



EFFECT OF I.V. DEXAMETHASONE V/S INFILTRATION OF DEXAMETHASONE (IN PERITONSILLAR REGION) ON ORAL INTAKE AND PAIN AFTER TONSILLECTOMY

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Article Received on 02/11/2018

Article Revised on 23/11/2018

Article Accepted on 14/12/2018

ABSTRACT

Background: Tonsillectomy is one of the most commonly performed surgery, particularly in children, with careful patient selection, it is a safe and effective procedure, with minimal morbidity. Pain, oedema, nausea, vomiting and poor oral intake are the most common morbidities following tonsillectomy. The association between pain and post operative nausea vomiting is also proved.^[1] Dexamethasone has anti inflammatory effect.^[2] There are quite a few studies with contradictory results about the effectiveness of steroids for reduction of post tonsillectomy morbidities.^[3,4,5,6,7,8] **Methods:** In our study we take a total of 100 patients diagnosed with chronic hypertrophy of tonsils and postoperative pain and oral intake were evaluated. **Group 1:** We have administered dexamethasone 0.15 mg/kg intravenously 5 mins before intubation. **Group 2:** We have infiltrated dexamethasone 0.5 mg /kg, maximum dose 12 mg in peritonsillar region 5 min prior to the onset of surgery but after induction of General anaesthesia. **Results:** We have compared 2 variables Postoperative pain, and oral intake. Only in Pre and Post tonsillectomized patients 10 subjects (20%) had pain in the postoperative period among group (1) as compared to 39 (78%) subjects in group (2). This difference was found to be statistically significant. 35 subjects (70%) was able to intake orally in the postoperative period among IV dexamethasone group(1) as compared to only 14 (28%) subjects in Peritonsillar dexamethasone group(2). This difference was found to be statistically significant. **Conclusions:** IV dexamethasone found to be effective method in reducing pain and improve oral intake in post tonsillectomy cases.

KEYWORDS: Tonsillectomy, dexamethasone, oral intake, pain.

INTRODUCTION

Tonsillectomy is one of the most commonly performed surgery, particularly in children, With careful patient selection, it is a safe and effective procedure, with minimal morbidity. Though many techniques for performing tonsillectomy exist, the ultimate goal is excising the lymphoid tissue residing in the oropharynx, and minimizing the frequency of sore throat. Pain, oedema, nausea, vomiting and poor oral intake are the most common morbidities following tonsillectomy. The association between pain and post operative nausea vomiting is also proved.^[1]

Dexamethasone has been used successfully as an antiemetic for chemotherapy induced vomiting.^[9] Prior use also prevents vomiting due to epidural narcotics.^[10]

Dexamethasone also has anti inflammatory effect.^[7] There are quite a few studies with contradictory results about the effectiveness of steroids for reduction of post tonsillectomy morbidities.^[3,4,5,6,7,8]

MATERIAL AND METHODS

In our study we take a total of 100 patients diagnosed with chronic hypertrophy of tonsils after proper history and examination. And postoperative pain and oral intake were also evaluated.

Inclusion Criteria - Chronic upper airway obstruction in conjunction with Adenotonsillar hypertrophy, which manifests as snoring, obstructive sleep apnea. Chronic infectious conditions such as chronic recurrent tonsillitis.

Patients of 03 yrs and above age undergoing tonsillectomy for the above mentioned indications were considered for this prospective study.

Exclusion Criteria- Patients with (1) Coagulopathy, (2) Diabetes, (3) Gastritis, (4) Peptic ulcer, (5) Hypertension and Cardiovascular or Renal disease or on therapy with Corticosteroids, Anti - emetics, Anti-histaminic, or Aspirin.

Tonsillectomy due to cancer and non-consenting patients were also excluded.

All patients are premedicated with inj. glycopyrrolate, Inj. pentazocine and Inj. midazolam. Following induction with Inj. Thiopentone, Inj. suxamethonium given intubation done.

Anaesthesia have to maintain with halothane and N₂O in oxygen and controlled ventilation using either Inj. vecuronium 0.08 mg/kg or inj. atracurium 0.5 mg/kg.

After premedication with anaesthetic agents patients are divided in to two groups.

Group 1: We have administered dexamethasone 0.15 mg/kg intravenously 5 mins before intubation.

Group 2: We have infiltrated dexamethasone 0.5 mg /kg, maximum dose 12 mg in peritonsillar region 5 min prior to the onset of surgery but after induction of General anaesthesia.

Surgical method – Sharp dissection snare technique was used for tonsillectomy, bleeders were ligated using ties. Whenever indicated adenoids were removed using curettes. Hemostasis was achieved using packs or sutures.

No electrocautery was used.

All infiltration was performed in the same manner, the needle was inserted superficially into tonsillar pillar and the pillar was ballooned.

Three injections into both pillars were made on every patient, at superior pole, at inferior pole and between the poles.

Post-op pain was assessed using.

