Original Article

Effects of Perioperative Steroids in Tonsillectomy Using Sharp Dissection Technique in Adults on First Postoperative Day

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Objective; To determine the effects of periperative dexamethasone sodium phosphate administration on post tonsillectomy morbidity for sharp dissection technique.

Study Design: Randomized control study

Place and Duration of the Study: The Study was conducted at the ENT Department, Hayatabad Medical Complex (HMC) and Pakistan Institute of Medical Sciences, Islamabad from March 2009 to March 2010.

Materials and Methods: A total 108 patients included in the study were randomly assigned to receive either dexamethasone sodium phosphate (1 mg/kg) or placebo. Post tonsillectomy pain, oral intake and postoperative vomiting were measured on post operative day (POD) 1 .

Results: A total of 54 patients received preoperative steroids and 54 patients received placebo undergoing tonsillectomy by sharp dissection technique. On POD 1 pain scores (p=0.016) were significantly lower in subjects receiving steroids than in those receiving placebo. Postoperative vomiting was reduced from 63 % (placebo group) to 25.9 % (steroid group) (p=0.02).Oral intake improved from 22.2% of normal diet (placebo group) to 31.5% (steroid group) (p=0004).when two groups were compared postoperative pain scores were significantly lower in the steroid group than in the other group.

Conclusion: Perioperative dexamethasone reduces post tonsillectomy morbidity in the adult patients in the early postoperative period after cold dissection tonsillectomy.

Key words: Dexamethasone, Tonsillectomy, Post tonsillectomy pain, Oral intake, vomiting.

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Introduction

Tonsillectomy remains one of the most common procedures performed in hospitals throughout the world.[1] Pain, nausea, vomiting, edema and poor oral intake are the most common morbidities following tonsillectomy.[2] Different modalities of treatment have been tried to reduce post tonsillectomy pain. Dexamethasone reduces postoperative pain after adult tonsillectomy.[3] Pervious studies on analgesic effect of single bolus intravenous administration of dexamethasone are inconspicuous.[4] Stastically there is significant relative decrease (23%,p = 0.016) in postoperative pain scores of patients receiving dexamethasone. Despite improvements in anesthetic and surgical techniques, post-tonsillectomy pain, discomfort and poor oral intake continues to be a significant clinical concern for the patients and their families.[5] Prophylactic dexamethasone during tonsillectomy decreases post-tonsillectomy pain at rest and during swallowing subsequently increasing oral intake and earlier tolerance to soft and regular diet.[1-3] It is also safe and cost effective.[6-8] Additionally it is found to have maximum beneficial effects when combined with cold dissection technique.[9]

In recent years many have advocated steroids for the reduction of postoperative morbidity after tonsillectomy. Steroids are believed to act to reduce tissue damage and postoperative pain by suppressing fibrin deposition, capillary dilation, edema formation, and leukocyte migration. Steroids are believed to increase thirst and appetite, resulting in a more rapid return to regular diet and adequate fluid intake. A prolonged antiemetic effect has been well documented in patients undergoing chemothaerapy.[8,9]

Aim of this study is to ascertain the role of steroids (dexamethasone) in reducing morbidity after tonsillectomy in adults.

Materials and Methods

A Randomized control study conducted at the ENT Department, Hayatabad Medical Complex (HMC) and Pakistan Institute of Medical Sciences, Islamabad from March 2009 to March 2010. Patients were informed about inclusion in study, medicine given, benefits and risks involved and informed consent was taken. The inclusion criteria were patients of either sex, adults, with history of chronic tonsillitis and selected for tonsillectomy. The exclusion criteria were patients with tonsillar malignancy, pre-established hypertension, diabetes mellitus and neuropsychiatric illness and patients with known bleeding disorders.

The registered subjects were allocated into two groups, group A receiving dexamethasone 1mg/kg and group B receiving isotonic sodium chloride (normal saline) placebo group, by simple random sampling. Patients were randomly allocated to either group A or B by lottery method.

Demographic information like name, age and gender were obtained. Baseline investigations like Hb, viral profile, bleeding and clotting time were done in all patients. All patients underwent tonsillectomy by cold knife dissection method under general anesthesia. Intravenous dexamethasone 1mg/kg up to a maximum of 50 mg was given during induction of anesthesia only in group A while group B received an equal volume of saline intravenously. Any intraoperative complication was noted in all subjects as well. Metoclopramide (0.15mg/kg IV) was given in the recovery room if there were 2 episodes of emesis or retching. All patients were given intramuscular diclofenac sodium 150mg post operatively in two equal divided doses during hospitalization. The main outcome measures included differences in oral intake, pain scores, and vomiting. These measures were assessed on postoperative day (POD) 1. On the POD 1, an examination was performed, and a standard study encounter form was completed. Patients were queried regarding the quantity of food ingested (expressed as a percentage of normal intake rounded to the nearest quartile:0%, 25%, 50%, 75%, 100%) and occurrence of emesis. Post-operative pain was assessed on day 1, using Linear Analog Scale; 0 being 'no pain' and 10 being 'the worst possible pain'. Patients were discharged on day 3. Data was collected using the approved proforma designed for the purpose. The data was stored and analyzed in SPSS version 11.

