



EFFECT OF PREOPERATIVE STEROIDS ON PERIOPERATIVE AND POSTOPERATIVE HAEMORRHAGE IN PATIENTS UNRERGOING FESS AT SKMCH, MUZAFFARPUR, BIHAR

ENT

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ABSTRACT

Objective: To compare the effect of preoperative oral steroids (prednisolone) on perioperative and postoperative hemorrhage in patients undergoing functional endoscopic sinus surgery for chronic sinusitis with those who do not receive steroids.

Design: Randomized controlled trials.

Place and duration of study: This study was conducted in ENT Department of Sri Krishna Medical College and Hospital (SKMCH), Muzaffarpur, Bihar from April 2020 to March 2021.

Material and Methods: After getting informed consent total of 60 patients who fulfilled the inclusion criteria were selected and functional endoscopic sinus surgery was carried out. They were divided into two groups of 30 each by using random number tables. Group A received prednisolone in a dose of 01 mg/kg body weight for 01 week prior to surgery (last day of dose being the day prior to operative day) while group B (control group) did not receive any steroid.

Results: There was a significant difference in both perioperative and postoperative hemorrhage with better control rates in group A.

Conclusion: Prednisolone given preoperatively significantly reduces the morbidity that is perioperative and postoperative hemorrhage thus early recovery to normal life style in patients undergoing functional endoscopic sinus surgery for chronic sinusitis.

KEYWORDS

Functional endoscopic sinus surgery, prednisolone, chronic sinusitis.

INTRODUCTION

In adults, the maxillary sinuses are most commonly affected with acute and chronic sinusitis. Most of these cases can be managed with medication alone. For the instances where medical management fails, surgery may be needed to treat chronic maxillary sinusitis.

Functional endoscopic sinus surgery (FESS) is based on the surgical approach performed by Messerklinger and Wigand via Ostiomeatal complex. FESS has become the standard surgical treatment for chronic maxillary sinusitis, with external approach being used as an adjunct in more complicated cases or in tumor management.

Most of the studies available have been carried out to see effects of intranasal (topical) or oral steroid in management of chronic sinusitis but to date no study is available to see effects of short course of preoperative oral steroid on perioperative and postoperative hemorrhage. This study was conducted with aim of comparing the effects of steroids on this perioperative and postoperative morbidity between two groups, one getting steroid (oral prednisolone) for 07 days prior to surgery with control group who was not getting steroids.

Steroids are believed to act by reducing tissue damage and leukocyte migration. A prolong antiemetic effect of intravenous dexamethasone is well known.

Also to date most of the data available on this particular problem is taken from western studies. Very limited studies have been conducted in our setup and that too not addressing the perioperative and postoperative morbidity as far as hemorrhage is concerned. This study will be a step forward in developing new and beneficial treatment modalities and protocols best suited for our patients.

MATERIAL AND METHODS

This randomized controlled trial was conducted at ENT Department, Sri Krishna Medical College and Hospital (SKMCH), Muzaffarpur, Bihar from April 2020 to March 2021.

Total of 60 cases were included in this study through non probability convenience sampling and they were divided into two groups by

random numbers table. Patients with age between 08 to 35 years, with chronic sinusitis {Maxillary and Ethmoidal (both anterior and posterior group) confirmed on CT scan} resistant to medical treatment (antibiotics, nasal decongestants, and steam inhalation only) were selected to undergo FESS. Patients with significant co-morbidities requiring perioperative/postoperative steroids (Severe reactive airway disease), diseases for which steroids are contraindicated (Diabetes mellitus), patients with extensive intranasal polyposis, patients with anatomical variants, those already using topical or oral steroids, patients with bleeding disorders and those who responded to our short course of steroid therapy were excluded from the study.

Patients between ages 08-12 years were treated as pediatric group and above 12 years as adults. Informed consent was taken from subjects/parents. Patients were divided into two groups of 30 each. Group A received preoperative prednisolone in a dose of 01 mg/kg body weight orally one week prior to surgery while group B (control group) did not receive any steroids. Seven days course of oral prednisolone (Deltacortil) cost 84 rupees which is easily available and affordable. It can also be stopped abruptly without having any side effects and no tapering of dose is required.

Only a designated group of experienced surgeons performed FESS. General anesthesia and postoperative care was standardized for both groups. All patients were prescribed a 05 days course of Amoxicillin. (Dose in pediatric group was 40 mg/kg body weight/day orally in three divided doses and in adults was 500 mg thrice daily orally). Acetaminophen was used as Analgesic for 05 days duration. (Dose in pediatric group was 10-15 mg/kg body weight /day orally and in adults was 500 mg thrice daily orally).

