EFFICACY OF STEROID AND PROTON PUMP INHIBITORS IN PATIENTS UNDERGOING TONSILLECTOMY - A COMPARATIVE STUDY

Otolaryngology

Prof. Somu Lakshmanan

Professor, Department of Otorhinolaryngology, Head and neck surgery, Sri Ramachandra Institute of Higher Education and Research Porur, Chennai, Tamil Nadu - 600116

Dr. Sathishkumar Jayagandhi*

Assistant Professor, Department of Otorhinolaryngology, Head and neck surgery, Sri Ramachandra Institute of Higher Education and Research Porur, Chennai, Tamil Nadu - 600116. *Corresponding Author

Dr. Tasneem Syed Fiaz Ahmed

Postgraduate, Department of Otorhinolaryngology, Head and neck surgery, Sri Ramachandra Institute of Higher Education and Research Porur, Chennai, Tamil Nadu - 600116

ABSTRACT

INTRODUCTION: All tonsillectomy techniques share the same characteristics of producing an avulsion wound exposing the underlying tissues which requires extensive healing by secondary intention. Our study aims to compare two pharmacological agents and analyze their clinical outcome in post operative recovery of tonsillectomy patients. **MATERIALS AND METHODS:** Patients were randomly divided into two groups- Group A and Group B. Group A received injection Dexamethasone, while group B received oral Pantoprazole. Post operatively patients were assessed for post operative pain, wound healing and incidence of secondary hemorrhage on post operative Day (POD) 0, 1, 7, 14. **RESULTS:** Group A (steroid) had comparatively less pain on POD 0 and POD 1. However there was no significant difference between both the groups on POD 7 and 14. Incidence of secondary haemorrhage was seen in Group A (2%), but no incidence of haemorrhage was recorded in Group B. Both the groups did not show statistically significant difference in regards to wound healing. **DISCUSSION:** Tonsillectomy as a surgical procedure has evolved over the years. Our study took into account two pharmacological agents, dexamethasone and pantoprazole which act by different mechanism and measured their clinical outcomes in managing post tonsillectomy patients. **CONCLUSION:** The study concluded that there was no significant statistical difference between the two drugs in alleviating postoperative pain, wound healing and secondary haemorrhage.

KEYWORDS

Tonsillectomy, Post operative pain, Haemorrhage, wound healing.

INTRODUCTION

Tonsillectomy is one of the common otorhinolaryngologic surgical procedure done all over the world(1). Due to advancement in technology various surgical methods of tonsillectomy are available now. All tonsillectomy techniques share the same characteristics of producing an avulsion wound which exposes the underlying tissues to the environment of oropharynx and which requires extensive healing by secondary intention(2),(3). The pain is the result of disruption of mucosa and exposure of glossopharyngeal nerve endings, followed by inflammation and spasm of pharyngeal muscles, which leads to ischaemia and protracted cycle of pain(4). Many studies have concluded the efficacy of steroid in pain management in post tonsillectomy patients. Recently studies have pointed a general improvement in wound healing in patients treated with Proton Pump Inhibitors(PPI). Morbidities associated with tonsillectomy account for 14% of readmission. In this context, our study aims to compare two pharmacological agents and analyze their clinical outcome in post operative management with respect to tonsillectomy.

MATERIALS AND METHODS

Institutional ethical committee approval was obtained prior to the study. Ethical committee approval was obtained on 31.7.2017. REF no. CSP-MED/15/AUG/24/27. Informed consent was obtained from the patients prior to participation in the study. This is a prospective interventional study conducted in a tertiary care hospital based at South India in the department of ENT from August 2015-2017. The aim of our study is comparing the efficacy of steroids and proton pump inhibitors in the management of post tonsillectomy patients. 100 patients were selected for the study. Inclusion criteria included patients with recurrent episodes of chronic tonsillitis and those above 18 years of age. Patients with acute infection, peritonsillar abscess, immunodeficient patients, tumours of tonsils and undergoing tonsillectomy as a part of other procedure were excluded. The surgical procedure was dissection and snare method. 100 patients were randomly divided into two groups, the first consecutive 50 patients were included in Group A (steroid group) and the next consecutive 50 patients included in Group B (proton pump inhibitor group). Group A patients received two doses of Injection Dexamethasone 0.2 mg/Kg(maximum 8 mg) before intubation and on post operative day (POD) 1 after a period of 24 hours. Group B patients received oral Pantoprazole 40 mg O.D for 1 week prior to tonsillectomy and 2 weeks

