



Deegesh Shah

S Shetty, AD MacBean and SF Olley

# Numb Chin Syndrome: A Metastatic Deposit in the Mandible

**Abstract:** Metastatic deposits in the mandible are discussed and a case of leiomyosarcoma arising from a testicular primary is presented. The patient presented with symptoms typical of those that would present to a general dental practitioner. The various stages involved in the diagnosis and management of the condition are discussed.

**Clinical Relevance:** Intra-oral malignant secondary tumours may present to dentists with signs and symptoms similar to those of benign, cystic or infectious processes. Metastatic tumours in the oral cavity are uncommon, most commonly arising in the mandible. Owing to their relative infrequency, these tumours present a challenge in diagnosis and treatment.

Dent Update 2010; 37: 244–246

Metastatic tumours of the oral cavity are uncommon, however, they must be considered in the differential diagnosis of lesions for patients with a known history of cancer. Most common sites in the oral cavity for bone secondaries are the mandibular premolar-molar regions,<sup>1</sup> whilst for soft tissue secondaries it is the gingival tissues and tongue.<sup>2</sup>

These tumours may present to a dentist with signs and symptoms similar to those of dental disease or an innocuous process. Patients with a known history of cancer or absence of local pathology to explain symptoms should arouse suspicion

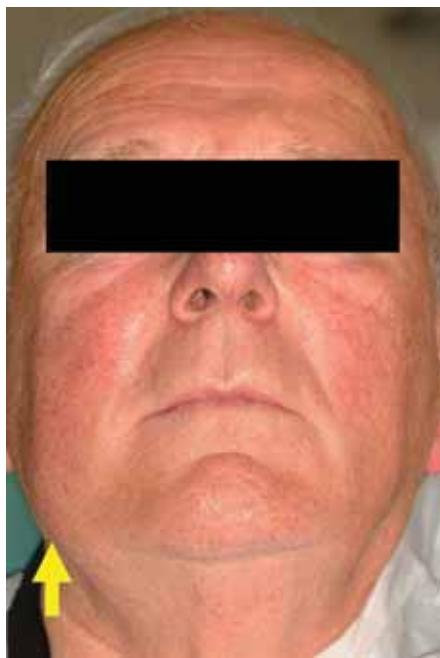


Figure 1. The diffuse, firm, non-tender, right-sided facial swelling (marked).



Figure 2. Intra-oral, submucosal, non-ulcerated swelling over the retromolar region (marked).

**D Shah**, MFDS RCS, BDS, Senior House Officer, Oral and Maxillofacial Surgery, **S Shetty**, FRCS, FDS RCS, Specialist Registrar, Oral and Maxillofacial Surgery, **AD MacBean**, FRCS(OMFS), FDS RCS, Consultant, Oral and Maxillofacial Surgery and **SF Olley**, FRCS(OMFS), FDS RCS, Consultant, Oral and Maxillofacial Surgery, Maxillofacial Unit, Royal Shrewsbury Hospital, Mytton Oak Road, Shrewsbury, SY3 8XQ, UK.

in the clinician's mind.

Leiomyosarcoma is a malignant mesenchymal smooth muscle cell tumour arising from sites such as the uterus, retroperitoneum and gastro-intestinal

tract.<sup>3</sup> These tumours exhibit a high rate of recurrence and metastatic spread to the lungs, bone and brain, leading to a poor prognosis.<sup>4</sup>

There have been few descriptions of primary<sup>5</sup> and secondary<sup>1</sup> leiomyosarcomas in the oropharynx. Both are rare and present a challenge in their diagnosis and treatment.

## Case Report

An 81-year-old man presented with a one week history of paraesthesia of the right lower lip associated with right facial and intra-oral swelling. (Figure 1) Medical history included testicular leiomyosarcoma with pulmonary metastases, diagnosed two years earlier and followed by radical orchidectomy and palliative chemotherapy.