Severity of perioperative hemorrhage was assessed by the amount of blood loss in ml as measured from suction bottle. 10-20ml blood loss was considered mild, 20-30ml moderate and more than 30ml severe. Post operative hemorrhage was assessed by its presence as an active trickling in throat on operative day as observed on oral cavity examination. No perioperative packing of nose was done during the procedure to control bleeding. Middle meatus was packed with Mersel/Spongostone dressing at end of procedure. Data was entered

in a proforma which included perioperative hemorrhage (mild 10-20ml, moderate 20-30ml and severe >30ml) and post op. hemorrhage as active trickle of blood in throat (present or absent). This was subsequently used to compile the results.

Data was analyzed using software SPSS-11. Mean and standard deviation were calculated for age. Frequency was calculated for perioperative and postoperative hemorrhage. Chi-square test was applied to determine statistical significance of difference between the two groups. p value of <0.05 was considered as significant.

RESULTS

The patients were divided into two groups, A and B. Both groups underwent Functional endoscopic sinus surgery. In group A, surgery was preceded by a 07 day short course of oral steroid in a dose of 01mg/kg body weight while no steroids were given to group B.

There were 16 (53.33%) males in group A while group B there were 22 (73.3%) males. The age of patients varied from 08 to 35 years. In group A mean for age was 13.23 years (SD= 6.4), while for group B was 14.37 years (SD= 6.9). Mean for height in group A was 100.2 cms (SD = 38), while for group B it was 102.4cm (SD= 35.6). Mean for weight was 36 kg (SD= 20.1) and for group B it was 38 (SD=17.7). Both the groups were comparable with respect to age, gender, height and weight.

In group A, patients with mild hemorrhage numbered 24 (80%), with 05 (16.7%) patients having moderate hemorrhage and 1 (3.3%) patient severe hemorrhage. In group B, 05 (16.7%) patients had mild hemorrhage, 2 (6.7%) had moderate hemorrhage and 23 (76.7%) had severe hemorrhage. ($p < 0.05$, table 1)

Table 1 : Percentage of amount of perioperative hemorrhage

	Mild hemorrhage 10-20 ml	Moderate hemorrhage 20-30 ml	Severe hemorrhage >30 ml
Group A (n=30)	24(80%)	5(16.7%)	1(3.3%)
Group B (n=30)	05(16.7%)	2(6.7%)	23(76.7%)

$P < 0.05$

Table 2 : Active trickle of blood in throat on operation day

Patients	Active blood trickle	
	Present	Absent
Group A (n=30)	03(10%)	27(90%)
Group B (n=30)	24(80%)	6(20%)

In group A only 03 (10%) patients had active trickling of blood in throat on operative day while in group B 24 (80%) patients have some trickling of blood in post operative period. ($p < 0.05$, table 2).

Patients in both the groups recovered from anesthesia without any complications. Patients were kept on postoperative antibiotics and analgesics as per protocol mentioned in data collection and discharged between third and fourth postoperative day.

DISCUSSION

Functional endoscopic sinus surgery (FESS) offers surgery tailored to the disease of each individual in order to restore sinus function through preservation of normal sinus anatomy. Good functional outcome is determined not just by surgical technique, but by medical measures in the immediate pre and postoperative periods. Functional outcome following FESS is determined by preoperative, intraoperative and postoperative management.

Pre and postoperative management of FESS facilitate mucosal healing, minimize scar tissue and ensure rapid return to normal function. Surgical technique has developed with improvements in instrumentation, optics and mucosal preservation technique.

As FESS is a newer modality of surgery especially in India so there are no clinical trials of the use of immediate preoperative medication and to date no study is available both locally as well as internationally to analyze the preoperative role of steroids on perioperative and postoperative hemorrhage in patients undergoing FESS for chronic sinusitis. However some trials have examined postoperative medical management and the recurrence of disease with topical steroid use following FESS. Opinions also vary widely as to when patients should be first followed up after FESS.

In our study the frequency of perioperative mild hemorrhage in group A was 24 (80%) and 05 (16.7%) in group B. similarly severe hemorrhage in group A was 1 (3.3%) and in group B it was 23 (76.7%) as shown in table 01.

Active trickle of blood in throat on operative day for group A was present in 03 cases (10%) while it was present in 24 cases (80%) in group B which shows the P values to be significant as shown in table 2. Steroids are believed to act to reduce tissue damage and postoperative pain by suppressing fibrin deposition, capillary dilatation, edema formation and leukocyte migration. A prolong anti emetic effect of intra venous dexamethasone is well known by its central depression. Decrease in pain is due to the fact that edema at the cut end of nerves is reduced thereby reduced pain stimulus. As far as the complications of corticosteroid therapy are concerned, they are typically related to its long-term use and risks of steroid therapy of less than 07 days duration is negligible. Our results have showed that use of Prednisolone for few days (07 days in our study) has been cost-effective and had less perioperative and postoperative morbidity like hemorrhage.

