Original Article

Role of the antibiotics in post-operative period after septoplasty

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Abstract

Problem Statement: Nasal obstruction is one of the commonest presenting symptoms in ear nose and throat practice. It can be caused by a number of conditions. As much as 70% to 80% of the general population is estimated to exhibit some type of anatomical deformity of the nose, the most common being deviated nasal septum. This deviation is often associated with compensatory hypertrophy of mucosa of inferior turbinate of the contra lateral nasal cavity. To compare the post-operative results of Septoplasty in terms of possible complications when patients are not going to be given antibiotic cover after surgery vis-à-vis two control groups who are administered antibiotics either per operatively and/or post operatively. **Methods:** This is a prospective study carried out at Department of Otorhinolaryngology, Darbhanga Medical College and Hospital, from Jan 2015 to Feb 2016. Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. A total of 30 patients were divided in 3 groups each with 10 patients depending upon the pre-operative and post-operative administration of antibiotics. **Results:** To my observation the post-operative complications are rare irrespective to the group they belong and findings over all the evaluation points individually of all the groups, had an insignificant statistical value except all the groups individually showed progressive significant decrease in pain post operatively irrespective of prophylactic use of antibiotics with proper administration of pain killers. **Conclusion:** The incidence of nasal surgery complications is rare. Septoplasy is considered potentially contaminated surgery and does not require prophylactic use of antibiotics due to low risk of postoperative infection. Antibiotics do not have any effect on post-operative pain. With proper administration of pain killers post operatively irrespective of prophylactic use of antibiotics there is progressive significant decrease in pain post operatively.

Key Word: Septoplasty, lacrimal sac, Dacryocystograph,

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Received Date: 18/02/2017 Revised Date: 13/03/2017 Accepted Date: 20/04/2017

Access this article online

Quick Response Code:

Website: www.statperson.com

DOI: 22 April 2017

INTRODUCTION

This use of antibiotics in otorhinolaryngo logical surgeries has become common practice among most ENT doctors, however there are few studies proving the efficacy and need for this practice, which is considered as unnecessary by some authors[1-3] Today world over there is a cognizant effort to reduce and at times even avoid the usage of antibiotics whenever possible. Though the human nose is one cavity rife with commensal pathogens many centres have developed protocols for operative work on the nose wherein antibiotic usage has been limited to minimum. The present study is undertaken to compare the post-operative results of Septoplasty in terms of possible complications when patients are not going to be given antibiotic cover after surgery vis-à-vis two control groups who are administered antibiotics either per operatively and/or post operatively.

Anatomy of Nasal Septum

Nasal septum consists of three parts:

i. Columellar septum: It is formed of columella containing the medial crura of alar cartilages united together by fibrous tissue and covered on either side by skin.
ii. Membranous septum: It consists of double layer of skin with no bony or cartilaginous support. It lies between the columella and the caudal border of septal cartilage. Both

How to site this article: Manoj Kumar. Role of the antibiotics in post-operative period after septoplasty. *International Journal of Recent Trends in Science and Technology*. April 2017; 22(3): 172-175. http://www.statperson.com (accessed 24 April 2017).

colmellar and membranous parts are freely movable from side to side.

iii. Septum proper: It consists of osteocartilaginous framework, covered with nasal mucous membrane.

The internal nasal valve

is located at the caudal edge of the upper lateral cartilage. At this location, the upper lateral cartilage forms an ideal angle of 10-15^0 with the septum (see the image below). The cross-sectional area of the nasal cavity is narrowest at the nasal valve, which acts as a funnel to focus and direct air currents and thereby produces laminar flow. Untreated deformities or poor alterations to the area of the valve can cause the valve to collapse or lose its ability to direct the air stream. When airflow dynamics change, subjective sensation of air passage is reduced, and this tends to be perceived by patients as nasal airway obstruction. The subjective sensation of airflow has not been clearly elucidated, but receptors that are sensitive to changes in the laminar airflow pattern and airspeed are believed to be present at the valve.

Internal Carotid System

- Anterior ethmoidal artery – Branches of ophthalmic
- osterior ethmoidal artery

External Carotid System

- Sphenopalatine artery (branch of maxillary artery) gives nasopalatine and posterior medial nasal branches.
- Septal branch of greater palatine artery (branch of maxillary artery).
- Septal branch of superior labial artery (branch of facial artery).

METHODS

This is a prospective study carried out at Department of Otorhinolaryngology, Darbhanga Medical College and Hospital, from Jan 2015 to Feb 2016. Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. A total of 30 patients were divided in 3 groups each with 10 patients depending upon the pre-operative and post-operative administration of antibiotics.