Results

A total of 108 patients were included in this study over a period of one year from March 2009 to March 2010. The age of patients varied from 16 to 38 years with mean of 23.52 ± 6.01 years. Out of the 108 patients there were 64(59.3%) males and 44 (40.7%) females. Gender distribution was in favor of males and male to female ratio was 1.5:1 as shown in table I.

Table I: Postoperative Pain on 1st day (n-54 each group)

	Groups		Total
Post-Operative 1st Day	**Dexamethasone Group**	**Placbo Group**	
No Pain	3		3
	5.%		2.8%
Mild Pain	20	13	33
	37%	24.1%	30.6%
Moderate	26	25	51
Pain	48.1%	46.3.5	47.2%
Severe Pain	5	16	21
	9.3%	29.6%	19.4%
Total	54	54	108
	100%	100%	100%

On the first post-operative day, significantly lower pain scores, based on visual analogue scale, were recorded in steroid receiving subjects compared with those recorded for patients receiving placebo (p=0.016) as shown in table II.

Table II: Postoperative Pain on 1st day (n-54 each group)

	Groups		Total
Post Op Vomiting	**Dexamethasone Group**	**Placbo Group**	
Yes	4	34	48
	25.9%	63%	44.4%
No	40	20	60
	74.1%	37%	55.6%
Total	54	54	108
	100%	100%	100%

The post-operative vomiting occurred in 14 (25.9%) patients in group A as compared to 34 (63%) patients in group B. In group A 74.1% of patients had no vomiting as compared to 37 % of group B with significant difference between (p=0.009) the two groups as shown in table III.

Table III: Postoperative Pain on 1st day (n-54 each group)

	Groups		Total
Oral Intake	**Dexamethasone Group**	**Placbo Group**	
Yes	11	12	29
	31.5%	22.2%	26.9%
No	37	42	79
	68.5%	77.8%	73.1%
Total	54	54	108
	100%	100%	100%

Likewise, significantly greater amount of oral intake relative to the patient's normal intake (31.5% vs 22.2%) were noted in the steroid group as shown in table III.

Discussion

Despite advances in surgical and anesthetic techniques, postoperative morbidities including pain, poor oral intake, fever, dehydration, vomiting and bleeding remains a significant problem after tonsillectomy both in hospital and at home.[5,10] A single dose of corticosteroids, even a large one, is virtually without harmful effects.[11, 13]

Our study found that the dexamethasone group had lowered pain scores at follow-up postoperatively (P=0.016). Our results are in agreement with the findings of Mckean that 10 mg intravenous dexamethasone at induction reduced mean pain scores after tonsillectomy.[14] Our surgical technique i.e. cold dissection and the dose of dexamethasone was almost the same. Siji Thomas and Suhara used the dose of 8 mg intravenous dexamethasone in 124 patients undergoing tonsillectomy and concluded the reduced incidence of post operative sore throat, less episodes of vomiting in patients receiving postoperative dexamethasone.[13] Carr found a single intraoperative dose of intravenous dexamethasone slightly reduces pain over 10 days after surgery in a small study population.[14] Malde studied the effectiveness of a single intravenous dose of dexamethasone (0.15 mg/kg) in patients aged > 3 years undergoing sharp dissection method tonsillectomy finding that dexamethasone provided significant analgesia, reduced edema and improved quality of oral intake.[15] Al-Shehri in a study of 30 adult tonsillectomies showed that Perioperative dexamethasone significantly experienced less pain, nausea and vomiting, better healing and less slough and granulations with no adverse effects reported[5]. These finding are in consistent with our study. Statistically significant difference was found in two groups in our study on POD 1 for pain, (P=0.016), episodes of vomiting (p=0.02), and oral intake (P=0.004)

In a meta-analysis by Steward, Welge and Myer of eight double-blinded, randomized, placebo controlled studies, and the use of single intravenous dose of dexamethasone is recommended keeping its efficacy, safety and cost effectiveness[16]

Conclusion

The study concludes that a single, 1 mg/kg IV dose of dexamethasone results in a statically significant reduction in post tonsillectomy pain scores, fewer episodes of vomiting and greater quantities of oral intake in the first 24 hours following tonsillectomy compared with saline placebo. The results of our study support the use of IV dexamethasone at the time of tonsillectomy.

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