

# A Technique for Surgical Mandibular Exostosis Removal

## Abstract

Exostosis, a slow-growing, benign bony outgrowth, is a common clinical finding and not usually an issue with patients. However, when removable prosthetics must sit either adjacent to or over these areas, pressure, food abrasion, ulceration, or limited tongue space can occur. This article describes a surgical technique for excision of exostosis through the presentation of a case. An 86-year-old woman had soft-tissue irritation caused by abrasion from food in the buccal posterior right quadrant. The removal of the exostosis is illustrated through the use of a device that serves as an alternative to a scalpel, offering a safe, predictable outcome.

Exostosis, termed torus mandibularis<sup>1</sup> (commonly called mandibular tori), is a common clinical finding. Most are asymptomatic, benign bony outgrowths that slowly grow over the patient's lifetime. They consist of dense, cortical bone and are avascular in nature.<sup>2</sup> Mandibular exostosis is commonly located lingual to the premolars and is often bilateral. It also may be located on the buccal portion of the ridge, either in a solitary location or extensively spread bilaterally. An incidence of 9% to 60% has been reported in various ethnic groups, and it has been reported in the literature for over 180 years.<sup>3-5</sup> Both genetic and environmental factors have been implicated as the causative factors, and the true cause may be multifactorial.<sup>6</sup>

The presence of an exostosis may pose a problem in successful construction of dentures. If large enough, an exostosis may create speech issues because of limited tongue space. Histologically, the tissue overlying the exostosis is thinner than normal gingiva and may ulcerate easily when masticating hard or sharp foods. This article will describe a surgical technique for excision mandibular exostosis.

## Case Presentation

An 86-year-old woman complained of soft-tissue irritation caused by abrasion from food in the buccal posterior right quadrant. A buccal exostosis was present at the first molar and had been the same size for the 16 years the woman had been a patient of the practice (Figure 1). After a discussion, the patient requested that the exostosis be removed to help decrease future food abrasion of the thin overlying tissue.

Anesthetic was administered to block the inferior alveolar nerve, and it was then applied locally at the papilla to control bleeding at the surgical site.

A bipolar electrotonic surgical unit<sup>a</sup> was used to make an intrasulcular incision distal to the exostosis to be removed and extended mesially to allow soft-tissue reflection and exposure of the exostosis (Figure 2). Vertical releasing incisions are not necessary, and if addi-

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Figure 1—Buccal exostosis adjacent to the mandibular first molar.



Figure 2—Bident electro-surgery tip is used to make a sulcular incision while water is sprayed on the site and evacuated with high volume suction.

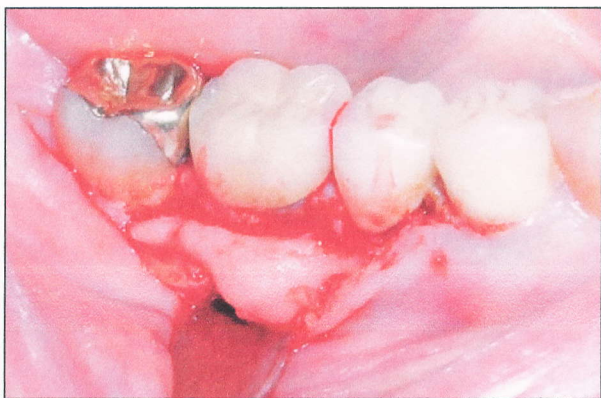


Figure 3—Soft-tissue reflection to fully expose the exostosis. Note the absence of charring of the flap edges and hemostasis of the surgical site.

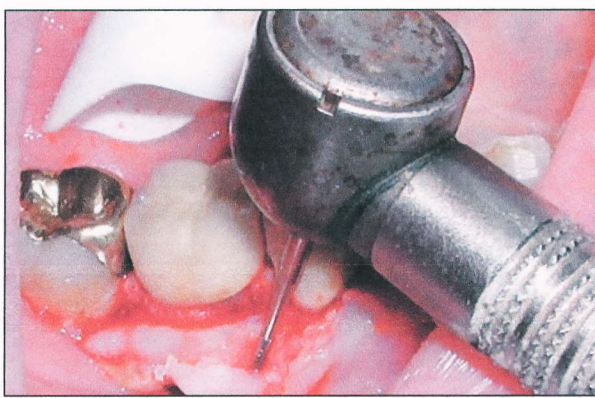


Figure 4—A surgical carbide is used to score the superior aspect of the exostosis, while a periosteal elevator is placed inferiorly to retract the flap.



Figure 5—A monoplane chisel is used to cleave the exostosis while protecting the underlying soft tissue with a periosteal elevator.

tional reflection is needed, the sulcular incision should be extended distally and mesially to the surgical site. The incision may be made with a scalpel blade, but the bipolar surgical tip will afford better hemostasis during surgery,<sup>7</sup> providing better visibility. The bipolar electro-surgical tip may be used in a wet field,<sup>8</sup> and the authors recommend applying a water spray during cutting, which will keep the tissue hydrated and yield a flap margin that is noncharred.<sup>9</sup>

Reflection of the soft tissue was accomplished with a periosteal elevator. Care must be given to avoid tearing

the thin tissue. Tissue should be reflected as a full-thickness flap, with the entire exostosis exposed, especially inferiorly (Figure 3).