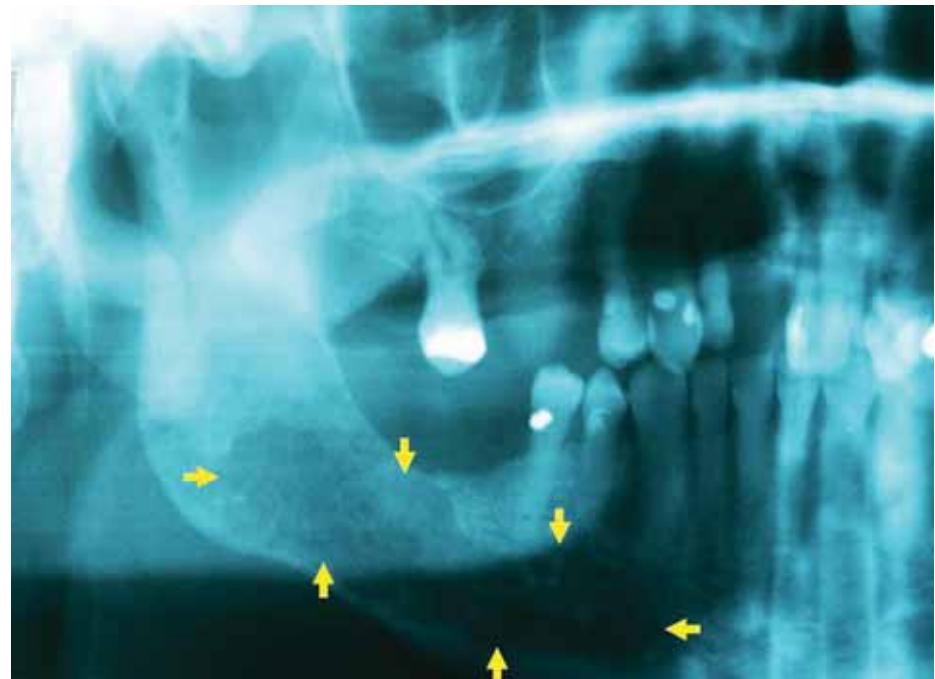
A 3 x 5 cm diffuse, firm, non-tender swelling over the angle of the mandible and a sub-mucosal, non-ulcerated, intra-oral swelling in the retromolar region were noted (Figure 2). The paraesthesia was confined to the right mental nerve. No evidence of cervical lymphadenopathy was noted. Radiographs showed a very subtle unilocular radiolucent lesion at the angle of the mandible, measuring 2 x 4 cm (Figure 3). CT scans confirmed a highly destructive lesion in the mandible with overlying soft tissue invasion (Figure 4).

Incisional biopsy and subsequent histological examination confirmed a metastatic high grade leiomyosarcoma (Figure 5). The patient was referred for consideration of palliative radiotherapy.

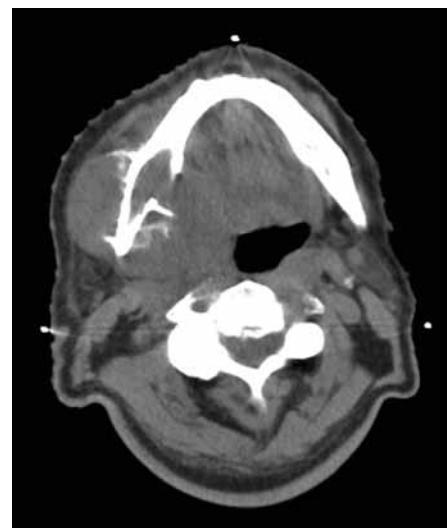
## Discussion

A numb chin is an important diagnostic symptom of metastatic disease. There are numerous causes of a numb chin; caused by injuries or pathology associated with the inferior dental nerve or the mental nerve.

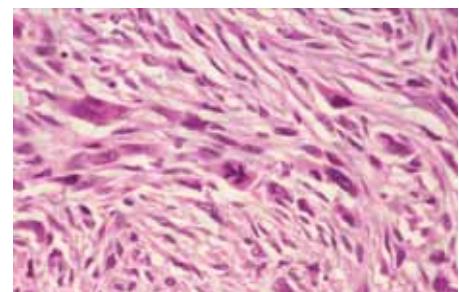
Trauma such as in mandibular fractures or following surgical removal of wisdom teeth is the most common cause of mental nerve paraesthesia. Pathological causes include compressive or destructive lesions affecting either the inferior dental nerve within the mandible or the mental nerve in the soft tissues around the lower premolar region. Compressive lesions, such as advanced cysts or benign lesions, prevent cellular membrane ion transfer, thus preventing action potential propagation along the nerve. Destructive



**Figure 3.** OPG: The subtle unilocular radiolucent lesion within the mandible (marked).



**Figure 4.** CT: The destructive lesion in the mandible with overlying soft tissue spread.



**Figure 5.** Malignant, spindle-shaped cells with eosinophilic cytoplasm (haematoxylin and eosin stain, magnification x150).

maxillofacial or neurosurgical unit.

Oral metastases are seen as a late complication in advanced disease. The symptoms of oral metastases include pain, bleeding, numbness, dysphagia and difficulty in chewing, therefore leading to inadequate nutritional intake. These patients may also have difficulties with oral hygiene, thus promoting dental disease.

Metastatic tumours, although uncommon, have been well documented. In the oral cavity, they usually arise from carcinomas rather than sarcomas.<sup>3</sup> Only 1% of all malignancies in the oral cavity are secondary to neoplasms below the clavicles.<sup>2</sup> Metastases tend to occur in areas

lesions, such as sarcomas and carcinomas, lead to breakdown of the nerve sheath or nerve trunk itself.