Group	No. of Patients	Pre-operative	Post-operative
A	10	Administered	Administered
B	10	Administered	Not Administered
C	10	Not Administered	Not Administered

patients were randomized in group A, group B and group C respectively with each group having 10 patients.

Inclusion criteria

- All patients were between 18 years to 50 years of age.
- All patients had deviated nasal septum.

Exclusion criteria

- Patients with pre-operative upper respiratory tract infection.
- Patients with any previous septal surgery.
- Patients with other nasal conditions along with deviated nasal septum.
- Patients with any other systemic disorder. (diabetes, hypertension, tuberculosis, asthma, etc.)
- Malignancy.

Surgical Procedure of Septoplasty

- Position: Supine position with 15^0 head elevation.
- Anaesthesia: Local anaesthesia with sedation.
- Preoperative Preparation: Bilateral nasal cavities are packed with cotton patteys soaked in 4% lignocaine with adrenaline.

Procedure:

- Painting and draping is done.
- Infiltration: Bilateral septal mucosa over quadrangular cartilage, vomer and maxillary crest are infiltrated with 2% with lignocaine with adrenaline. Bilateral mucoperichondrial and mucoperiosteal flaps are raised due to hydro dissection.
- Incision: Freer's incision taken of the concave side.
- Mucoperichondrial flap is elevated over the quadrangular cartilage and mucoperiosteal flap is raised over the vomer and maxillary crest of the concave side.

Evaluation

Nasal discharge , Condition of wound , Condition of nasal septum, Patency of nostril, Tenderness over dorsum of nose, Pain assessment b using visual analogue scale, Septal perforation Septal abscess, Tenderness over sinuses,.

Patients were followed up:

- For 3 days after surgery
- 1 week after surgery
- 3 weeks after surgery
- 6 weeks after surgery

Assessment Tool

Pain was assessed on POD 1. POD2. and POD 3 by Visual Analogue Scale.

RESULTS

Table 1: Compare of age in study groups

	Group A	Group B	Group C	F Value	P Value
	Mean ± SD (n=10)	Mean ± SD (n=10)	Mean ± SD (n=10)		
Age (Yrs.)	32.95 ± 7.75	32.30 ± 7.83	31.30 ± 9.77	0.19	>0.05

Gr A Vs Gr. B: P>0.05 Gr. B Vs Gr. C: P>0.05 Gr. A Vs Gr. C: P>0.05

Table 2: Sex wise distribution in study groups

Sex	Group A (%)	Group B (%)	Group C (%)	Total (%)
Male	4 (13.3)	6 (20.0)	7 (23.3)	17 (56.6)
Female	6 (20.0)	4 (13.3)	3 (10.0)	13 (43.3)
Total	10 (33.33)	10 (33.33)	10 (33.33)	30 (100)

Chi-square = 3.75, P>0.05

Table 3: Nasal discharge wise distribution in study groups

Nasal discharge	Group A (%)	Group B (%)	Group C (%)	Total (%)
Yes	1 (3.4)	1 (3.4)	2 (6.6)	4 (13.4)
No	9 (30)	9 (30)	8 (26.6)	26 (86.6)
Total	10 (33.4)	10 (33.4)	10 (33.2)	30 (100)

Table 4: Condition of wound and nasal septum wise distribution of study group

Conditional of wound and nasal septum	Group A (%)	Group B (%)	Group C (%)	Total (%)
Healthy	10 (33.33)	10 (33.33)	8 (26.6)	28 (93.3)
Gapping	0	0	2 (6.66)	2 (6.6)
Total	10 (33.33)	10 (33.33)	10 (33.33)	30 (100)

Table 5: Comparison of pain score in study groups

Pain on	Group A Mean ± SD (n = 20)	Group B Mean ± SD (n = 20)	Group C Mean ± SD (n = 20)	F Value	P Value
Day 1	2 ± 1.21	2.25 ±1.25	2.40 ± 1.05	0.59	>0.05
Day 2	1.20 ± 0.83	1.40 ± 0.88	1.45 ± 0.95	0.44	>0.05
Day 3	0.20 ± 0.52	0.25 ± 0.55	0.35 ± 0.67	0.34	>0.05
1 Week	0.05 ± 0.22	0.05 ± 0.22	0.05 ± 0.22	0	>0.05
3 Weeks	0.05 ± 0.22	0 ± 0	0.10 ± 0.31	1.04	>0.05
6 Weeks	0 ± 0	0.05 ± 0.22	0 ± 0	1	>0.05

Dacryocystography

It produces an image of lacrimal sac and nasolacrimal duct. Plastic catheters are placed into one canaliculus on either side. Contrast medium in the form of about 1ml. of lip iodol, is simultaneously injected through both catheters and postero-anterior radiographs are taken. Five minutes later an erect oblique film is taken to ascertain this effect of gravity on tear drainage. Failure of dye to reach the now indicates an anatomical obstruction, the site of which is usually evident. The normal dacryocystograph in the presence of epiphora indicates either a partial obstruction or lacrimal pump failure. It is also helpful in diagnosis of diverticula, fistulae and filling defects caused by stones or tumors.