post operatively. Both the groups A & B received the same antibiotics and analgesics. Patients of both the groups were evaluated after surgery on POD 0, POD 1, POD 7 & POD 14. We studied three parameters, namely: post operative pain, wound healing and incidence of secondary hemorrhage. Pain score was recorded using a visual analogue score, where in 0 inferred no pain and 10 inferred severe pain. Wound healing was determined by size of post tonsillectomy slough as percentage of slough to tonsillar fossa. The data obtained from both the groups were compared and statistically analyzed. Statistical tests were applied to find the level of significance between Group A and Group B.

RESULTS:

Statistical analysis was done using SPSS software for Windows 17 version, Chicago, United States of America.

A total of 100 patients were analysed, 50 from each group. Age of patients ranged from 22 to 58 years with mean age of 29.68 years in Group A and 30.26 years in Group B. (Table 1)

POST OP PAIN SCORE:

In the immediate post op period on POD 0 and POD 1, the intensity of pain was lower in Group A. However, at day 7 and day 14, there was no significant difference in the pain score between the two groups. (Graph 1)

INCIDENCE OF SECONDARY HEMORRHAGE:

Among 100 patients, 1 of them had post operative secondary hemorrhage which was observed in the steroid group. However it was not statistically significant. (table 2)

HEALING OF TONSILLAR FOSSA

At the end of POD 0, the mean healing percentage in both the groups was 0%. At the end of POD 1, 7, 14 the mean healing percentage was more in steroid group. However, statistically there was no significant difference in progress of healing in either of the groups. (Graph 2)

DISCUSSION

Tonsillectomy as a surgical procedure has evolved over the years. However, it remains associated with a high morbidity related to post operative pain, risk of bleeding and dehydration due to impaired oral intake(5). This study is an attempt to compare two pharmacological

agents: Dexamethasone and Pantoprazole and measure the clinical outcomes in managing post tonsillectomy patients. Steroid usage in tonsillectomy has been studied thoroughly for close to forty years since the seminal paper by Papangelou in 1972(3). Multiple studies over a period of time, tried and tested various steroid agents. Of them the most thoroughly studied, most potent, economical with fewer side effect was found to be dexamethasone. Thimmasettaiah et al(4) did a study to compare the clinical efficacy of administering steroids pre, intra and post operatively. The authors concluded that pre operative administration of intravenous steroid was more beneficial in controlling pain followed by post operative administration.

The visual analogue scoring system of quantifying pain was utilized in studies done by Stewart et al(10). In our study, in the immediate post operative period, intensity of pain was lower in steroid group when compared to proton pump inhibitor group. At the end of follow up, the pain intensity between the two groups was equal. This finding was similar to the studies done by Pangelou(2), April et al(6), Ohlms et al(7) and Liu et al(8). The studies done by Setabutr et al showed poor oral intake due to post operative pain was the number one reason for prolonged hospitalization following tonsillectomy(9). In our study too, steroid group had better oral intake during immediate post operative period as this group had lower intensity of pain. Dexamethasone suppresses the postoperative increase in circulating levels of beta endorphin. Tissue injury induced acute inflammation plays a significant role in the genesis of postoperative pain. The analgesic property of corticosteroid may be due to their inherent anti inflammatory action(10).

Wound healing was assessed by measurement of the amount of slough in the tonsillar fossa. At the end of day 0, hardly any healing was noticed in both the groups. On comparing the healing rate at the end of day 0, 1, 7 and 14, we found no statistical significance when it came to both the groups. This finding concurs with studies done by Volk et al. Brief exposure to pepsin has been proven to damage pharyngeal epithelium. Due to poor oral intake there is increase in gastroesophageal reflux which impairs wound healing. Our study demonstrates the proton pump inhibitors have no significant role in reducing pain postoperatively nor does it enhance wound healing. A clinical trial done by Carissa J Wentland(4) used omeprazole for a period of 4 weeks prior to surgery. Careful selection of patients after thorough diagnosis of LPR is efficacious for optimum usage of PPI in post tonsillectomy patients. With respect to wound healing, both the groups showed no improvement. The study done by Anderson et al(11) concluded no significant effect with respect to wound healing in patient administered with steroids.

