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A Comparative Study of Cold Steel and Diathermy Tonsillectomy Methods

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Abstract

Tonsillectomy is one of the most widely performed surgeries in ENT. In countries like India where cost is a major issue, cold steel and diathermy methods for tonsillectomy are preferred. Twenty patients with indications of bilateral tonsillectomy were selected and randomly assigned to any of the two groups. Standard preoperative and postoperative care was followed. The statistical analysis showed diathermy procedure takes less time and less perioperative bleeding but more postoperative pain. No incidence of primary, reactionary or secondary hemorrhage in any of the cases. Diathermy method of tonsillectomy may be considered as a method of choice based on our study findings.

Keywords Tonsillectomy; Cold steel; Diathermy

Introduction

Tonsillectomy is one of the most commonly performed surgeries in the field of Otorhinolaryngology. Different techniques of tonsillectomy include cold steel method, guillotine excision, monopolar and bipolar diathermy dissection, cryosurgery, coblation technique, microscopic bipolar diathermy, ultrasonic removal, harmonic scalpel, and laser dissection [1-3].

Cold steel, electrodissection(diathermy assisted), coblation, laser-assisted, radiofrequency ablation, microdebrider are some of the methods of tonsillectomy. Cold steel method is the earliest method and still one of the most commonly performed methods to date in the developing world. Diathermy assisted(monopolar, bipolar) tonsillectomy has gained popularity in recent years. Though, in many nations, other methods like laser-assisted tonsillectomy and coblation have gained significant popularity but in a developing country like India, cost of surgery is a major issue for which these methods are less commonly performed.

Cold steel method uses stainless steel tonsillar knife, tonsillar dissector, Negus ligature tier, Negus forceps and anterior pillar retractor. In this method the tonsil is dissected with its capsule, exposing the underline constrictor muscles.

Electrodissection method is also known as diathermy method for which either monopolar or bipolar or both can be used. The heat of the diathermy reaches around 300-4000C, which induce hemostasis. Lateral dispersion of thermal energy causes the dissection of tonsil from the bed.

This study intends to compare these two commonly performed surgeries based on some important per-operative and postoperative parameters.

Materials and Methods

This is a case-control study done on twenty patients, of whom ten patients underwent cold steel method and other ten underwent electrodissection (diathermy) in a tertiary care hospital in West Bengal, India. Bipolar diathermy is chosen over monopolar to minimise lateral dispersion of heat. All the surgeries were performed in the same institution and by a single surgeon under general anaesthesia. Chronic tonsillitis meeting the standard criteria was used to select the patients for surgery. Patients were randomly chosen for either of the two groups. Standard preoperative investigations were sent and preoperative fitness was obtained for all patients. Same analgesic (infusion paracetamol) in dosage adjusted for body weight was used pre-operatively and postoperatively. Per- operative hydrocortisone injection was given to all patients. Adequate hydration was maintained in per-opeative and postoperative period for all patients. Patients were encouraged for oral feed 6 hours after the operation and standard post-operative care is given for all patients.

The study aimed at comparing pre-operative parameters which include the duration of surgery and amount of blood loss which was measured from difference in weight of the throat packs and blood collected in suction drain, and post-operative parameters which include pain at 12 hours after surgery using Visual Analog Scale (VAS) and degree of mouth opening. The later was quantified as the ratios of post-operative (at 12 hours after surgery) to preoperative inter incisional distance expressed as a percentage. Patients were discharged 48 hours after surgery and followed up on postoperative day 7and then weekly for two months.

Statistical analysis was done using Graph Pad Prism v.6 for Mac. Unpaired t-test was used to compare the two groups and the p value<0.05 was considered to be significant.

Results

Out of the twenty patients, nine were females. There were no significant differences between the cold steel and diathermy groups

with regards to the preoperative parameters of age (3.5 *vs.* 3.0 respectively, p=ns) and tonsillar size (12.2 *vs.* 13.5 respectively, p=ns).

