

ANTERIOR NASAL PACKING VS SEPTAL CLIPS TYPE III, IN POST NASAL SEPTAL SUBMUCUS RESECTION & SEPTOPLASTY SURGERIES: A COMPARATIVE STUDY

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ABSTRACT:

Background & Objectives: The objective of present study is to compare 2 techniques of nasal packing after SMR (submucous resection) or septoplasty surgeries i.e anterior nasal packing (ANP) & nasal septal clip type III (NSCT).

Materials & methods: This is a prospective randomized comparative study including 50 patients above 18 years who underwent SMR or septoplasty for deviated nasal septum (DNS). The patients were randomly divided into two equal groups for nasal packing using NSCT or ANP.

Results: Intra operatively, packing with NSC was easier, faster. And support provided to the septum could be assessed visually when compared to ANP ($t = 7.52, p < 0.001$). Trauma to mucous membrane occurred during packing was 8% in ANP and 4% in NSC group. In immediate post op we noted headache, 20 % in NSC and 92% in ANP, epiphora 12% in NSC and 100% in ANP. Sleep disturbance 16 % in NSC and 18 % in ANP, dysphagia 80% in ANP and 0 % in NSC and bleeding 20% in NSC who were managed with nasal decongestants ($p < 0.001$). At pack removal severe pain was experienced in 100% ANP and 8 % in NSC. Bleeding occurred during pack removal was 16% in ANP and 8 % in NSC ($\chi^2 = 12.39, p < 0.05$). Follow up complications noted were synechia in 8% in ANP, 4% in NSC, septal hematomas in 4% in each. The necrosis of the mucous membrane was noted in 4% in ANP group and treated conservatively. None suffered septal perforation.

Conclusion: Purpose of packing was served by both methods more or less equally but NSC was better tolerated in post operative period with less post operative discomfort and follow up complications when compared to ANP.

Keywords: Deviated nasal septum (DNS); SMR; Septoplasty; Nasal septal clip type III (NSC); conventional anterior nasal packing (ANP).

INTRODUCTION:

Though the history of nasal packing after septoplasty or SMR dates back to 1847 from the time of Gustav Killian of Germany & Otto Tiger Freer of USA, yet the systematic nasal packing post septoplasty or SMR was started in 1882 by Ephraim in Chicago & Peterson in Germany¹ which was routinely followed for many decades to give the functional support to the

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nasal septum with good flap opposition minimizing the risk of complication like bleeding & adhesions. However nasal packing itself causes postoperative distress, periorbital oedema, excessive lacrimation, sleeplessness, dry mouth, cardiopulmonary complications^{2,3,4} & some says its removal as the most painful experience of their life². Thus alternatives like BIPP gels⁵, Vaseline gauze, merocel⁶ were used to address mainly bleeding but other complications were debatable⁷.

In this view Stucker & Ansel⁸ questioned the benefits of nasal packing, since then with alternative techniques using absorbable materials like platelet rich gels⁶, tissue adhesives⁶, bovine gelatin mixed with thrombin⁹, modified hyaluronase⁶ to obviate the need of pack removal, but biocompatibility & cost issue was raised⁹. To get out from this customary nasal packing alternative techniques like, through & through absorbable sutures¹⁰, septal splints with quilting sutures or clips^{4,11}, septal magnets¹², were used with comparisons with merits & demerits introduced without standardization regarding the complete details of the technique & purpose served along with postoperative morbidity & complications. Hence a clinical comparative study was conducted between customary antibiotics soaked gauze nasal packing with that of commercially available nasal septal clip type III consisting of soft rubber splint & septal clip, to see which technique is better overall & to give functional support to nasal septum after post SMR & septoplasty surgeries.

MATERIALS AND METHODS:

This is a prospective, comparative study of 50 patients conducted at M.R Medical College attached to Basaweshwara Teaching and General Hospital, Kalaburgi from September 2010 to September 2011. Ethical clearance was taken from the institute. Informed and written consent was taken from all patients of 18 yrs & above with thorough history and clinical examination. Those who were diagnosed as having DNS as the only cause for nasal obstruction were included in study. They were all operated on the basis of Cottle's line, those DNS that were anterior to line were subjected to Septoplasty and posterior to the line were subjected to SMR. Post-surgery, bilateral nasal packing was done after complete hemostasis using

conventional anterior nasal packing with saline soaked antibiotic ribbon gauze (fig2) or with Nasal septal clip type III (fig 1) on both sides of nose by dividing 25 patients for each study group randomly.