Objective pain scale (OPS)^[11] in patients below 8 Years.

Visual analogue scale (VAS, 0-100)^[12] Above 8 years of age.

Post-Operative Pain

Table 1: Only 10 subjects (20%) had pain in the postoperative period among Group(1) as compared to 39(78%) subjects in Group (2). This difference was found to be statistically significant.

Group	Number of patients have Post operative pain		Chi square	P value
	Present	Absent		
Group – 1	10	40	33.65	0.0001
Group - 2	39	11		

- Recordings will be done every half hourly for the first 2hours, hourly for next 4hours and then at 10, 14 and 24 hours.

For analysis, patients of each group were divided into three pain groups for first 6hours and 6-24 hours.

Significant pain = OPS^[11] 6 or VAS^[12] 40

Mild pain = OPS 4-5 or VAS 20 < 40;

Pain free = OPS 0-3 or VAS < 20.

Tramadol 1 mg/kg in first six hours or oral Paracetamol 10 mg/kg in 6-24 hours were administered. Before administering rescue analgesic, a time period of 15 minutes would be allowed to see if patient responded to tender loving care and pain subside.

At 6 hours after the surgery patients were asked to take oral liquids.

The quality of oral intake will be graded as follows:

Excellent = patient requests it.

Good = Patient accepts it when offered.

Fair = patient accepts it when coaxed.

Poor = patient refuses.

If the oral intake was delayed. The time duration between the end of surgery and first acceptance of oral liquid will be recorded.

Till that time 3 ml/kg/hr of lactated ringer's solution with dextrose was infused.

RESULTS

We have compared 2 variables in Pre and Post tonsillectomized patients. Postoperative pain, and oral intake. The data entries were entered into SPSS software and paired t test was applied.

Following Tonsillectomy operation significant improvement was seen in Group-1 as compared to Group-2.

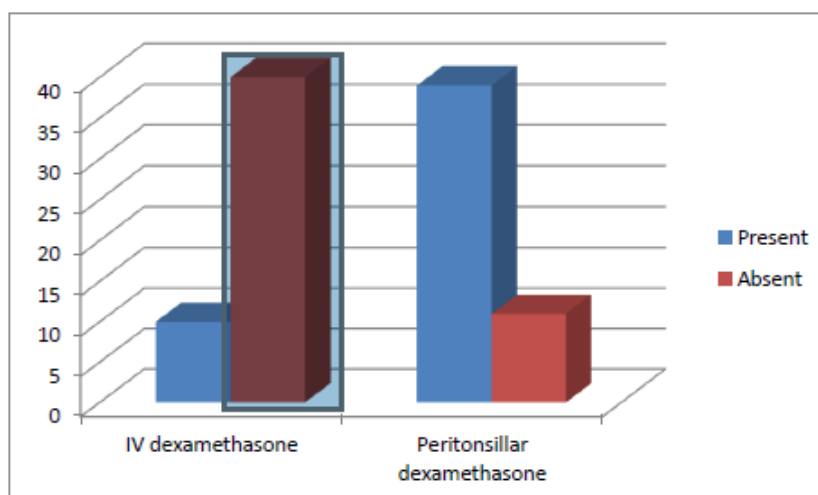


Figure 1: Graph showing number of patient having pain in Group-1 and Group-2.

Post-Operative Oral Intake

Table 2: 35 subjects (70%) was able to intake orally in the postoperative period among IV dexamethasone Group(1) as compared to only 14 (28%) subjects in Peritonsillar dexamethasone Group(2). This difference was found to be statistically significant.

Groups	Patients have improved oral intake		Chi square	P value
	Improved	Delayed		
GROUP - 1	35	15	17.65	0.0001
GROUP - 2	14	36		

Post-operative Oral intake

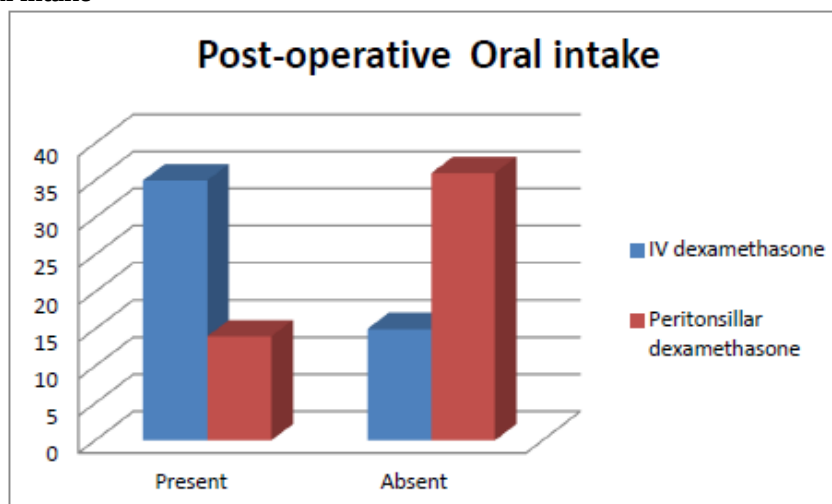


Figure 2: Graph showing number of patient having improved and delayed oral intake in Group-1 and Group-2.

