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## Full Length Research Paper

# THE EFFECT OF SINGLE DOSE INTRAVENOUS DEXAMETHASONE IN TONSILLECTOMY IN CHILDREN

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### Abstract

**Aims and Objectives:** To study the effect of single dose of intravenous dexamethasone (0.5mg/kg) on PONV in first 24 hours and on pain and oral intake upto third postoperative day, in children 4 to 12 years old undergoing Tonsillectomy with or without Adenoidectomy.

**Materials and Method:** 66 patients, in the age group of 4 to 12 years, undergoing tonsillectomy with or without adenoidectomy were included in the study. 33 were injected with single dose intravenous dexamethasone just before surgery, while the remaining 33 were given same volume of saline.

**Results:** Reduction in PONV and significant improvement in pain and oral intake.

**Discussion:** Corticosteroids have been demonstrated to decrease local inflammation by blocking chemical mediators of inflammation thus reducing pain. Its mechanism of antiemesis is not fully understood, but central inhibition of prostaglandin synthesis and decrease in 5-HT turnover in the CNS or changes in the permeability of blood CSF barrier to serum proteins may be involved.

**Conclusion:** Single dose dexamethasone given just before tonsillectomy results in reduction of postoperative pain and the need for rescue analgesics, early return to normal diet with better food intake and early hospital discharge.

**Keywords:** Dexamethasone, Tonsillectomy, post operative pain, intensive care unit.

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## INTRODUCTION

Tonsillectomy is defined as a surgical procedure performed with or without adenoidectomy that completely removes the tonsil, including its capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscular wall (Reginald *et al.*, 2011). It is one of the most frequently performed surgical operations in children. Morbidity related to postoperative nausea and vomiting (PONV), pain, poor oral intake, dehydration and fever continues to be a concern in patients undergoing tonsillectomy. The delay in postoperative oral fluid intake and inadequate oral feeding because of the nausea, vomiting and pain prolongs the discharge period and also increases dehydration risk in the early or late postoperative period (Khani, Jaafaarpour and Khajavikhan, 2009). Dexamethasone and other steroid preparations have been used to minimize tissue injury and oedema and related morbidity such as pain, vomiting and poor oral intake. However, many reports have questioned the efficacy of dexamethasone as an antiemetic as well as its beneficial effect on the quality of oral

intake after tonsillectomy (Pappas *et al.*, 1998). This controversy may be attributed to the wide range of dosages of dexamethasone. Therefore, the present study is planned to investigate the effect of 0.5 mg/kg intravenous dexamethasone as single intravenous dose given just before the surgery.

## MATERIALS AND METHOD

The present study, "THE EFFECT OF SINGLE DOSE INTRAVENOUS DEXAMETHASONE IN TONSILLECTOMY IN CHILDREN" was conducted in Department Of Otorhinolaryngology, Goa Medical College, Goa between August 2009-August 2011. 66 patients, in the age group of 4 to 12 years, undergoing tonsillectomy with or without adenoidectomy were included in the study. Among the 66 patients, 33 were injected with single dose intravenous dexamethasone (0.5mg/kg) just before surgery, while the remaining 33 were given same volume of saline. Data was collected from patients or their parents regarding postoperative pain, use of analgesics, oral intake, type of food taken,

desirability of food upto 3<sup>rd</sup> post operative day. Incidence of nausea and vomiting in the first 24 hours of surgery was also noted. The day of surgery was considered day zero. First, second and third post operative days were taken as day1, day2, day3 respectively. The diet score in both groups was calculated by scoring the type of feeds which the patients had. (Score1-not tolerating oral feeds, Score2-liquid feeds only, Score3-soft feeds, Score 4-normal solid feeds) (Palme *et al.*, 2000; Ohlms *et al.*, 1995; Celiker *et al.*, 2004). The quality of food intake was assessed by scoring the desirability of food by the patients in both groups. (Score4=excellent i.e. patient requests food. Score 3=good i.e. patient accepts it, when offered, Score 2=fair i.e. patient accepts it, but coaxed. Score 1= poor; patient refuses) (Yasmin, Zakir and Shafiqul, 2007; Aouad *et al.*, 2001).

## RESULTS

In the present study there was a significant reduction in post operative pain in Dexamethasone group (Mean Pain Score 3.03, 0.91, 0.12, 0) as compared to Placebo (Saline) group (7.58, 5.03, 2.73, 1.39) on day0, day1, day2, day3 respectively.

There was significant improvement in accepting oral feeds in Dexamethasone group. On the day of surgery 85% patients accepted oral feeds in the Dexamethasone group as compared to 30% in the Placebo (Saline) group. However all patients in both groups had oral intake on the first post operative day.

Patients who were given Dexamethasone returned to normal diet (with diet score 2.42, 3.27, 3.76, 3.94 on day0; day1; day2; day3) much early as compared with that of the Placebo group (1.30, 1.88, 2.61, 3.12).

Also, the Dexamethasone group (score of 2.61, 3.42, 3.67, 3.79) had a better quality of food intake as compared with the Placebo group (score of 1.30, 1.67, 2.33, 2.42) on day0; day1; day2; day3 respectively.

The length of hospital stay was less in Dexamethasone group (1.79+0.0857 days), as compared to that of the Placebo group (2.70+0.0637 days). All these observations were found to be statistically significant.

Even though the incidence of PONV in the first 24 hours was less (12%patients) in the Dexamethasone group as compared to that in (24%) Placebo group, this result was not statistically significant. Results obtained were similar as seen by (Khani *et al.*, 2009; Yasmin *et al.*, 2007; Malde *et al.*, 2005 and Kann *et al.*, 2006)

## DISCUSSION

Corticosteroids have been demonstrated to decrease the local inflammation by blocking the chemical mediators of inflammation (Aouad *et al.*, 2001). Tissue-injury induced acute inflammation is known to play a significant role in the genesis of surgical pain and dexamethasone is also known to have potent anti-inflammatory effect (Yasmin *et al.*, 2009). By inhibiting phospholipase enzyme, corticosteroids block both the cyclooxygenase and lipooxygenase pathway and thus prostaglandin production (Malde *et al.*, 2005). This results in

antiinflammation and pain relief. The mechanism of dexamethasone induced antiemesis is not fully understood, but central inhibition of prostaglandin synthesis and decrease in 5-HT turnover in the CNS or changes in the permeability of blood CSF barrier to serum proteins may be involved (Yasmin *et al.*, 2007). Dexamethasone is highly potent and for its glucocorticoid activity has long half life (36-72 hours), therefore the effect remains longer even after the discharge of the patient. Single intravenous dose is devoid of side effects like gastritis, delayed healing in surgical patient, adrenal suppression etc (Khani *et al.*, 2009; Yasmin *et al.*, 2007; Kara *et al.*, 2007; Hamoud *et al.*, 2008).

## Conclusion

It can be concluded that single dose intravenous dexamethasone (0.5mg/kg) given just before tonsillectomy with or without adenoidectomy can result in reduction of post operative pain, early return to normal diet with better quality of food intake and early hospital discharge.

## Abbreviations

PONV : Post operative nausea vomiting

CSF : Cerebrospinal fluid

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