In NSC Type III group after completion of surgery, the horizontal incision at lower border of mucoperiosteal flap on one side to drain any residual blood or collection in between the septal flaps. A cut was given along the dotted line in the middle of the septal soft rubber splint & lubricating it with soframycin ointment was gently inserted by crimping the splint through the nostrils and then along the floor of nasal cavity & manipulated to pass medial to middle & inferior turbinate to approximate both the flaps on both sides. A thread is passed into the holes in the splint and tied loosely in front of columella. Then holding the thread loop, the septal clip is held open by the nasal speculum and is introduced over the splint to make sure that the metallic septal clip does not touch the mucosa to maintain the septum in corrected position & post nasal bleed was checked to confirm the hemostasis.



Fig. 1- Nasal septal clip type III.



Fig.2- Anterior nasal packing.

In anterior nasal packing group, nasal packing was done using saline soaked ribbon gauze treated with soframycin antibiotic cream was inserted to fill the nasal cavity stalked layer by layer from floor to roof gently to approximate & support the nasal septal flaps on both sides & post nasal bleeding was checked for hemostasis.

Postoperative signs & symptoms like headache, epiphora, dysphagia, disturbance of sleep, bleeding was noted & tabulated. One day later nasal packing removed & assessed for signs & symptoms suffered during pack removal. Follow up done weekly for one month & clinical observations were noted & any complication was managed with minor intervention, conservatively. Finally both the groups were compared along with statistical significance.

RESULTS:

50 patients attending ENT, OPD with clinical features of DNS were selected randomly. According to Cottle's line those who had anterior deviation were subjected to Septoplasty and those posterior to line were subjected to SMR. Two groups were made of 25 in each group irrespective of type of surgery for nasal packing in the form of NSC Type III and anterior nasal packing randomly. The following observations were made, tabulated as below (Table-1).

Intraoperatively nasal packs were available in the OT i.e ribbon gauze piece and antibiotic soframycin, whereas NSC Type III were to make it

Table-1: Intra operative nasal comparison.

Intra operatively	Anterior nasal packing	NSC Type III	t-test value & p value
Availability	25	25	-
Ease of insertion	Not so easy	Easy	-
Trauma to mucous membrane	2(8%)	1(4%)	
Time required	Mean and S.D 4.32+/- 1.12	Mean and S.D 2.04+/- 1.03	t=7.52 ,p<0.001
Assessment of B/L equality of pressure	Visually not possible	Visually possible	-

commercially available. As insertion of pack was concerned it was easy to introduce NSC T III but not so easy with ANP. The time required for ANP was more compared to NSC T III. Mean and S.D for ANP is 4.32+/-1.12 and Mean and S.D for NSC T III is 2.04+/-1.03. Hence the statistical difference of time required in packing is highly significant.

The postoperative symptoms Headache, epiphora, dysphagia, sleep disturbance, bleeding which occur after surgery due to packing were compared and found that with NSC T III symptoms noted were Headache in 5 patients(20%), Epiphora in 3 patients(12%), dysphagia in 0 patients(0%), sleep disturbance in(4) patients(16%), bleeding in 5 patients(20%).

Table 2. Post-operative subjective signs & symptoms.

Post-operative symptoms	NSC T III No	NSC T III %	ANP No	ANP %	X2	p-value
Headache	5	20	23	92	25.92	<0.001
Epiphora	3	12	25	100	39.28	<0.001
Dysphagia	0	00	20	80	33.30	<0.001
Sleep disturbance	4	16	20	80	20.5	<0.001
Bleeding	5	20	0	00	5.52	<0.001
Sense of discomfort	4	16	23	92	29.06	<0.001

Sense of discomfort in 4 patients (16%) out of total 25 patients (100%). Whereas in ANP group Headache in 23 patients(92%), Epiphora in 25 patients (100%), dysphagia in 20 patients (80%), sleep disturbance in 20 patients (80%), bleeding in 0 patients(0%), Senses of discomfort in 23 pts (92%) out of total 25 patients (100%) were noted (Table-2).

Looking at the x2 and p value for individual signs and symptoms the study carries a significant difference

between the two groups. In ANP group pain occurred in all 25 patients during pack removal and bleeding in 4 patients, whereas in NSC T III group 2 suffered pain during clip removal and 2 had bleeding. Statistically $\chi^2 = 12.39$, $p < 0.05$ hence a significant difference between the symptoms suffered during pack removal (Table-3).

Table 3: Signs & Symptoms at pack technique and findings removal.

At pack removal	A NP	%	NS C T III	%	Total	%
Pain	25	100	2	8	27	54.0
Bleeding	4	16	2	8	6	12.0

Statistically $\chi^2 = 12.39$, $p < 0.05$.

