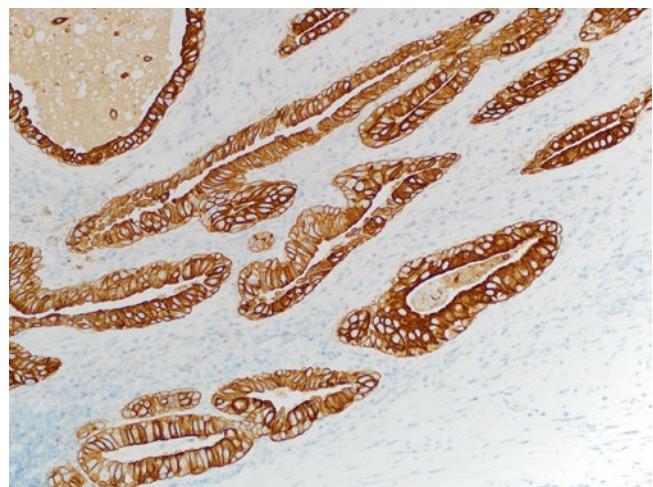


Fig. 28.18 (AE1/AE3, 200×) Warthin's tumor, diffuse immunoreactivity

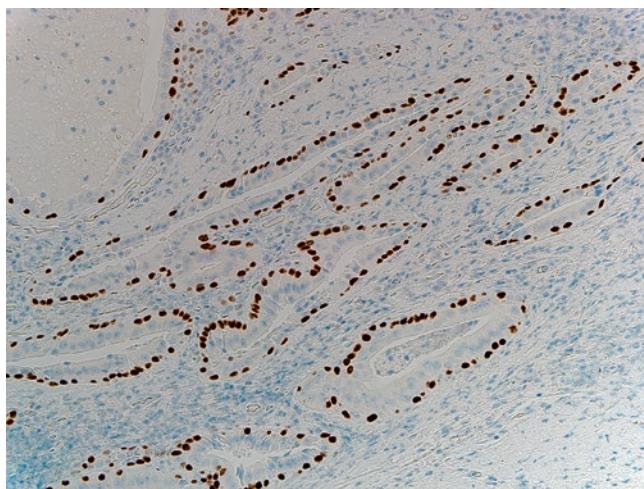


Fig. 28.19 (p63, 200 \times) Warthin's tumor, basal immunoreactivity

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Index

A

Acinic cell carcinoma, 37–45
Adenoid cystic carcinoma, 47–54

B

Basal cell adenoma, 57–62
Basal cell adenocarcinoma, 65–70

C

Canalicular adenoma, 73–76
Carcinosarcoma, 79–82
Clear cell carcinoma, 85–89

E

Epithelial-myoepithelial carcinoma, 91–97

G

Gross anatomy, 1–7
Gross examination, 21–27

I

Intraoperative examination, 15–19
Intraductal carcinoma, 99–104

L

Lymphadenoma, 107–110
Lymphoepithelial carcinoma, 113–116

M

Microscopic anatomy, 9–12
Microscopic examination, 29–35
Mucoepidermoid carcinoma, 119–126
Myoepithelioma, 129–133
Myoepithelial carcinoma, 135–139

O

Oncocytoma, 141–146
Oncocytic carcinoma, 149–151

P

Pleomorphic adenoma, 153–159
Pleomorphic adenoma, carcinoma ex, 161–168
Polymorphous adenocarcinoma, 171–176

S

Salivary duct carcinoma, 179–184
Secretory carcinoma, 187–192
Small cell neuroendocrine carcinoma, 195–200

W

Warthin's tumor, 203–207