Our study had limitation in terms of data which is qualitative and not quantitative. Aim of the study was to improve the perioperative and postoperative morbidity by use of preoperative corticosteroid and thus early recovery to routine life style. This has been proved by our study. However further studies at larger level need to be planned to validate these findings.

CONCLUSION

Prednisolone given preoperatively for one week significantly reduces the perioperative and postoperative morbidity that is hemorrhage in patients undergoing Functional endoscopic sinus surgery thus making the procedure easy.

REFERENCES

- Annys E, Jorissen M. Short term effects of antibiotics (Zinnat) after endoscopic sinus surgery. *Acta Otorhinolaryngol Belg* 2000; 54:23-8.
- Aouad MT, Siddik SS, Rizk LB, Zaytoon GM, Baraka AS. The effect of dexamethasone on postoperative vomiting after tonsillectomy. *Anesth Analg* 2001; 92: 636-40.
- April MM, Callan ND, Novak DM, Hausdorff MA. The effect of intravenous dexamethasone in pediatric adenotonsillectomy. *Arch Otolaryngol Head Neck Surg* 1996; 122:117-20.
- Catlin FI, Grimes WJ. The effect of steroid therapy on recovery from tonsillectomy in children. *Arch Otolaryngol Head Neck Surg* 1991; 117: 649-52.
- Dijkstra MN, Ebbens FA, Poubon RML, Fokkens WJ. Fluticasone propionate aqueous nasal spray does not influence the recurrence rate of chronic rhinosinusitis and nasal polyps 1 year after functional endoscopic sinus surgery. *Clin Exp Allergy* 2004; 34:1395-400.
- Dingsor G, Kramer J, Olsholt R, Soderstrom T. Flunisolide nasal spray 0.025% in the prophylactic treatment of nasal polyposis after polypectomy. *Rhinology* 1985; 23:49-59.
- Dretner B, Ebbesen A, Nilsson M. Prophylactic treatment with flunisolide after polypectomy. *Rhinology* 1982; 20:149-58.
- Fernandes SV. Postoperative care in functional endoscopic sinus surgery? *Laryngoscope* 1999; 109:945-48.
- Hartwig S, Linden M, Laurent C, Vargo AK, Lindqvist N. Budesonide nasal spray as prophylactic treatment after polypectomy. *J Laryngol Otol* 1988; 102:148-51.
- Jorissen M. Postoperative care following endoscopic sinus surgery. *Rhinology* 2004; 42:114-20.
- Karlsson G, Rundcrantz H. A randomized trial of intranasal beclomethasone dipropionate after polypectomy. *Rhinology* 1982; 20:144-8.
- Kennedy DW. Prognostic factors, outcomes and staging in ethmoid sinus surgery. *Laryngoscope* 1992; 102(S57):1-18.
- Litman RS, Wu CL, Catanzaro FA. Ondansetron decreases emesis after tonsillectomy in children. *Anesth Analg* 1994; 78: 478-81.
- Lund VJ, McKay IS. Outcome assessment of endoscopic sinus surgery. *J R Soc Med* 1994; 87:70-2.
- Melby JC. Drug spotlight program: systemic corticosteroid therapy-pharmacology and endocrinologic considerations. *Ann Intern Med* 1974;81:505-12.
- Messerklinger W. Endoscopy of the nose. 1978 Baltimore: Schwarzenberg.
- Moriyama H, Yangi K, Ohtori N, Fukamo M. Evaluation of endoscopic sinus surgery for chronic sinusitis: post-operative erythromycin therapy. *Rhinology* 1995; 33:166-70.
- Ryan RM, Whittet HB, Norval C, Marks NJ. Minimal follow-up after functional endoscopic sinus surgery. Does it affect outcome? *Rhinology* 1996; 34:44-5.
- Shott SR. Tonsillectomy and postoperative vomiting: Do steroids really work? *Arch Otolaryngol Head Neck Surg* 2001; 127: 1009-10.
- Stammberger H. Surgical treatment of nasal polyps: past, present and future. *Allergy* 1999; 54:7-11.
- Tomooka LT, Murphy C, Davidson TM. Clinical study and literature review of nasal irrigation. *Laryngoscope* 2000; 110:1189-93.
- Virolainen E, Puhakka H. The effect of intranasal beclomethasone dipropionate on the recurrence of nasal polyps after ethmoidectomy. *Rhinology* 1980; 18:9-18.
- Wigand ME. Endoscopic surgery of the paranasal sinuses and anterior skull base. New York: Thieme Medical Publishers Inc, 1990.