Lacrimal Scintillography

A drop of radionuclide tracer Technetium pertechnetate (Tc 99m) in saline or technetium Sulphur collide is instilled in the conjunctival cul-de-sac followed by imaging of the lacrimal system with a gamma beam. It is useful in patients who show contradictory or inconsistent results with lacrimal drainage system irrigation but have a strong history of epiphora. However, it does not provide the fine anatomical detail as visualized with contrast dacryocystography.

Computed Tomography

It is indicated when the lacrimal sac is enlarged by clinical examination but dacryocystitisis absent and the patient has other symptoms such as severe pain and bloody tears. Altered anatomy due to congenital malformation, trauma, or prior nasal, sinus or lacrimal surgery can be assessed. The paranasal sinus should be

scanned as well, to look for abnormalities of the maxillary sinus that might be affecting the nasolacrimal duct

DISCUSSION

This is a prospective study carried out at the Department of Otorhinolaryngology, Darbhanga Medical College and Hospital, from Jan 2015 to Feb 2016 to find out the role of the antibiotics in post-operative period after septoplasty. In table no.1 after comparing group A, B and C we found Gr. A Vs Gr. B: P>0.05 Gr. B Vs Gr. C: P>0.05Gr. A Vs Gr. C: P>0.05. From Table no.2 we found that there was no statistically significant sex wise difference amongst the three groups. Table No. 3 shows the post-operative nasal discharge in different groups. 13.4% (4 out of 30) patients had post operatively nasal discharge. In group A and group B 1 patient (3.34%) each had nasal discharge post operatively, whereas 2 patients in group C (6.6%) had nasal discharge post operatively which was statistically not significant. In table no. 4 we found that the condition of wound and nasal septum wise distribution of study group as follows: Chi-square = 2.03, p>0.05 statistically not significant. Table no.5 shows comparison of pain score done by visual analogue scale amongst all the three groups on day[1], day[2], day[3], 1week, 3weeks and 6weeks, as well as among the two groups out of three in all probabilities on day[1], day[2], day[3], 1week, 3weeks and 6weeks. It was found that for all the comparisons the p value was greater than 0.05 which proved it to be statistically insignificant. Such results confirm that antibiotic prophylaxis in septoplasty with short-duration (24 hours) nasal packing has no role in preventing infection complications after septal surgery. The septoplaty technique (with the 'back-to-front' mattress suture of the nasal septum) used by the authors, together with radiofrequency inferior turbinate reduction, [4] allows early removal of nasal packing with no risk of septal hematoma and low frequency (0.3%) of postoperative nasal bleeding. Topical antibiotic in nasal packing does not seem to affect the frequency on local infection, because infection rate in our study were comparable with those reported by other authors using topical antibiotic in nasal packing. According to several authors, the risk of infection after septoplasty seems to be related to nasal packing duration rather than to the surgical procedure itself Kaygusuz *et al*. found bacteremia in 9 of 53 patients (16.9%) after packing removal. Herzon observed bacteremia in 12% of 33 patients submitted to anteroposterior packing because of epistaxis. Although surgical field (nasal fossa) is contaminated, bacteremia does not seem to be a relevant issue during nasal surgery[5-7] and if it occurs normally it is not likely to result in major clinical complications. In their study on 50 patients submitted to septoplasty. Silk *et al*. found that although 46% of the patients had nasal mucosa colonized with Staphylococcus aureus, none of the blood swabs collected during surgical procedures showed bacterial growth[8]

CONCLUSION

The rate of nasal surgery complications is rare. Septoplasty is considered potentially contaminated surgery and does not require prophylactic use of antibiotics as there is the risk of postoperative infection is very low. Antibiotics do not have any effect on post-operative pain. There is progressive significant decrease in pain post operatively with proper administration of pain killers irrespective of prophylactic use of antibiotics.

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Source of Support: None Declared
Conflict of Interest: None Declared