The periosteal elevator was placed inferior to the exostosis to protect the underlying soft tissue, and a surgical length carbide<sup>b</sup> in a high-speed handpiece with water was used to score a line on the superior aspect of the exostosis (Figure 4). The score line should be placed close to the normal contour of the alveolar ridge. A monoplane chisel was placed in the score line, allowing the exostosis to be cleaved from the alveolar ridge. It is important that the periosteal elevator is placed inferior to the exostosis to prevent accidental slippage of the chisel tip and subsequent tissue damage. The tip of the periosteal elevator was kept in contact with the bone, and a gentle tap was applied to the chisel with a surgical mallet (Figure 5).

The exostosis, a dense cortical bone, will cleave at the score line and separate from the underlying bone as a single piece (Figure 6). The osseous bed will have sharp edges at the point of cleavage (Figure 7). A foot-ball diamond<sup>b</sup> bur was used in a high-speed handpiece with water to smooth the alveolar ridge and remove any sharp edges that resulted after cleavage of the hard exostosis (Figure 8). The flap was repositioned, and a vertical mattress suture is placed at each papilla with

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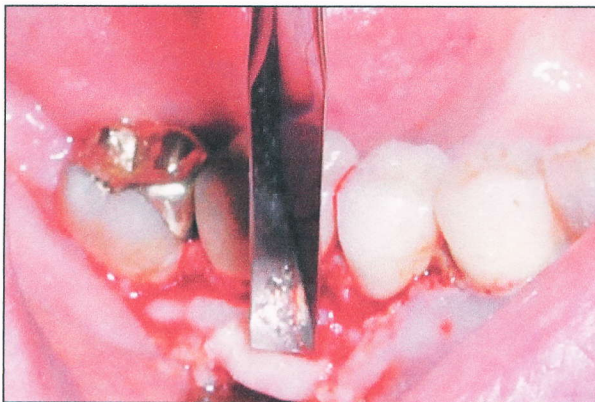


Figure 6—The exostosis is removed in a single piece.



Figure 7—The surgical site after cleavage of the exostosis.



Figure 8—The surgical site after smoothing of the area with a diamond.



Figure 10—The surgical site 4 weeks after surgery shows lack of inflammation and complete healing.

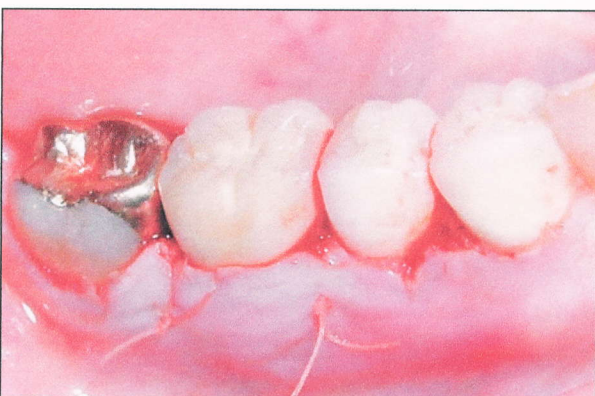


Figure 9—The surgical site after placement of the resorbable sutures.

4-0 polyglycolic acid suture (Figure 9). The sutures were left in place for 21 days. Before releasing the patient, gentle pressure was applied to the site with wet gauze to permit a fibrin clot, helping to tack the periosteum to the new osseous bed. Pressure should be applied for 5 minutes, which will also prevent fluid accumulation under the flap during the period immediately after the surgery.

The patient returned 2 weeks after surgery to check healing, and sutures were still present. There was no inflammation, and the patient indicated that she had minimal discomfort after surgery and that the area felt normal 3 days after surgery. A followup appointment was scheduled at 4 weeks after surgery to check the site. Sutures

were absent, and the tissue appeared healed. Slight recession was noted on the mesial buccal of the first molar (Figure 10).

## Conclusion

Exostosis is a common occurrence as cited in the literature. These slow-growing, dense cortical bone deposits are not usually an issue with patients, except when removable prosthetics must sit either adjacent to or over these areas. Because the overlying tissue is thin, pressure or food abrasion may cause ulceration.

Excision of exostosis in the mandible is a safe, predictable procedure with minimal postoperative sequelae. As an alternative to a scalpel, the bipolar electrosurgical unit provides an incision without charring of the flap edges as would be seen with monopolar electrosurgical units.<sup>10</sup> The bipolar electronic surgical tip produced a smaller temperature gradient (average difference 9.2°C) at the 1-mm tissue depth compared with the monopolar electrosurgery tip (average difference 14.6°C).<sup>11</sup> Additionally, arcing that is commonly seen with monopolar electrosurgery units when cutting near metallic restorations or dental implants is not observed with the Bident bipolar surgical unit, making it safe.<sup>12</sup> The Bident bipolar tip also provides coagulation of the capillaries transected during the incision, and hemostasis is maintained, providing better visibility in the surgical field than would be expected with a scalpel incision.



The dense nature of the exostosis allows it to be cleaved in a single piece with a chisel after appropriate scoring of the bone. Use of surgical chisels has decreased over the past 20 years because of fear of potential soft-tissue damage if the chisel tip were to slip.<sup>13,14</sup> Chisels may be used safely when a periosteal elevator is placed below the bone to be sectioned, acting as a safety stop. An alternative to the chisel has been the use of a diamond to grind away the entire exostosis. In the authors' opinion, this will lead to accumulation of nonvascular osseous debris under the flap, which may lead to compromised healing.

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