

Use of Intranasal Splints to Prevent Post Operative Nasal Synechia Formation

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ABSTRACT

Objective: This study was conducted to see the effect of intranasal splints in preventing post operative nasal synechia in patients who underwent intranasal surgery.

Study Design: Observational and descriptive study.

Place & duration of study: This study was carried out at the Department of ENT, Islam Teaching Hospital, affiliated to Islam Medical College, Pasrur road, Sialkot, Pakistan: from June 2007 to December 2013.

Materials and Methods: Fifty four patients coming to Islam Teaching Hospital Sialkot from September 2012 to December 2013 were selected. Intransal splints were used in all patients after the intransal surgery. Nasal pack was removed on 1st or second post operative day. Intranasal splints were removed on 7th post operative day in the clinic without anesthesia. Follow up was done on 7th post operative day, 2 weeks and then monthly for 3 months.

Results: In this study there were 36 cases (66.7 %) were among male patients and 18 cases (33.3 %) were among female patients. The Maximum age of the patients in this study was 45 years and minimum age of the patients was 9 years and mean age was 25.70. There were 2 cases (3.7 %) of septal abscess drainage, 2 cases (3.7 %) of septal hematoma drainage, 8 cases (14.8 %) of Septoplasty, 2 cases (3.7 %) septoplasty and bilateral partial inferior turbinectomy, 6 cases (11.1 %) of septoplasty plus bilateral partial inferior turbinectomy, 4 cases (7.4 %) of septoplasty plus left inferior turbinectomy & septoplasty plus manipulation of fractured nasal bones, 2 cases (3.7 %) of septoplasty plus nasal cauterization, 20 cases (37 %) of septoplasty plus right inferior turbinectomy, 2 cases (3.7 %) of septoplasty plus right inferior turbinectomy plus trimming of right middle turbinate & septoplasty plus right intranasal polypectomy. There were 10 patients (18.5 %) in which the nasal pack was removed on 1st day and 44 patients (81.5 %) in which nasal pack was removed on 2nd day.

Conclusion: Intranasal splints made of intravenous fluid bottle soft plastic are well tolerated and they were effective in preventing nasal synechia formation.

Key Words: Intranasal splints, intravenous fluid bottle soft plastic, nasal synechia formation.

INTRODUCTION

Nasal adhesions/ synechia are a well established complication of intranasal surgery^[1] The most commonly performed intranasal procedures are septoplasty, turbinectomy, intransal polypectomy and endoscopic sinus surgery. The raw surfaces of the nasal cavity with injured nasal mucosa when come in contact during the post operative period result in nasal adhesions. Intranasal procedures which involve both lateral and medial walls of the nasal cavity result in a higher incidence of such adhesions^[2] Intranasal splints prevent nasal adhesion formation by not allowing the raw mucosal surfaces of the nasal cavity to come in contact during the post operative period. The intranasal splints are removed on 4th to 7th post operative day. The splints are usually secured in the midline with a non absorbable suture passing through the splints and the nasal septum^[3]

Nasal splints first time used in intranasal surgery by Salinger and Cohen in 1955 to keep the septum in position after septal surgery.^[4] The commonest reason for using nasal splints which was mentioned by pringle

in UK was to prevent the formation of adhesions.^[5]

The scope for using intranasal splint has includes holding septal grafts in position and as a means of securing anterior nasal packs in the treatment of epistaxis.^[6]

Several types of materials have been used in the past such as strips of x-ray film, and the polyethylene tops of coffee cans, drug and intravenous fluid containers, silicon or soft splints, Wax plate splints, magnet-containing silicone rubber intranasal splints, Guastella/ Mantovani septo-valvular splint can be left in situ as long as needed (up to 4 weeks) without interfering with normal nasal physiology.^[7] Since its introduction 56 years ago intranasal splints has become, after Pressure equalization tubes, the most frequently used prostheses in otolaryngology.^[8] According to the Royal National Throat, Nose and Ear Hospital in London, UK, silicon is the most common material used for nasal splints.^[9]

Many ENT specialists still use intranasal splints in nasal surgery, although their practice was not based on any scientific evidence of their effectiveness. Despite this the available literature does not give a clear definition of its role in intranasal surgery.^[10]

MATERIALS AND METHODS

Fifty four patients coming to Islam Teaching Hospital Sialkot from September 2012 to December 2013 were selected.