The mean duration of surgery for cold steel method was 63(5.1) mins which was significantly higher than the diathermy method 17.5(1.7) mins (p value<.0001) (Figure 1a and 1b).

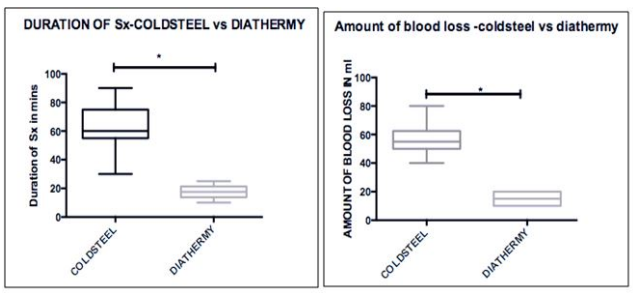

Figure 1: Box and Whiskers plots showing comparison of the duration of surgery (1a) and amount of blood loss (1b) in cold steel and diathermy groups.

The amount of blood loss during cold steel method was 57(3.67)ml which is significantly higher (p-value<.0001) than diathermy method 14.5(1.39)ml.

The mean VAS score used for pain assessment at 12 hours after surgery for cold steel method was 5.8(0.5) which is significantly lower (p-value 0.0102) than the diathermy method 7.4(0.3). The assessment of maximal mouth opening at 12 hours after surgery compared to preoperative mouth opening for cold steel method 69.5(2.17)% is significantly higher (p-value 0.039) than diathermy 61.00(3.15)%. None of 20 patients reported primary, reactionary or secondary hemorrhage or vomiting.

Discussion

The current study shows that thediathermy procedure of tonsillectomyis quicker and with lesser amount of blood loss, but results in more post-operative pain in comparison to the cold steel procedure. No postoperative bleeding or vomiting was associated with any of the surgeries.

This study showed there is no significant difference in postoperative bleeding between the two procedures which is a contradiction to many previous studies [4].

In this study, there is a significant difference in mean operating time between the two procedures, which is similar to the previous study [5]. But the mean operative time is much higher in this study. Post-operative pain is significantly higher in the diathermy group which is in contradiction to other Indian study [5]. Post-operative mouth opening assessment also shows higher pain with diathermy procedure. It may be due to lateral dispersion of heat causing injury to the nearby structures and also to the superior constrictor muscle in the tonsillar bed.

This study is the comparison between the two most commonly performed tonsillectomies in India, which may help the surgeon to determine the produce of choice.

The study consists of only twenty patients which are the limitation of this study.

Conclusion

This study shows that diathermy reduces the operative time and amount of blood loss thus reducing the cost of surgery. Though there is a significant increase in postoperative pain considering other aspects, it may be the procedure of choice.

But all surgeons should be familiar with the cold steel method to prepare themselves for diathermy instrument failure or bleeding from deep vessels.

References

1. Remcle M, Keghian J, Lawson G, Jamart J. (2003) Carbon-dioxide laser-assisted tonsilablation for adults with chronic tonsillitis: a 6 month follow-up study. Eur Arch Otorhinolaryngol260:456–459.
2. Heidemann CH, Wallén M, Aakesson M. (2009) Post-tonsillectomy hemorrhage: assessment ofriskfactorswithspecialattentiontointroduction of coblation technique. Eur Arch Otorhinolaryngol 266:1011–1015.
3. Khan NS, Khan AR, Farman A, Shah ED. (2009) Management of tonsillectomy hemorrhages by bipolar versus dissection method. J Med Sci 17:27–29.
4. O'Leary S, Vorrath J. (2009) Postoperative bleeding after diathermy anddissection tonsillectomy. Laryngoscope115:591–594.
5. Moonka PK. (2002) Ligation vs. bipolar diathermy for hemostasis in tonsillectomy – a comparative study.Indian J Otolaryngol Head Neck Surg54:35–38.