Lesions within the infratemporal fossa or central lesions affecting the trigeminal ganglion or the pons are rare causes of facial paraesthesia. Failure to find local pathology or injury should arouse suspicion and require referral to a

of the skeleton with high amounts of red bone marrow and sluggish flow of blood. Lack of red marrow and haematopoietic remnants in the oral cavity may contribute to the low incidence.<sup>6</sup>

The main sites for primary lesions tend to be the lungs, kidneys and skin in males; whereas in females they tend to be breast, genital organs, kidney and bone.<sup>6,7</sup> Malignant cells in the vasculature from the lungs can bypass filtration, whilst increases in thoracic pressure may direct blood flow to the head and neck via valve-less venous plexuses.<sup>7</sup>

Of oral metastases, 61% occur in the mandible, while only 24% appear in the maxilla. The preferential spread of malignant cells to the mandible is unclear. Remnants of haematopoietic tissue in the posterior mandible may explain this.<sup>7</sup> The rich capillary network, especially in inflamed gingival tissues, may be the site for seeding of malignant cells.<sup>8</sup> The presence of teeth appears to have a significant impact on the site of metastases. In dentate patients, 80% of metastases occur in the gingival tissues whilst, in edentulous patients, metastases are distributed between the tongue and alveolar mucosa.<sup>7</sup>

Metastatic deposits in the oral cavity are rare but recognition is essential for appropriate care with emphasis on a thorough medical history. A firm, non-painful, non-ulcerated submucosal mass with an acute onset is not classic malignant behaviour and could be misdiagnosed as infection or a benign, slow growing lesion. Symptoms, such as paresthesia of the mental dermatome, should arouse suspicion.

The differential diagnoses are extensive and could include cystic lesions of the mandible, such as a radicular, dentigerous cyst. Primary benign lesions could include fibroma, central giant cell granuloma, ameloblastoma and adenomatoid odontogenic tumour. Primary malignant lesions could include fibrosarcoma, malignant nerve sheath tumours, spindle cell carcinoma and

fibroblastic osteosarcoma or metastatic deposits.

Imaging is essential for diagnosis and to determine the underlying extent of any bony lesions. Metastatic lesions may be poorly defined within the mandible. Plain radiographs may show very subtle changes in architecture or a radiolucent lesion with defined marginal sclerosis.<sup>5</sup> Computed tomography or magnetic resonance imaging reveals the extent and deeper extension of these lesions as well as any soft tissue involvement.

Histopathology is also essential in confirming a diagnosis. When a secondary tumour is suspected, immunohistochemistry and comparison with the primary lesion may be necessary to confirm the type of primary lesion. The histopathological features in these cases were consistent with malignant lesions of smooth muscle, with proliferation of high grade, malignant, spindle-shaped cells as well as areas of focal necrosis.

Prognosis for patients with mandibular metastases is poor. Oral metastases usually indicate widespread lesions preceded by deposits in the liver, peritoneum, long bones and lungs. The prognosis for advanced stage leiomyosarcoma is poor. Recurrence rates of 50% for the primary tumours following wide excision<sup>5</sup> and mortality rates of 40%<sup>9</sup> have been reported. Long term follow-up is essential. Neither radiotherapy nor chemotherapy have shown any significant impact on survival.<sup>2</sup>

## Conclusion

Early diagnosis is essential for successful outcomes of treatment in malignant lesions. Metastases, as in the above case, may present to dentists with paresthesia, dental pain, intra-oral or extra-oral swellings, bleeding and lack of oral hygiene. Accessible imaging, such as orthopantomograms, may reveal radiolucent lesions or subtle changes in architecture, as noted in our patient. As discussed earlier, inflamed gingival

tissues may be susceptible to oral metastatic deposits, making oral hygiene paramount. Dentists need to be aware of metastatic lesions in their differential diagnoses. Once suspected, prompt referral to a maxillofacial surgery unit is necessary.

## Acknowledgements

We would like to thank Professor A. Malcolm (consultant histopathologist) for his help in the preparation of this manuscript.

## References

1. Meyer HL, Shklar G. Malignant tumours metastatic to the mouth and jaw. *Oral Surg* 1965; **20**: 350–352.
2. Zacharides N. Neoplasms metastatic to the mouth, jaws and surrounding tissue. *J Craniomaxillofac Surg* 1989; **17**: 283–290.
3. Allen C, Neville B, Damm D et al. Leiomyosarcoma metastatic to the oral region: report of three cases. *Oral Surg Oral Med Oral Pathol* 1993; **76**: 752–756.
4. Cotran RS, Kumar V, Robbins SL. *Pathological Basis of Disease* 4th edn. Philadelphia: WB Saunders Co, 1989: pp.1155–1156.
5. Carter LC, Aguirre A, Boyd B et al. Primary leiomyosarcoma of the mandible in a 7 year old girl. *Oral Surg Oral Med Oral Pathol* 1999; **87**: 477–484.
6. Van der Kwast WA, Van der Waal I. Jaw metastases. *Oral Surg* 1974; **37**: 850–857.
7. Rajappa S, Loya AC, Raghunadha R et al. Metastasis to oral cavity – a report of two cases and review of literature. *Indian J Med Pediatr Oncol* 2005; **26**: 43–46.
8. Hershberg A, Leibovich P, Buchner A. Malignant tumours metastatic to the mouth and jaws. *Oral Surg* 1965; **20**: 283–290.
9. Weitzner S. Leiomyosarcoma of the anterior maxillary alveolar ridge. *Oral Surg* 1980; **54**: 647.