

Electrosurgery: An Alternative to Laser Surgery in Orthodontics

PETER G. MILES, BDS, MDS

Laser treatment has recently emerged as a useful addition to orthodontic practice. The most common applications of lasers in dentistry include gingivectomies, frenectomies, removal of mucocutaneous lesions, and gingival sculpting for implants.¹

Many of these procedures can also be performed with electrosurgery, which offers the benefits of laser surgery at a lower cost. Electrosurgery works by generating a radio frequency current. With a fully rectified current, the clinician can make precise incisions while the current seals off blood vessels and lymphatics, leaving a dry field that allows immediate placement of attachments. Electrosurgery creates a sterile incision with minimal postoperative pain; reduced wound contraction ensures scar-free repairs.²

Like lasers, electrosurgery can be used in orthodontics for exposure of totally or partially impacted teeth, providing access for bracket placement, gingivectomy, frenectomy, or cosmetic gingival contouring. It has even been advocated for pericision following correction of rotations.³

Case 1

A 14-year-old female presented with a dentition that was fully erupted except for a soft-tissue-impacted maxillary right canine. At the initial bonding appointment, .5ml of local anesthetic was delivered and the brackets were placed, giving the area time to anesthetize. The electrosurgical unit* was then set to Cut/Coagulate (fully rectified current) on a power setting of 5, and an initial incision was made in the attached gingiva over the impacted canine (Fig. 1). High-volume suction was kept near the site to remove any odor as the surgery was performed. A wedge of tissue was excised, leaving a collar of attached tissue.

A button was bonded to the exposed canine,

*Sensimatic 600SE, Parkell, Inc., 300 Executive Drive, Edgewood, NY 11717; www.parkell.com.

and the initial .014" nickel titanium archwire was engaged (Fig. 2). The patient was instructed to use a chlorhexidine rinse twice daily for a week. In a follow-up call the next day, she reported no soft-tissue discomfort from the electrosurgery procedure—only sore teeth from the initial ligation.

Ten weeks later, the tissue had healed well, and the canine had erupted enough for ideal bracket placement and insertion of the next archwire (Fig. 3). Early exposure of this tooth may have reduced the patient's treatment time by months.



Fig. 1 Case 1. Initial incision in attached gingiva made with electrosurgery tip to uncover impacted canine. High-volume suction is kept close to remove odor.



Fig. 2 Case 1. With no bleeding, button can be bonded immediately to exposed canine, and initial .014" nickel titanium archwire engaged.



Dr. Miles is a Senior Lecturer, University of Queensland Dental School, Brisbane, and in the private practice of orthodontics at 10 Mayes Ave., Caloundra, Queensland 4551, Australia; e-mail: pmiles@beautifulsmiles.com.au.



Fig. 3 Case 1. Ten weeks later, bracket is bonded in ideal position, and .0175" × .0175" nickel titanium archwire engaged.

Case 2

A 13-year-old female presented with a partially erupted maxillary right canine. After injecting .5ml of local anesthetic and bonding the other brackets indirectly, we used a periodontal probe to assess the sulcus depth (to be sure we were clear of bone) and the level of attached gingiva (Fig. 4). Electrosurgery exposed enough tooth structure that the canine bracket could be bonded in an ideal location, while a collar of attached tissue was maintained (Fig. 5).

Discussion

Disadvantages of electrosurgery include the need for local anesthesia; in addition, the procedure should not be used on patients with pacemakers or within 15 feet of someone with a pacemaker.¹ Although electrosurgery has been found safe when used near bone,⁴ it is prudent to avoid contact due to the risk of necrosis.⁵ If there is any doubt about the level of underlying bone, the patient should be referred to an oral surgeon, or a small flap should be reflected with a scalpel to visualize the area prior to surgery.

Electrosurgery provides many of the same benefits as laser treatments, but is less expensive and requires no special eye protection or government registration.



Fig. 4 Case 2. Periodontal probe used to ensure avoidance of bone contact in labial sulcus and presence of sufficient attached gingiva for exposure of impacted canine.



Fig. 5 Case 2. Immediately following exposure, bracket is bonded in ideal location, allowing initial archwire to be engaged.

REFERENCES

1. Sarver, D.M. and Yanosky, M.: Principles of cosmetic dentistry in orthodontics: Part 2. Soft tissue laser technology and cosmetic gingival contouring, *Am. J. Orthod.* 127:85-90, 2005.
2. Roby, G.: Electrosurgical currents and their effects, *Dent. Clin. N. Am.* 26:683-691, 1982.
3. Fricke, L.L. and Rankine, C.A.N.: Comparison of electrosurgery with conventional fibrotomies on rotational relapse and gingival tissue in the dog, *Am. J. Orthod.* 97:405-412, 1990.
4. Schieda, J.D.; De Marco, T.J.; and Johnson, L.E. Jr.: Alveolar bone response to the electrosurgical scalpel, *J. Periodontol.* 43:225-232, 1972.
5. Glickman, I. and Imber, L.R.: Comparison of gingival resection with electrosurgery and periodontal knives: A biometric and histologic study, *J. Periodontol.* 41:142-148, 1970.