Section: ENT

Original Research Article

A COMPARATIVE ANALYSIS OF HEMOSTATIC TECHNIQUES IN TONSILLECTOMY: IMPACT ON POST OPERATIVE PAIN AND RECOVERY

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Abstract

Background: A comparison of intraoperative hemostatic techniques during tonsillectomy by using suture technique and electrocautery and to assess the post operative pain scores and duration to resumption of normal diet. **Materials and Methods:** This is a prospective study with 35 consecutive patients with grade 3 or 4 tonsils for Obstructive Sleep Apnea (OSA) and Chronic Tonsillitis who underwent Tonsillectomy or Adenotonsillectomy in Department of Otorhinolaryngology at Gadag Institute of Medical Sciences, Gadag, Karnataka, India, over a period of ten months between December 2023 to September 2024. **Result:** Pain levels in Group 1 (hemostasis with sutures, n=17) were considerably lower than those in Group 2 (hemostasis with cauterization,n=18) from 6th hour to 7th post operative day. Post operative bleeding is less in group 1 compared to group 2. For both liquid and solid food, Group 1 returned to normal diet earlier, compared to Group 2. **Conclusion:** Our study demonstrates that cold steel dissection, combined with sutures for hemostasis, results in less postoperative pain and a quicker return to both liquid and solid diets compared to hemostasis with electrocautery.

INTRODUCTION

Tonsillectomy remains one of the most common surgical procedures worldwide. Tonsillectomy is a surgical procedure which includes complete removal of the tonsil with its capsule. It may involve adenoidectomy also.

Morbidity commonly associated with tonsillectomy include pain, bleeding, nausea and vomiting, dehydration, and airway obstruction.

Now a day's different methods are used for tonsillectomy e.g. blunt dissection, cold methods, electro cautery or hot methods like lasers and coblation methods.

Hemostasis can be achieved by different methods like ligatures, diathermy, laser coagulation of bleeding vessels, calcium alginate swabs after tonsillectomy and adrenaline soaked packs with lignocaine to reduce the pain and bleeding intra and post-operatively.

In the literature, comparisons have been made between cold steel dissection and electrocoagulation for tonsillectomy. Our study is different as we are focusing on intraoperative hemostatic techniques (of suture versus electrocautery), rather than the dissection technique.

MATERIALS AND METHODS

This is a prospective study with 35 consecutive patients with grade 3 or 4 tonsils for Obstructive Sleep Apnea (OSA) and Chronic Tonsillitis who underwent Tonsillectomy or Adenotonsillectomy in department of Otorhinolaryngology at Gadag Institute of Medical Sciences, Gadag, Karnataka, India, over a period of ten months between December 2023 to September 2024.

Figure 1: Intra operative image of right tonsil showing suture technique

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All cases were performed by cold steel dissection. Intraoperative hemostasis was performed using sutures (silk 1 sutures at inferior poles, [Figure 1]) in group 1 and electrocautery in group 2 [Figure 2]. No massive intraoperative hemorrhage occurred in Group 1 or Group 2. A comparison was made between the groups in terms of the level of postoperative pain, as well as duration to resumption of normal diet.

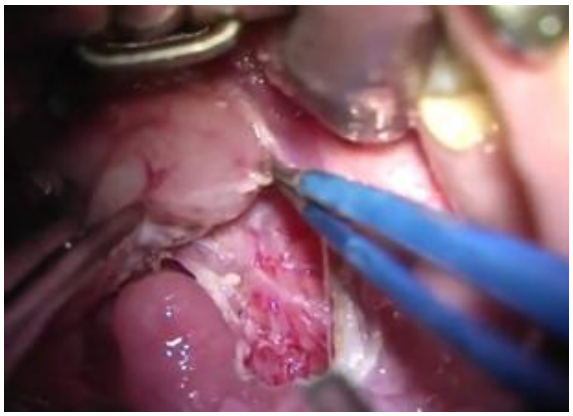

Figure 2: Intra operative image of right tonsil showing electro cautery technique

Questionnaire method was used to get information. it was given to parents of children after surgery.

- Post-operative pain scores (at the 1st, 6th, 12th hours of the first day, followed by the 2nd, 3rd, 4th, 5th, 6th and 7th days). The evaluation of the pain scores was performed by Wong-Baker Scale as 0-10 points scale.
- Post-operative duration to resumption of normal diet.

The Numeric Pain Rating Scale Instructions

General Information: The patient is asked to make three pain ratings, corresponding to current, best and worst pain experienced over the past 24 hours. The average of the 3 ratings was used to represent the patient's level of pain over the previous 24 hours. Patient Instructions (adopted from (McCaffery, Beebe et al. 1989): "Please indicate the intensity of current, best, and worst pain levels over the past 24 hours on a scale of 0 (no pain) to 10 (worst pain imaginable)

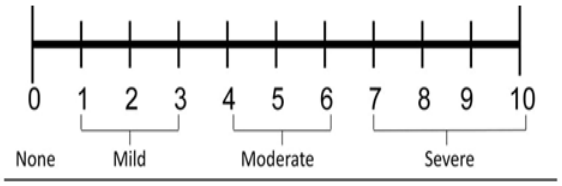

Figure 3: The Numeric Pain Rating Scale

RESULTS

The gender distribution across the groups is presented in [Table 1], with no significant difference observed between them. Likewise, the groups showed no significant difference in age.

