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CLINICAL TECHNIQUES AND TECHNOLOGY

Bipolar radiofrequency for adenoidectomy

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Otolaryngologists have utilized bipolar radiofrequency for tonsillectomy for nearly 5 years, although many switch to a curette or suction cautery to remove the adenoids. Since adopting Coblation bipolar radiofrequency (ArthroCare Corporation, Sunnyvale, CA) for tonsil removal, the author has seen patient benefits, including minimal blood loss and less thermal damage, leading to a more thorough dissection and faster recovery. Expanding the use of Coblation to the removal of the adenoids seemed a logical adjunct to the use of the technology for tonsillectomy.

The author was compelled to evaluate the technique for tonsillectomy upon reading several studies revealing dramatic effects of Coblation on postoperative recovery. One study showed that Coblation patients were back to their normal diet in 2.4 days vs 7.6 days on average when compared to electrocautery,[1] reducing the risk of dehydration and rapid weight loss. The author also found children experience less pain and recover more quickly than those who received electrocautery.[1] Another study found fewer calls to the physician during the 14-day follow-up period, less frequent use of postoperative narcotics, and a lower incidence of postoperative nausea and throat swelling.[2]

Even though there are little data indicating that Coblation has similar effects on recovery when used for adenoidectomy, the author's positive experience with using Coblation for tonsillectomy prompted the evaluation of the technology for adenoidectomy. Since making the switch, the author has successfully performed more than 500 adenotonsillectomy procedures using Coblation. The technique is used for all pediatric patients presenting obstruction or chronic infection and has been used successfully on patients as young as 9 months with no complications. Using Coblation for both tonsillectomy and adenoidectomy eliminated the need for two different instruments and reduced overall procedure costs.

While curettage is the most common method of adenoid removal,[3] the technique is not without its disadvantages. Utilizing a curette causes intraoperative bleeding, which can lead to potential trauma to the surrounding structures due to poor visualization of the surgical field. Similar to curettage, packing and suction cautery are also necessary to control bleeding when performing an adenoidectomy with the microdebrider. Suction cautery, which the author used prior to Coblation for adenoid removal, offers the advantage of better visualization due to minimal intraoperative bleeding throughout the procedure. However, this technique can lead to incomplete tissue removal due to the degree of thermal damage present in the surgical field that may obstruct the site of remaining adenoid tissue. Coblation provides the author with a more precise and controlled method of removing tissue with less damage to surrounding areas and offers optimal visualization of the surgical field.[4]

TECHNIQUE

When performing an adenoidectomy alone or in conjunction with a tonsillectomy, the author uses the EVac 70 Xtra device (ArthroCare, Sunnyvale, CA) on a power setting of 7 for Coblation and a setting of 3 for Coagulation.

Using a McIVOR channeled mouth gag (Surgipro, Inc., Chicago, IL) to keep the endotracheal tube in the midline eliminates the need to reposition the endotracheal tube during tonsillectomy. A red rubber catheter is placed through the right nostril to retract the palate and a laryngeal mirror is set at the base of the tongue. This allows the assessment of the size of the adenoids and provides a full view of the nasopharynx as the wand is introduced into the visual field, as shown in Figure 1.

Prebending the wand is not recommended; it can easily be adjusted later in the dissection if necessary. If the instru-

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ment needs adjustment, it should be bent at the junction of the handle and the wand. This provides a better angle of approach into the nasopharynx, without compromising visualization.

The dissection begins at the inferior edge of the adenoid working the wand from left to right, as shown in Figure 2. Moving slowly and systematically, approximately 1 cm of tissue is removed with each pass until reaching the posterior choanae. Hovering over the tissue and keeping the wand moving maintains a continuous plasma field and thus allows for rapid tissue removal and minimal intraoperative bleeding. It is critical not to bury the tip of the wand into the tissue since this will lead to clogging of the tip. The wand also has an integrated suction port, which allows for a clear operative field. If hemostasis is necessary, the system's coagulation mechanism can be activated by switching to the coagulation foot pedal.

The tip of the wand emits radiofrequency energy and saline, creating a precisely focused plasma between the active electrode and the tissue. The energized particles in the plasma have sufficient energy to break molecular bonds, excising or dissolving soft tissue at relatively low temperatures (40°C to 70°C), thereby preserving the integrity of the surrounding healthy tissue.

Working from the floor of the adenoid allows for a more precise dissection and also permits an easy dissociation of large bulks of tissue. As the dissection proceeds deeper into the nasopharynx (or superiorly towards the choanae), the wand can be bent for optimal tissue removal without compromising visualization.

There will be a clear demarcation between the lymph tissue and the posterior adenoid wall indicating complete removal of the adenoid. As with all adenoidectomy procedures, all boundaries, including the orifices of the eustachian tubes, the back of the nose, and the pharyngeal wall, should be examined.

Figure 1 Using a mirror to assess the size of the adenoids, the author is able to identify the inferior edge of the adenoid, the opening to the eustachian tubes, and the septum in the midline.

Figure 2 The author begins ablating the adenoid tissue at the inferior edge of the adenoids, taking approximately a centimeter of tissue with each pass until reaching the posterior choanae.

BENEFITS

Since adopting Coblation for adenoid removal, it is the author's impression that patients have less postoperative pain and quicker recovery, which may be due to the minimal thermal damage associated with bipolar radiofrequency.[5] Additional surgical benefits include optimal visualization of the surgical field, less time under general anesthesia, minimal blood loss, and reduced time in the recovery room. Because of the precise and controlled tissue removal in addition to the clear field of vision experienced with this technique, complete removal of the adenoid is possible without damage to the eustachian tubes, the septum, and the cervical spine.

By using the same instrument for both tonsillectomy and adenoidectomy the author has reduced the costs to the hospital and streamlined the procedure. Coblation may provide surgeons with a systematic approach for both tonsillectomy and adenoidectomy, while alleviating the hemostasis problems often associated with electrosurgery. Overall, bipolar radiofrequency has provided a precise, complete, and safe removal of adenoid tissue.

REFERENCES

1. Temple RH, Timms MS. Paediatric Coblation tonsillectomy. Int J Pediatr Otorhinolaryngol 2001;61:195–8.
2. Stoker KE, Don DM, Kang DR, et al. Pediatric total tonsillectomy using Coblation compared to conventional electrosurgery: a prospective, controlled single-blind study. Otolaryngol Head Neck Surg 2004;130(6): 666–75.
3. Kay DJ, Mehta V, Goldsmith AJ. Perioperative adenotonsillectomy management in children: current practices. Laryngoscope 2003;113(4): 592–7.
4. Timms MS, Ghosh S, Roper A. Adenoidectomy with the coblator: a logical extension of radiofrequency tonsillectomy. J Laryngol Otol 2005;119(5):398–9.
5. Chinpairoj S, Feldman MD, Saunders JC, et al. A comparison of monopolar electrosurgery to a new multipolar electrosurgical system in a rat model. Laryngoscope 2001;111(2):213–7.