Supracapsular Partial Tonsillectomy with Monopolar Electrocautery: A Single Surgeon’s Method and Experience

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Abstract

Objectives: To present a single surgeon’s method and experience with a novel approach to monopolar intracapsular tonsillectomy to treat obstructive tonsillar hypertrophy in the pediatric population.

Methods: We describe a novel method utilizing monopolar bovie electrocautery to perform supracapsular partial tonsillectomy and reviewed the cases of pediatric patients who underwent this procedure performed by a single surgeon. The technique, outcomes, complications, and average material cost of these procedures was examined.

Results: The cases of 220 pediatric patients undergoing supracapsular partial tonsillectomy with monopolar bovie electrocautery by a single surgeon were reviewed retrospectively. Tonsils were excised using a combination of bovie/needle tip electrocautery and suction cautery using a novel technique until roughly 95% of tonsillar tissue was removed and hemostasis was confirmed. Only one patient (0.45%) experienced post-operative hemorrhage. Two patients required re-operation for re-growth/recurrent infection (1%). Materials cost analysis was performed to compare our method with powered microdebrider-assisted or Coblation partial tonsillectomy and revealed a cost advantage of nearly 500%.

Conclusion: Supracapsular partial tonsillectomy with monopolar electrocautery is an effective and inexpensive modality for treatment of obstructive tonsillar hypertrophy and is associated with only rare instances of re-growth and post-operative bleeding.

Background

Tonsillectomy is one of the most common surgical procedures performed in the United States, with 300,000 to 400,000 tonsillectomies performed annually. Since 2002, partial tonsillectomy has been described as a safe and effective way to treat symptoms of sleep disordered breathing and OSA in children. In a partial intracapsular tonsillectomy, the tonsil is incompletely removed, leaving a very small amount (<5%) of tonsillar tissue behind, effectively serving as a barrier between the surgical site and the muscle, nerves, and blood vessels deep to the capsule. Previous studies have described partial tonsillectomy techniques using powered microdebriders and coblation wands, but a monopolar electrocautery technique has not been previously described in the literature to our knowledge.

Technique

- No special set-up is required.
- Cautery tip—Insulated, Teflon-coated paddle or needle tip. Slightly bend tip so that it is angled medially so as to prevent inadvertent sub-capsular dissection.
- Cut/Coag setting—From 15/15 to 20/20. Most of the dissection performed using the ‘cut’ mode.
- Very important to decrease FIO2 to as close to room air as possible to reduce risk of airway fire as char build-up occurs more quickly with intratonsillar dissection.
- Grasp tonsil with Allis clamp. Excise the medial 2/3 of the tonsil with monopolar cautery. The goal is to maintain the tissue in the supracapsular/intratonsillar plane. This can be difficult inferiorly where the capsule can become thinner and more superficial. Evacuate smoke (and O2) while keeping tip very clean.
- Be careful to stay well away from uvula. retracting the uvula with an NP catheter can help. Thermal injury can occur even without direct electrocautery contact.
- Treat remnant with suction cautery for hemostasis and to complete removal. The tonsillar capsule and underlying pharyngeal musculature are not violated.
- Use frequent irrigation, irrigation washes are aspirated
- Check uvula for evidence of thermal damage. Consider excising remnant of uvula or if satisfactory removal of tissue is not removed with supracapsular dissection. Consent for ‘complete tonsillectomy’ should be obtained on all patients.

Results

- 220 cases of pediatric patients ( < 18 years) undergoing partial tonsillectomy with this novel method over a 10 year span were reviewed to determine average incidence of post-operative bleeding and success in alleviating sleep disordered breathing/OSA.
- One patient experienced post-tonsillectomy hemorrhage (0.45%). Two patients required re-operation for tonsil re-growth (1%). These outcomes appear to be as good or better than published results, though strict statistical analysis was not undertaken in this technique description and retrospective review.
- Average materials cost of our technique was $20.00 compared with $150.00 for powered microdebrider and $200.00+ for coblator. Some studies have listed the cost of a monopolar cautery device to be as low as $5.00.

Conclusions

Supracapsular partial tonsillectomy with monopolar electrocautery is an effective and inexpensive modality for treatment of obstructive tonsillar hypertrophy. While the efficacy of partial tonsillectomy has been described, our particular technique has not been previously reported in the literature to our knowledge. It could be easily translated for use in other US and international medical centers, including those in developing nations with limited access to more expensive instruments.

References


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