[Table 1] also presents the surgical indication. In Group 1, 76.4% of the children had OSA, while 23.6% had Chronic Tonsillitis. In Group 2, OSA was observed in 83.3% of the children, and 16.7% had Chronic Tonsillitis. No significant difference was found between the groups.

Table 1: Comparison among Group 1 and Group 2

		Group 1(Cold dissection with suture) (n=17)		Group 2 (Cauterization) (n=18)	
		N	**%**	**n**	**%**
Gender	Male	10	58.8	11	61.1
	Female	7	41.2	7	38.9
Diagnosis	OSA	13	76.4	15	83.3
	Chronic tonsillitis	4	23.6	3	16.7
Tonsil Score	Grade 3	10	58.8	11	61.1
	Grade 4	7	41.2	7	38.9
Surgery	Tonsillectomy	4	23.6	4	22.3
	Adenotonsillectomy	13	76.4	14	77.7
Postoperative Bleeding	No	17	100	17	94.5
	Yes	0	0	1	5.5

[Table 1] presents the tonsil size scores of the children. In Group 1, 58.8% had grade 3 tonsils, while 41.2% had grade 4. In Group 2, 61.1% had grade 3 tonsils, and 38.9% had grade 4. No significant difference was observed between the groups.

In Group 1, 76.4% of the children had Adenotonsillectomy, while 23.6% underwent Tonsillectomy alone. In Group 2, Adenotonsillectomy was performed in 77.7% of cases, whereas 22.3% had only a Tonsillectomy.

The postoperative pain values calculated according to numeric pain rating scale. Apart from the first postoperative hour, pain levels in Group 1 were significantly lower than those in Group 2 from the 6th hour through the 7th day.

In group 1 was no post operative bleeding and only one patient had post operative bleeding in group 2.

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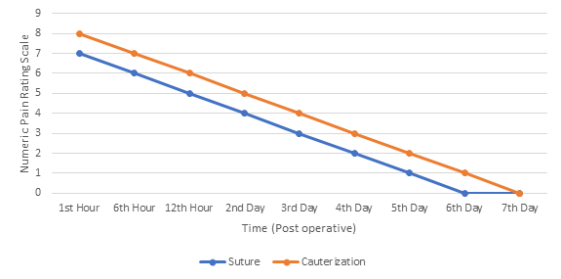

Figure 4: Comparison of post operative pain between suture technique and electro cautery method.

For both liquid and solid food, Group 1 returned to normal diet earlier, compared to Group 2.

DISCUSSION

The tonsils, which form a protective ring around the posterior aspect of the nasal cavity and oral cavity, are the parts of the immune system. A Tonsillectomy is a surgical procedure to remove the tonsils to treat an underlying disease. It is one of the most common surgeries that perform worldwide. Celsus in 30 B.C. performed the first tonsil removal.[1]

There are different surgical techniques for Tonsillectomy all over the world and different opinions supporting and opposing each of the methods exist.[2,3]

The goals of using these different Tonsillectomy techniques are to find the ideal way to minimize pain, to reduce peri-operative and post-operative hemorrhage and to ensure patients comfort.

Postoperative hemorrhage, pain, and postoperative infection with secondary hemorrhage are the major morbidities associated with Tonsillectomy.[4] There are several hemostatic methods to reduce the blood loss which include traditional silk ligation, electrocautery, oxymetazoline hydrochloride packs, tannic acid, topical thrombin, and bismuth subgallate.

Pain is the most common problem after Tonsillectomy. Nunez, et al,[5] reported that pain was the most common reason for seeking outpatient medical attention in the first 2 weeks following Tonsillectomy.

Our study showed that the postoperative pain values decreased significantly over time in both groups.

It was reported that electrocautery resulted in higher postoperative pain scores. Yilmaz, et al,[6] reported that postoperative pain is most severe within the first 24 hours, similar to our findings

The presence of significant pain is associated with a delay in return to normal activity and diet for patients. Wexler,[7] found that electrodissection in the adult population resulted in an average delay of 2 days to return to normal diet.

Pang, et al,[8] found that children resumed a regular diet earlier after bipolar cautery Tonsillectomy, than after dissection snare Tonsillectomy; bleeding rates were similar in both groups.

Bleeding is an important source of morbidity after tonsillectomy. Primary hemorrhage is described as that occurring within the first 24 to 48 hours after surgery, with secondary hemorrhage occurring after that, usually between days 5 and 10.

Mac Gregor et al,[9] conducted a prospective study comparing 36 children who underwent bipolar Tonsillectomy with 40 children who had cold steel dissection Tonsillectomy, using bipolar cautery solely for hemostasis. The bipolar Tonsillectomy group experienced less intraoperative blood loss but required more pain medication and took longer to return to a normal diet compared to the cold steel dissection group.

CONCLUSION

Our study demonstrates that cold steel dissection, combined with sutures for hemostasis, results in less postoperative pain and a quicker return to both liquid and solid diets compared to hemostasis with electrocautery. Therefore, we recommend using cold steel dissection with sutures for hemostasis in pediatric patients to minimize postoperative pain and promote a faster recovery to a normal diet.

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