DISCUSSION

Dexamethasone is an exogenous steroid. We selected dexamethasone as it is highly potent and has long half life (36-72 hours) for glucocorticoid activity, so that the effect would remain even after the discharge of the patient. Single dose of dexamethasone was used, as it is devoid of side effects like gastritis, adrenal suppression etc.^[13]

Pain - The physiology of pain has delineated 2 distinct pain mechanism, a local effect produced by the surgical trauma and a central effect produced by stimulation of the central nervous system.

Tissue injury induced acute inflammation, nerve irritation and spasm of exposed pharyngeal muscle is known to play a role in genesis of post tonsillectomy pain. It follows that the use of anti-inflammatory agents, such as acetaminophen, would successfully treat pain and in fact, is standard practice in the treatment of postsurgical pain.

Corticosteroids have shown significant analgesia by inhibiting phospholipase enzyme, corticosteroids block both the cyclooxygenase and lipooxygenase pathway and thus prostaglandin production, thereby leading to pain relief.^[14]

We used two different pain scores for evaluation of pain for patient age less than equal to 8 and another for age more than 8yrs. There are no references proving equivalence of OPS 6 and VAS of 40. However in our opinion VAS of 40 signifies real pain as it is highly specific, whereas OPS of 6 would better signify pain. Therefore, we had chosen OPS^[11] 6 or VAS^[12] 40 as significant pain. In addition to avoid the influence of factors other than pain on higher OPS, before administering rescue analgesic, a time period of 15 minutes was allowed to see if patient responded to tender loving care or pain subsided.

In our study postoperative pain in post tonsillectomised patients significantly reduced in group-1 as compared to group 2 patients, with p value of < 0.0001.

This observation is in concurrence with the following studies:

In a study done by Dr. Anila D. Malde et al,^[15] effect of dexamethasone on post- tonsillectomy morbidities, they found that, in 6-24 hours, 91% of dexamethasone group versus 40% of control group were free of pain (P<0.001).

The study done by Kaan MN. et al^[16] on the effect of preoperative dexamethasone on early oral intake, vomiting and pain after tonsillectomy, it was found that the patients who received preoperative (i.v) dexamethasone had significantly less pain score

Diakos EA. et al^[17] did meta-analysis of seven randomized controlled trials (580 patients) involving dexamethasone for reducing pain, vomiting and overall complications following tonsillectomy in adults. They found that dexamethasone in adults reduces the pain level.

Nagaraj M et al^[18] did a randomized double-blind study, 100 patients who underwent tonsillectomy were enrolled and were randomly allocated into control or dexamethasone group (pre-operative, intra operative and post-operative groups), Patients treated with dexamethasone particularly in the pre and intra operative groups (Group B, Group C) showed a general trend towards lower pain score than post-operative group (Group D).

In our study: Improved oral intake was also seen in group 1 patients as compared to group 2 patients, with p value of <0.05.

This observation is in concurrence with the following studies:

In a metaanalysis Steward et al,^[19] showed that children receiving Dexamethasone were more likely to advance to a soft or solid diet on post-tonsillectomy day 1 (RR= 1.69; 95% CI, 1.02-2.79; p =0.04).

Vosdogonis and Baines^[20] described 41 children who received 0.4 mg/kg of intravenous dexamethasone or placebo, concentrating their observations on the first 24 h postoperatively, Time taken to first liquid intake was similar between the groups, but first solid intake was earlier in the study group (6 vs. 10 h; P <0.1).

April M et al^[21] studied 80 children who received 1mg/kg of dexamethasone or placebo prior to adenotonsillectomy and measured postoperative oral intake, pain, vomiting, fever, and complications during the first 24 h. The dexamethasone group had significantly improved oral food (including early acceptance of solid food) than the control group.

Fazel et al^[22] did a double -blind, placebo –controlled clinical trial, 100 patients aged 5-15 years, ASA classes I and II were randomly selected to receive either 0.5 mg/kg IV dexamethasone (n=50), as study group or an equivalent volume of saline preoperatively, as control group. Data analysis showed that dexamethasone shortened the time to first oral intake.

In study done by Kaan MN. et al 16, it was a double-blinded, placebo-controlled study 62 children, aged 4-12 years, who underwent tonsillectomy with or without adenoidectomy were randomly assigned to receive single dose of 0.5 mg/kg i.v. dexamethasone preoperatively, they found that the patients who received preoperative (i.v) dexamethasone group had shorter time for oral intake (p<0.05) and the discharge time was earlier (p<0.05).

DECLARATIONS

Funding: Self.

Conflict of interest: nothing to disclose.

Ethical approval: ethically approved.

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