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A Comparison of Dissection-method and Diathermy Tonsillectomies

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Abstract

Objective: To compare the dissection and diathermy methods of tonsillectomy and evaluate their advantages and disadvantages during surgery and convalescence.

Methods and Setting: Patients who had tonsillectomy at Aga Khan University Hospital, between January 1994-December 1997.

Results: Four year retrospective analysis was done of 200 patients who underwent tonsillectomy by either electrocautery or dissection method. One hundred and eleven underwent tonsillectomy by electrocautery and the other 79 had their tonsils removed by dissection-method and 2 had a combination of both. The average intraoperative blood loss was 10 ml with cautery and 65 ml with dissection method. The average operative time was 15.7 minutes with cautery and 26.9 minutes for dissection. We found higher amounts of blood loss and intraoperative time with dissection method than electrocautery. In comparing diathermy dissection method tonsillectomies, there was marked difference between two, in pre-operative blood loss and operative time.

Conclusion: Although post-operative bleeding, pain and infection are complications of both techniques and in our study their incidence is similar in both, but intra-operative blood loss and time are two important factors, electrocautery technique is a more effective technique in our set up based on which we can conclude that electrocautery (JPMA 50:215, 2000).

Introduction

Tonsillectomy is one of the commonest surgical procedures performed in the field of otolaryngology. Tonsillectomy was described for the first time by Celsius in the first century AD¹. Over the last century many different procedures and techniques have been described, of which dissection method, electrocautery and now laser techniques are commonly used. Dissection method, in which the tonsils are removed mechanically followed by hemostasis by ligature or minimal electrocautery to bleeding points, is still the most popular method. The use of electrocautery for tonsillectomy was described by Goycoolea et al² in the 1980's. The literature remains divided over which method is better and each technique has its proponents. At the Aga Khan University Hospital, Karachi, Pakistan, both the dissection method and diathermy (unipolar) method are employed. A retrospective study was done in both methods evaluating their advantages and disadvantages during surgery and convalescence.

Patients and Methods

The patients who underwent tonsillectomy at the Aga Khan University Hospital between January 1994 and December 1 1997 were studied. Patients included in this study had a tonsillectomy with

either method during this time period, regardless of any adjunctive procedures like adenoidectomies, grommet insertion, etc. simultaneously. All the patients with a poor follow-up were excluded from the study.

The tonsillectomy by electrocautery was defined as tonsillectomy performed with electrocautery dissection (monopolar) with hemostasis also being achieved by electrocautery. Dissection method tonsillectomy was defined as tonsillectomy performed by a combination of sharp and blunt dissection, hemostasis being obtained with ligature or minimal electrocautery (bipolar). The complications were divided into pre-operative, postoperative and late. Pre-operative complications like, damage to lips tongue pharyngeal wall, TM joint dislocation and bleeding were those occurring during the operation and post-operative complications like bleeding, infections and otalgia occurred immediately after the operation up to 4 weeks. Any complications like, pharyngeal and palatal scarring, tonsillar remnants and voice changes, after 4 weeks were classified as late complications.

Analysis of the data was performed using the statistical analysis package Epidemiological Information (Epi Info) V6.0.

Results

A total of 200 patients who had tonsillectomies between January 1994 to December 1997 fulfilled our criteria and were included in this study. The mean age of the patients was 5.8 years (SD = 9.4 years) ranging from 4-49 years. Of these 200, 111 (55.5%) were male and 89 (44.5%) were female. A majority 183 (91.5%), of our patients had surgery as inpatients, while 19 (8.5%) had daycare surgery. The average stay of admitted patients was 1.68 days (SD 0.7), with a range of 1-3 days.

The commonest indication for tonsillectomy in these patients was recurrent tonsillitis (187, 9.5%). Other indications included quinsy, sleep disorders, tumor of the palate and tumor of the tonsils. In 195 (97.5%) patients, only a tonsillectomy was performed, while 5 patients had adenoidectomies with tonsillectomies. Out of 200 surgeries, 79 (39.5%) had tonsillectomy by dissection method, while 119 (59.5%) patients had tonsillectomy by electrocautery method and in 2 patients (1%) a combination of both techniques was used.

Pre-operative, post-operative and late complications were evaluated. Pre-operative complications occurred in 2 (1%) patients, both of them anesthesia-related. Post-operative complications were recorded in 36 (18%) patients. Of these 36, 11 reported otalgia post-operatively, 8 had infections, 7 suffered from secondary hemorrhage and 4 complained of excessive vomiting. A first generation cephalosporin and penicillin were given prophylactically. In comparing diathermy to dissection-method tonsillectomies, several differences were noted. Pre-operative blood loss for each dissection-method tonsillectomy ranged from 50 to 100 ml, with the average being 65 ml. In contrast, pre-operative blood loss for diathermy tonsillectomies ranged from 5 ml to 20 ml, with the average being 10 ml. Operative time also differed between the two, with diathermy procedures taking an average of 15.7 minutes and dissection-method procedures taking average of 26.9 minutes. Statistical analysis revealed no differences between complications rates for dissection-method and diathermy tonsillectomies.

Discussion

Tonsillectomy has been a common operation in otolaryngology, with over 1 million tonsillectomies being performed annually in the UK in the 1960's and 70's. However, recently, this figure has fallen considerably³. Although the tonsillectomy is a quick operation, morbidity may be significant. Hemorrhage, apnea, pain, fever and poor oral fluid intake are all possible effects of surgery⁴. All these effects can be minimized in experienced hands and improved techniques. There is no consensus on the best technique for a tonsillectomy. In the past, the guillotine or tonsillotome technique was used, but because of higher morbidity, this technique has been reported as unsatisfactory and its use has been decreased worldwide⁵.

Dissection tonsillectomy is one of several frequently practiced techniques. Dissection tonsillectomy can be accomplished by blunt or sharp method, while other modifications of the this technique include dissection with electrocautery and laser. These modifications are described the morbidity of the operation. Laser tonsillectomy has achieved a growing popularity in the United States because of increasing availability of machines and reduction in morbidity (less intra-operative blood loss, reduced postoperative pain and more rapid healing)⁶.

The conventional techniques are commonly used in most hospitals worldwide because they do not require any expensive machines. The mechanical dissection as reported by Crysedale⁷ has an incidence of 6% of bleeding within 24 hours, while Szeremeta W1. reported 7.6% bleeding postoperatively. In the electrocautery technique, post-operative bleeding rates have been reported at between 0-033%^{8,9}. In experienced hands, both techniques have a negligible incidence of post-operative bleeding. In our study, post-operative bleeding rates for dissection method is 6% and for electrocautery is 2%. The incidence of postoperative pain is significant after electrocautery but is not as severe after dissection method¹⁰.

The operative time is less with electrocautery, ranging from 11.2-13.5 minutes^{4,11}, while it ranges from 12.4-19.9 minutes for the dissection method^{11,12}. In our study, the average operative time was 15.7 minutes for electrocautery and 26.9 minutes for dissection.

The reported intra-operative blood loss with electrocautery ranges from 26.6 ml - 33 ml, while for dissection method it ranges from 78.4-104 ml^{3,4}. In our patients is was 10 ml for electrocautery and 65 ml for dissection method.

Although post-operative bleeding, pain, fever and infections are complications of both techniques and have similar incidences, the intra-operative blood loss and time are two important factors which can effect the outcome of both techniques. Considering these factors, we found that the electrocautery technique is a more effective method in our setup.

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