During the period of study one patient from steroid group (Group A) presented with secondary hemorrhage (1%). None of the patients in group B presented with hemorrhage postoperatively. According to the systematic analysis of retrospective cohort study involving 61,430 patients from 718 hospital over a period of six years in Japan showed intravenous administration of steroids on the day of surgery was increasingly associated with high rate of reoperation in children (age<15 years) but not in adults (age >15 years).(12) Statistical analysis on the risk of bleeding between Group A and Group B showed no significance. This concurs with the Cochrane study(12). However, there is a need for more such evidence based studies in future that would help in analysing the data comparable to this study.

CONCLUSION

- Patients administered with Dexamethasone injection showed significant reduction of pain in immediate post operative period on POD 0 and POD 1.
- Both steroid group and PPI group had no significant advantage in pain management by the end of 1st and 2nd week post operatively.
- Patients in both the groups had no significant influence in post operative wound healing, incidence of reactionary and secondary haemorrhage in both groups.

LEGENDS/ CAPTIONS:

Table 1: Sex distribution in both Group A and Group B.

Table 2: Comparing the incidence of secondary hemorrhage.

Graph 1 : Comparative post operative pain scores.

Graph 2: comparison of postoperative wound healing

GROUPS	SEX		TOTAL
	MALES	FEMALES	
GROUP A	14	36	50
GROUP B	18	32	50
TOTAL	32	68	100

Table 2: Comparing the incidence of secondary hemorrhage.

Groups	
A	B
1(2%)	0

Graph 1 : Comparative post operative pain scores.

Graph 2 comparison of postoperative wound healing

REFERENCES

1. Back L, Paloheimo M, Ylikoski J. Traditional tonsillectomy compared with bipolar radiofrequency thermal ablation in adults. A pilot study.
2. Papangelou, L. (1972), Steroid therapy in tonsillectomy. The laryngoscope, 82:297-302.
3. Nagaraj Bangalore Thimmasettaiah, Ravi GowdaChandrapa: A prospective study to compare the effects of pre, intra and post operative steroid(dexamethasone sodium phosphate) on post tonsillectomy morbidity: Journal of Pharmacology and Pharmacotherapeutics July – September 2012.
4. Carissa J Wetland: Ant-reflux control to decrease post tonsillectomy pain: Clinical trial NCT01777854.
5. Curtin JM. THE HISTORY OF TONSIL AND ADENOID SURGERY. OTOLARYNGOLCLINNORTHAM.1987;20(2):414-419
6. April MM, Callan ND, Nowak DM. The effect of intravenous dexamethasone in pediatric adenotonsillectomy. Arch Otolaryngol Head and Neck Surg 1996 Feb;122(2):117-20
7. Ohlms LA, Wilder Rt. Use of intraoperative corticosteroids in pediatric tonsillectomy. Arch Otolaryngol Head and Neck surgery. 1995;121(7):737-742
8. Liu k, Hsu C.C& Chia Y.Y (1998) Effect of dexamethasone on post operative emesis and pain. Br J Anaesth.80, 85-86
9. Setabutr D, PatelH, Choby G. Predictive factors for prolonged hospital stay in pediatric tonsillectomy patients. Eur Arch Otorhinolaryngol 270:1775-1781
10. R. Stewart, R. Bill, R. Ullah: Dexamethasone reduces pain after tonsillectomy in adults: Clin Otolaryngol. 2002, 27, 321-326
11. Anderson HA, Rice BJ, Cantress RW. Effects of injected dexamethasone on post tonsillectomy morbidity: a double blind study. Arch Otolaryngol 1975;101:86-8
12. Steward DL, Grisell, Meinzen DerrJSteward : Steroids for improving recovery following tonsillectomy in children (Review): Cochrane library