FOLLOW UP INDEX

Table 4: Follow up index.

follow up for 1wk,2wk and 1 month	ANP No	%	NSC T III No	%
NECROSIS OF MUCOUS MEMBRANE	1	4%	0	0%
SEPTAL HAEMATOMA	1	4%	1	4%
SYNAECHIAE	2	8%	1	4%
SEPTAL PERFORATION	0	0%	0	0%
TOTAL	4	16%	2	8%

After follow up for a period of one month on regular basis we found that with ANP group following complications occurred necrosis of mucous membrane in 0 pt (0%), septal haematoma in 1 patient (4%), synechiae in 1 patient (4%), septal perforation in 0 patient (0%) of total 25patient (100%). In NSC T III group the complications seen were necrosis of mucous membrane 1patient(4%), septal haematoma 1patient

(4%), synechiae 2pt (8%), septal perforation 0patient (0%) of total 25pt (100%). Statistically there is no much difference between the two groups (Table-4).

DISCUSSION:

In our study 50 patients were taken with only symptomatic DNS in which 26 patients had anterior deviation who underwent septoplasty and 24 patients had posterior deviation that underwent SMR respectively. Accordingly 2 groups were made; 25 in each group irrespective of type of surgery for nasal packing in the form of NSC TYPE III & conventional anterior nasal packing randomly. Among study group patients were in the age group of 18-50years with 26 males (41.7%) & 24 females (58.3%).

In all other studies the age group selected is 15 years and above^{11, 13, 15}& in our study was 18 years and above, for better compliance in terms of giving accurate subjective signs and symptoms suffered in the immediate post-operative period and in follow up period. The other reason would be that the septal splint and clip are available in sizes to fit this age group. As far as ANP is considered it can be done in any age group. In total the age distribution & sex does not have any significant attribute towards our study.

The parameters of **intra-operative technique of packing** have not been commented upon in literature for comparison.

As **insertion** of pack was concerned it was easy to introduce NSC Type III but not so easy with ANP with minor difference in mucosal trauma which varies & depends on the care taken during the insertion of nasal packing technique used. The **time** required for ANP was more as it require more time in assessing the pack insertion layer by layer with equal amount of pack to be inserted on both sides when compared to NSC T III which can be directly applied under direct vision with equal pressure on both sides of nasal septum. Visual Assesment of bilateral pressure was possible with the NSC TypeIII as the pressure is constant and predetermined as per the make whereas with ANP this was not so because the volume of gauze could fill any of the corner of nasal cavity. So mean time consumed for ANP is more than NSC type III as the mean time

S.D for ANP is 4.32+/-1.12 and Mean time S.D for NSC T III is 2.04+/-1.03. Hence the statistical difference ($p < 0.001$) of time required in packing is highly significant. In Anand et al study on septal clips and ANP group⁴, the technical details & advantages of insertion & time duration was not mentioned.

So technically when intraoperatively compared for conventional ANP, NSC type III is better as it is more easy, quick, under direct vision for proper assessment to support the operated septum except the cost & availability.

Postoperative observation on symptom & sign noted in our study in ANP group were Headache in 92%, Epiphora in 100%, Dysphagia in 80%, Sleep disturbance in 80%, bleeding in 0%, Sense of discomfort in 92% as compared to study conducted by Md Sohail Awan et.al in ANP group Headache in 90.90%, Epiphora in 100%, Dysphagia in 95.50%, Sleep disturbance in 81.8%, bleeding in 0%, Sense of discomfort was not commented¹³. In M.M.Adrehali et.al study, pain as per Visual Analogue Scale (VAS) - 5 was noted¹¹. In Al Raggad et.al study bleeding noted was 13% in the ANP group¹⁴. In Anand et al study headache was 72.5%, dysphagia 95%, epiphora 100%, bleeding 3%, dryness of mouth 40%⁴. As per the above data the subjective signs and symptoms suffered in immediate post operative period were more or less similar when compared to ANP groups of other studies. The post operative complaints are attributed to the effect of complete block of Nasal Cavity and pressure of the ANP on Lateral wall of the nose.

In our study with NSC Type III we noted Headache in 20%, Epiphora in 12%, Dysphagia in 0%, Sleep disturbance in 16%, bleeding in 20 %, Sense of discomfort in 16%. In the study by Md Sohail Awan et.al they used through and through suture and observed Headache in 20.50%, Epiphora in 11.40%, Dysphagia in 4.50%, Sleep disturbance in 15.90%, bleeding in 2.30%, Sense of discomfort were not commented¹³. In M.M.Adrehali et.al study quilting suture group, pain as per Visual Analogue Scale (VAS) - 2 was noted¹¹. In Al Raggad et.al study suture group, bleeding noted was 15.3 %¹⁴. In Anand et al study on

septal clips showed headache was 15%, dysphagia 2%, epiphora 3%, bleeding 0%, dryness of mouth 4%⁴. In this regard if we look at the data in the table the technique of NSC T III and through and through suturing, quilting suturing with 3'0 vicryl¹³ or septal clips⁴ had not much significant difference in terms of subjective signs and symptoms except bleeding in immediate post- op up to 24 hrs period.

Coming back to our comparative clinical study it is evident by our data that for the individual postoperative signs & symptoms the study carries a significant difference between the two groups as the $p < 0.05$ for all postoperative symptoms where NSC Type III scores 5-8 times more better than the ANP.

During Pack removal in our study in ANP group pain was seen in 100% and some complained it as "most horrible experience of life". Similarly in Md Sohail study it was 97.80%¹³ and in M.M.Adrehali study it was 10%¹¹. Bleeding was seen 16% and in Md Sohail study¹³ and in M.M.Adrehali study it was not commented, whereas in Al Raggad study it was 4.8%¹⁴. So when compared to other studies, pain and bleeding is directly attributed to ANP as it causes pressure and ulceration on nasal mucus membrane.

In NSC T III group in our study pain was noted in 8%, in Md Sohail study it was 0%¹³ and in M.M Adrehali study it was 0% in suturing group¹¹. Bleeding was noted in 8%, in Md Sohail study it was 0%¹³ and in M.M Adrehali study it was 0% in suturing group¹¹. Minimal pain and bleeding experienced in our study is attributed to pressure effect of clipping on nasal septum and in other study the suture material used is absolutely not removed in post operative period. Coming back to our study pain and bleeding is 10 times less in NSC T III group when compared to ANP group. So NSCT III is an excellent packing method compared to ANP as far as pack removal is considered.

During follow up period of one month in our study of ANP group we noted necrosis of mucous membrane in 4%, septal haematoma in 4% and synechiae in 8% was less when compared to Anand et al study had synechiae in 12.5% & raw area/mucosal necrosis in 25% & residual DNS 7.5%⁴, in Md Sohail

Awan (et.al) study which were necrosis of mucous membrane in 57% and septal haematoma in 7%, synechiae in 18%¹³, in M.M.Ardehali (et.al) study 3% synechiae and 3% septal perforation was noted¹¹, in Al Raggad et. al study septal haematoma in 4.8% synechiae in 5.9% and septal perforation in 2.4% was noted¹⁴. In Z.M.Raahat et.al study 2.7%, septal haematoma was noted¹⁰. The lower incidence of complications in our study is attributed to use of saline soaked antibiotic ribbon gauze.

In our study in **NSC type III group** septal haematoma in 4% and synechiae in 4% was noted and when compared to Anand et al study had synechiae in 2.5%, raw area /mucosal necrosis in 17.5% & residual DNS 7.5%⁴, in M M Ardehali (et.al) study synechiae in 2% and septal perforation in 1%¹¹, in Al Raggad (et.al) study synechiae in 1.1% was noted¹⁴. In our study all the complications which occurred were treatable. The complication which occurred in Anand et al (residual DNS), in M.M.Ardehali et.al study and Al Raggad study (i.e. septal perforation) caused due to the suture which causes trauma to flaps bilaterally and the knot pulls on itself were difficult to treat. The treatment protocols for septal perforation & residual DNS repair are also controversial.

In our comparative study the complications noted in both groups except synechiae which occurred in 8% in ANP group as compared to 4% in NSC T III group. This is because the packs exert pressure on both the septum and lateral wall of nose when compared to NSC T III which exerts pressure on the septum only and the pressure induced is less than the capillary pressure as per the make.

So NSC T III is better in giving less follow up complications than ANP.

CONCLUSION:

The Comparative results confirmed that patients with ANP and NSC T III were benefited more or less equal as per the purpose of nasal packing was considered to give functional support to septum but the objective evidence suggests that, NSC T III was technically quick, easy to insert under direct vision in giving uniform support on both sides of septum and can be removed

with minimal tolerable pain. The subjective signs and symptoms in the immediate postoperative period and the follow up complications were significantly less compared to ANP group. As far as ANP is concerned except for its availability and cheaper cost we did not find any advantage.

So we conclude that, those who underwent septal surgeries with NSC T III as a packing method, were benefited more though being costly.

“In the last in our opinion when NSC T III is available it is advisable to use the same” to merit its advantages to the patients.

DISCLOSURES:

- (a) Competing interests/Interests of Conflict- None
- (b) Sponsorships – None
- (c) Funding - None
- (d) Written consent of patient- taken
- (e) Animal rights- Not applicable

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