Nasal Splints After Routine Nasal Surgery: How Justified Is It?

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ABSTRACT: OBJECTIVE: To evaluate the benefits and ill effects of using intranasal splints (INS) after nasal surgeries. MATERIALS AND METHODS: A prospective study of 124 patients was carried out at Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, India. A total of 124 patients undergoing three types of nasal surgeries (Septoplasty, Septoplasty with turbinate reduction, endoscopic sinus surgery with or without septal correction) over a span of 5 years were included in the study. RESULTS: The role of INS was thoroughly investigated. Patient satisfaction after post operative healing was higher in patients with INS as compared with those without INS. Though within 7 days there was more pain, discomfort and nasal obstruction in patients with INS. CONCLUSION: Still, considering the long term benefits our study favours the use of INS after nasal surgeries. We recommend intranasal splints especially in those surgeries in which both lateral wall of nose and septum are simultaneously manipulated.

Key Words: Intranasal splints, nasal obstruction, post operative healing, nasal surgery.

INTRODUCTION: Nasal surgery is frequently associated with some amount of morbidity due to adhesions, hematoma formation, crusting, bleeding, pain & discomfort because of nasal antibiotic meshes which are post-operatively inserted. Rarer complications include septal perforations. INS has been widely used by rhinologist to combat these complications. Salinger and Cohen were the first to use INS for surgery of a difficult septum. Several materials have been used in the past, but now preformed splints are available in the market (silicon and soft splints). INS has been mainly used to reduce the adhesion formation between the septum and lateral wall of nose. After the emergence of FESS which was a breakthrough in nasal surgery, the incidence of adhesion formation in the nasal cavity has markedly increased because of simultaneous injury to the septum and lateral nasal wall due to repeated in and out manipulation of the endoscope. Raw surfaces are also markedly increased because of use of microdebriders in nasal surgeries. The prevalence of adhesions (which most ototrinolaryngologists would like to avoid) was reported to be 6-11%. It is even higher (36%) following turbinate resection alone, 31% in turbinate resection combined with septal surgery and only 7% in other procedures. Campbell et al showed that incidence of adhesions following high risk surgery (such as synchronous surgery to septum and lateral wall) was reduced from 26% to 0% by inserting silastic splints at the end of operation and leaving them in place for 7 days. The INS is widely accepted as a good intervention to minimize post-operative complications in patients undergoing various nasal surgeries. However in spite of its wide usefulness some recent studies have created considerable doubt in their effectiveness and morbidity. To evaluate the benefits...
and morbidity associated with INS a randomized prospective study was carried out and it was very helpful in answering majority of questions raised about the wisdom of using INS.

**PATIENTS AND METHODS:** This study was carried out at Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, in the department of ENT. A total of 124 patients undergoing three types of nasal surgeries (Septoplasty, Septoplasty with turbinate reduction, endoscopic sinus surgery with or without septal correction) over a span of 5 years were included in the study. To avoid the operator bias all 124 cases of the study were operated by the same surgeon. The patients in which there was slightest doubt of any intra operative complication such as mucosal tear or septal perforation were excluded from the study to avoid any confounding in the results. The patients were randomly divided into two groups of 62 patients each. In group 1 both antibiotic soaked anterior nasal packing & intranasal splints were used post operatively. While in group 2 only antibiotic soaked anterior nasal packing was done post operatively. The splints were made up of plastic sheets cut from intravenous infusion bottles which were previously sterilized and were fixed with 2-0 silk through the septum (Figure 1). Antibiotic soaked packs were removed in both groups after 48 hours; while the patients of group 2 who had intranasal splints; the splints were kept till 7th post operative day. The patients of both the groups were given systemic antibiotics & alkaline nasal washes with NaCl + NaHCO3 in ratio of 2:1 in 250 ml of water, twice a day, following the removal of anterior nasal packs, till discharge of patient. The patients were evaluated for pain on the basis of history, using a visual analog scale. Adhesions, incidence of perforation (due to intra nasal splint), crusting and hematoma formation were also recorded in each group using 00 nasal endoscope on 7th, 10th & 15th post operative day.