Inclusion criteria: Patients who underwent intranasal surgery.

Exclusion criteria: patients with intranasal malignancy or congenital nasal deformities.

Informed consent regarding the procedure was taken.

Intranasal splints were used in all patients after the intranasal surgery.

Nasal pack was removed on 1st or second post operative day. Intranasal splints were removed on 7th post operative day in the clinic without anesthesia. Follow up was done on 7th post operative day, 2 weeks and then monthly for 3 months.

RESULTS

In this study there were 36 cases (66.7 %) were among male patients and 18 cases (33.3 %) were among female patients as shown in Table No 1.

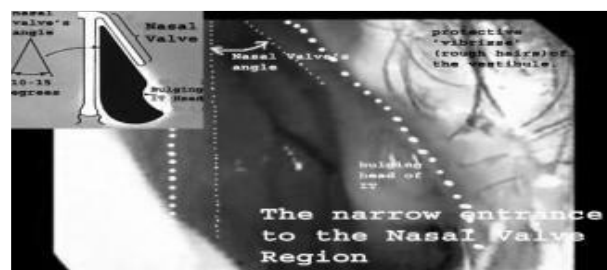
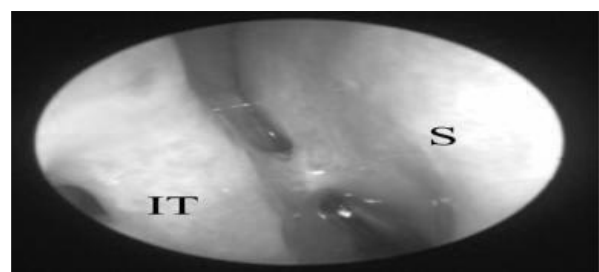


Figure No.1: Internal nasal valve.

Table No 1: Sex distribution

S. No	Sex	Cases	Percentage
01	Male	36	66.7 %
02	Female	18	33.3 %
	Total	54	100 %



Figure(2): Synechiae between right inferior turbinate and nasal septum.

Table No 2: The age of patients included in the study ranged from 9 years to 45 years.

S. No	Limit	Age
01	Maximum	45
02	Minimum	09
03	Mean	25.70

Table No 3: Distribution of types of surgical procedures.

S. No	Type of surgical procedure	No of Cases	%age
01	septal abscess drainage	2	3.7
02	septal hematoma drainage	2	3.7
03	Septoplasty	8	14.8
04	septoplasty and bilateral partial inferior turbinectomy	2	3.7
05	septoplasty plus bilateral partial inferior turbinectomy	6	11.1
06	septoplasty plus left inferior turbinectomy	4	7.4
07	septoplasty plus manipulation of fractured nasal bones	4	7.4
08	septoplasty plus nasal cauterization	2	3.7
09	septoplasty plus right inferior turbinectomy	20	37.0
10	septoplasty plus right inferior turbinectomy plus trimming of right middle turbinate	2	3.7
11	septoplasty plus right intranasal polypectomy	2	3.7
12	Total	54	100.0

Table No 4. Postoperative examination and timing of removal of nasal pack.

S. No	Pack removal	No of Cases	Percentage
01	1 st day	10	18.5 %
02	2 nd day	44	81.5 %
	Total	54	100 %

The Maximum age of the patients in this study was 45 years and minimum age of the patients was 9 years and mean age was 25.70 as shown in Table No 2. There were 2 cases (3.7 %) of septal abscess drainage, 2 cases (3.7 %) of septal hematoma drainage, 8 cases (14.8 %) of Septoplasty, 2 cases (3.7 %) septoplasty and bilateral partial inferior turbinectomy, 6 cases (11.1 %) of septoplasty plus bilateral partial inferior turbinectomy, 4 cases (7.4 %) of septoplasty plus left inferior turbinectomy & septoplasty plus manipulation of fractured nasal bones, 2 cases (3.7 %) of septoplasty plus nasal cauterization, 20 cases (37 %) of septoplasty plus right inferior turbinectomy, 2 cases (3.7 %) of septoplasty plus right inferior turbinectomy plus trimming of right middle turbinate & septoplasty plus right intranasal polypectomy as shown in Table No 3. There were 10 patients (18.5 %) in which the nasal

pack was removed on 1st day and 44 patients (81.5 %) in which nasal pack was removed on 2nd day as shown in Table No 4.

DISCUSSION

Intranasal adhesions are relatively common after septoplasty in combination with turbinate surgery^[11]. In retrospective studies in up to 36% of cases intranasal adhesions could be found, however not all of them were functionally relevant^[12, 13]. Investigations by Pirsig on more than 2000 patients could show that the use of nasal splinting for 4 to 7 days could avoid intranasal adhesions in almost all cases^[14, 15]. Intranasal splints made of soft silicone are available in the market. Intranasal splints made of x ray films and suture packing tailored by the surgeon are also described.^[16, 17] We used soft plastic material of Intravenous fluid bottles as intranasal splints. In our study 36 (66.7%) patients were male and 18(33.3%) patients were female (table 1). Maximum age was 45 years and minimum 09 years (table 2). The types of surgical procedures are shown in table .most common procedure done is septoplasty with right partial inferior turbinectomy followed by septoplasty alone (table 3). Intranasal splints tailored according to the size of the nose were placed in all patients and secured with a prolene stitch passing through and through the nasal septum. All patients were seen at 1st week post operative time, then 2nd week, then 4th week and then monthly for three months. Pack was removed on 2nd day in those who underwent turbinectomy along with septoplasty and on 1st day in those who underwent septoplasty alone (table 4). All patients were examined under the head light with nasal decongestion if required to look for adhesions. None of the patients were found to have developed nasal adhesions at any stage of their follow up.

Some authors found results in contrast to our findings as they found a significant difference between splinted and non splinted patients, due to high rate of adhesions when septoplasty combined with lateral wall surgery like Schoenberg et al., they found a low risk of adhesion early in the first week post operatively when intranasal splints were used, and the highest incidence of intranasal adhesions occurred in non splinted patients who had surgery to both walls of their nasal cavity (3.6% in splinted vs. 31.6% in non splinted).^[18] Campbell et al. inserted a nasal splint into one side of the nose of 106 patients undergoing a variety of intranasal procedures, all adhesions occurred on the non splinted side and more commonly when bilateral wall procedures had been performed (8% in splinted vs. 26% in non splinted), they concluded that splints were justified for bilateral wall procedures but that their increased morbidity did not justify their use in single wall procedures.^[19] Roberto et al. found the high efficiency to prevent post-surgical adhesion once any of

the patient who underwent the septoplasty with turbinectomy (0% in splinted vs.10.6% in non splinted group).^[20] Nabil-ur Rahman concluded that complications are related to the type of procedure performed and Adhesions are common complication if intranasal splint is not provided,^[21] White and Murray concluded that adhesion may be prevented by insertion of nasal splint.^[22]

After stratification by gender results showed 3 adhesions (10.0%) in females and 1(3.5%) in males (tables 5, 6), indicating there is no significant effect of gender on adhesion formation, Which is in agreement to White and Murray (14.5% males vs. 14.6% females) who pointed that an individual patient may have a greater propensity to develop adhesion and further studies on patient fibroblastic activity will be required to explore this possibility.^[23]

CONCLUSION

Intranasal splints made of soft plastic material of intravenous fluid bottles are well tolerated. Intranasal splints prevent nasal adhesion formation after intranasal surgery.

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