**RESULTS:** Of the 124 patients included in the study, 68 males and 56 females, the overall mean age group was 32 years. The study was divided into two groups of patients in which group 1 comprised of 62 patients in which INS with antibiotic soaked anterior nasal pack were used and in other 62 patients only antibiotic soaked anterior nasal pack was used postoperatively.

The patients were subjected to either of the 3 modalities of treatment which was in the form of septoplasty (in 42 patients), septoplasty with turbinectomy (in 42 patients) and bilateral endoscopic sinus surgery (in 40 patients). The results were evaluated on aspects of pain (visual analog scale), bleeding, crust formation, adhesions (synechia), hematoma, septal perforation (Figure 2) in each group and the results have been tabulated below in detail.

**DISCUSSION:** Intranasal splints are pressure equalization tubes and the most frequently used prosthesis postoperatively in the practice of otorhinolaryngology. These were first used in 1970’s by Foxen and Glichrist7. To prevent nasal adhesions and till now they have an undisputed role in decreasing the post-operative complications to a significant amount. Although the splints are placed in certain patients to provide the best long term outcomes, it can produce some temporary problems. Often the splint becomes coated with dried mucus or blood; patient may be unable to breathe through their nose if this happens. The splints themselves or the stitch can cause some discomfort in excess of the typical surgical discomfort. Finally, the nose may appear wider with splints in place. All these are temporary changes that resolve once the stitches are removed. One of the most deleterious complications of nasal surgery is the formation of synechia. Their presence leads to persistence of nasal obstruction which often leaves the patient and the doctor dissatisfaction. The incidence of various parameters contributing to post-operative morbidity in splinted and non-splinted patients undergoing nasal surgeries has been compared in our study of 124 patients. In our study out of 62 patients who were non-splinted the incidence of synechia formation was 52% while it was drastically reduced to 18% in 62 splinted patients. Out of 62 splinted patients, the synechia were seen more in patients with septoplasty and turbinectomy followed by patients undergoing FESS and septoplasty alone.
This is supported by Campbell et al\textsuperscript{3} and Von Schoenberg et al\textsuperscript{8} who advised using INS in patients undergoing multiple nasal procedures to prevent the risk of adhesions. In spite of its beneficial effects other parameters showed worsened degree of morbidity\textsuperscript{9}. In patients with INS, nasal crusting was found in about 82% and pain in 77% as opposed to 43% and 40% respectively in patients without INS. However crusting was highly significant with the use of INS in the study conducted by Munnessar et al\textsuperscript{6}, the reason being that INS interferes with ciliary function resulting in prevalence of crusting. Repeated nasal toileting is important in reducing the rate of crust formation. Perforation of nasal septum (a well known complication of nasal surgery) had an incidence of 5% in our patients using INS which is similar to study by Von Schoenberg et al\textsuperscript{8} and Al Mazrou et al (2.5-3.5%)\textsuperscript{10}. The use of INS had increased the rate of septal perforation in our study, probably due to over tightening of the suture which was used to stabilize the splints in position leading to pressure necrosis (Figure 3). Once the suture was applied a bit loosely the incidence of septal perforation reduced markedly. Bleeding i.e. soakage of intranasal packs was more in cases of septoplasty with turbinectomy as compared to the other two surgical procedures.

CONCLUSION: This study as well as other studies have proven now and again that INS had significant role in preventing intranasal adhesions but it definitely increases morbidity by causing pain, discomfort and crust formation. The morbidity factors are temporary and are mainly during first 7 days of surgical procedure and can be managed by medication, regular nasal toileting and patient counselling but adhesion after nasal surgery are a menace; the prevention of which definitely outweighs the above mentioned morbidity factors.

On the basis of present study, we recommend intranasal splints especially in those surgeries in which both lateral wall of nose and septum are simultaneously manipulated.

REFERENCES: