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Comparison of Nasal Packing versus Septal Stitich on Airway Complications during Recovery from Anesthesia

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ABSTRACT

Objective: To compare the incidence of airway related complications associated with nasal packing versus septal stitch in the post-operative period in patients presenting for elective septoplasty for deviated nasal septum (DNS).

Study Design: Randomized controlled trial (Iranian registery of Clinical trials: 75068)

Place and Duration of Study: Department of Anesthesia, Combined Military Hospital, Rawalpindi Pakistan, from Mar to Aug 2023.

Methodology: Septoplasty was done under general anesthesia in both groups and before extubation, Group-N (n=110) received bilateral Vaseline soaked nasal packing and Group-S received quilted septal sutures (n=110). Primary variables studied were mean time from recovery room to discharge, mean dose of analgesia used post-procedure and pre-discharge, incidence of laryngospasm, hypoxia, bleeding, and headache in 6 hours in the immediate post-operative period in the pre-anesthesia care unit or in the ward.

Results: Mean time from recovery to discharge being 19.19±2.24 hours in Group-N versus 12.32±1.36 hours in Group-S (p<0.001). Median pain scores post-procedure once fully awake from anesthesia were 6.00 (1.00) in Group-N and 4.00 (1.00) in Group-S on the Visual Analog Scale (p<0.001). Mean dose of analgesia required for pain from shifting to recovery to discharge was 3.43±0.58 grams in Group-N versus 2.14±0.53 grams in Group-S (p<0.001).

Conclusion: We conclude that quilted septal stitch provides better pain scores, patient comfort and less incidence of respiratory complications post-septoplasty.

Keywords: Airway, Anesthesia, Complications, Nasal Packing, Septal, Stitch.

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INTRODUCTION

A deviated nasal septum is the most common cause for chronic nasal obstruction presenting to the otolaryngologists' clinic for surgical correction.[1] It is estimated that 75-80% of the general population has deviated nasal septum of varying degree but all of these patients may not require surgical correction or may require it at later stage in life.[2] Septoplasty is one of the most common procedures done for correction of a DNS and around 260,000 septoplasties are done annually in the US alone.[3] The procedure is a challenge for the anesthetist due to airway deviation and post-operative concerns and respiratory complications associated with the operation.[4]

The use of nasal packing has been the common convention in vogue after septoplasty to align and provide mechanical support to the re-adjusted septum.[5] By providing support to the septum, it is proposed to result in less chances of bleed and formation of hematoma.[6] With advancement and refinement in literature for this common procedure, literature is supportive that the use of nasal packs is associated with considerable patient discomfort, delayed healing and increasing the incidence of respiratory complications in the post-operative period.[7] Hypoxia, laryngospasm, delayed wound healing, infection and considerable discomfort and pain from the pack when in place and during removal results in poor patient compliance.[8] Bilateral nasal packing has also been shown to adversely affect the breathing especially during sleep cycles affecting the quality of sleep and resulting in complications in obese patients and especially those with obstructive sleep apnea.[9]

The need for alternative methods to stabilize the septum have been employed by surgeons and quilted septal stitch has been used with considerable success.[7] Literature on the comparison of their associated anesthesia and airway complications in the immediate and early post-operative period have not been studies

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in detail in our demographic setup. Our study aims to study anesthesia related and airway complications associated with nasal packing versus septal stitch in patients presenting for elective septoplasty.

METHODOLOGY

This randomized controlled trial was carried out at the Department of Anesthesia, Combined Military Hospital, Rawalpindi Pakistan, from March to August 2023 after approval from the ethical review board vide letter no. 549 with trial I'd 75068 registered with Iranian registery of Clinical trials. The sample size for two groups was calculated keeping the confidence interval at 95%, power of test at 80% with mean recovery time to discharge due to pain and discomfort after nasal pack versus septal stitch being 19.12±4.21 hours versus 12.61±3.76 hours respectively.[10] Minimum sample size according to WHO calculator came out to be 43 and 99 participants respectively for the two groups. We made two groups of 110 patients each, one as the nasal packing group and one as the septal suture group after assessment for inclusion through non-probability consecutive sampling via lottery method according to the inclusion criteria furnished (Figure-I).

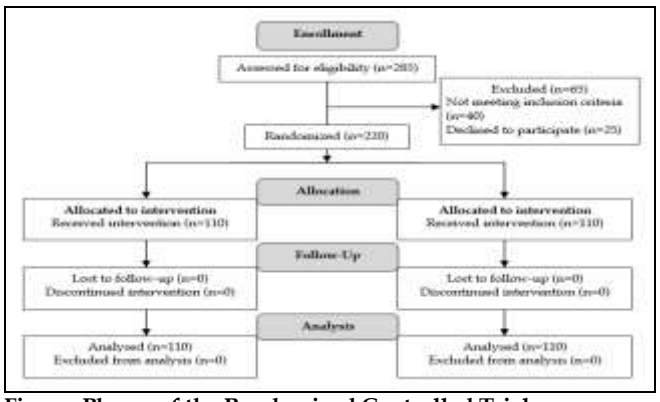

Figure: Phases of the Randomized Controlled Trial

Inclusion Criteria: included all patients >18 years presenting for pre-anesthesia assessment for elective nasal surgeries requiring nasal packing/septal stitch post-operatively.

Exclusion Criteria: included patients <18 years, pregnancy, previous history of septoplasty, patients with coagulation disorders, patients with advanced cardiac, respiratory, or metastatic disease, patients with concomitant nasal surgery including turbinectomy etc. and patients unwilling to be included in the study or lost to follow-up.

The study method included all patients as per the inclusion criteria furnished. The patients were randomized into two groups of 110 patients each. Group-N (n=110) to receive nasal packing and Group-S (n=110) to receive septal sutures. The patients were initially counseled in detail about the study protocol and a written informed consent was taken before enrolment in the study protocol. Since procedural limitations did not allow blinding during the study, independent investigators unaware of the study protocol were designated to submit proformas with the primary variables to be assessed in both groups.

Septoplasty was done under general anesthesia in both groups and before extubation, Group-N received bilateral Vaseline soaked nasal packing and Group-S received quilted septal sutures and patients were extubated. Both groups received IV Nalbuphine 0.15mg/kg and IV Paracetamol 1gm per-operatively. Patients were kept in the recovery and discharged once pain settled in both groups on the Visual Analog Scale[11] to <3. Patients requiring analgesia for pain were given IV Paracetamol 15mg/kg to maximum single dose of 1 gram repeated 6-hourly as needed. Median pain scores in the recovery room were noted once patients were fully awake. Primary variables studied were mean time from recovery room to discharge, mean dose of analgesia used post-procedure and pre-discharge, incidence of laryngospasm, hypoxemia, bleeding, and headache in 6 hours in the immediate post-operative period in the pre-anesthesia care unit (PACU) or in the ward.

Demographic data were statistically described in terms of mean and SD, frequencies, and percentages when appropriate. Independent samples t-test was used to compare statistically significant means. Median values were compared using the Mann-Whitney U test. Chi-square test was used to compare frequency variables. A p-value of ≤0.05 was considered statistically significant. All statistical calculations were performed using SPSS 26.0.

RESULTS

A total of 220 patients were randomized after assessment for eligibility into Group-N (n=110) and Group-S (n=110). Mean age of patients in Group-N was 26.56±4.69 years versus 26.21±4.43 years in Group-S (p=0.565). Mean weight between both groups was 67.58±5.59 kg in Group-N versus 67.05±5.38 kg in Group-S (p=0.470). Gender distribution revealed 82(74.5%) males and 28(25.5%) females in Group-N

versus 78(70.9%) males and 32(29.1%) females in Group-S (Table-I).

Table-I: Age and Height Characterisitics Between both Groups (n=220)

Variable	Group-N (n=110)	Group-S (n=110)	*p*-value
Mean age (years)	26.56±4.69	26.21±4.43	0.565
Mean weight (kg)	67.58±5.59	67.05±5.38	0.470
Gender			
Male	82(74.5%)	78(70.9%)	-
Female	28(25.5%)	32(29.1%)	-

Results of the variables under study revealed mean time from recovery to discharge being 19.19±2.24 hours in Group-N versus 12.32±1.36 hours in Group-S (p<0.001). Median pain scores post-procedure once fully awake from anesthesia were 6.00 (1.00) in Group-N and 4.00 (1.00) in Group-S on the Visual Analog Scale (p<0.001). Mean dose of analgesia required for pain from shifting to recovery to discharge was 3.43±0.58 grams in Group-N versus 2.14±0.53 grams in Group-S (p<0.001) (Table-II).

Incidence of adverse effects showed laryngo-spasm seen in 07(6.4%) patients in Group-N versus 02(1.8%) patients in Group-S (p=0.089). Hypoxia was seen in 12(10.9%) patients in Group-N versus 03(2.7%) patients in Group-S (p=0.059). Bleeding was seen in 16(14.5%) patients in GroupN versus 05(4.5%) patients in GroupS (p=0.012). Headache was experienced by 24(21.8%) patients in Group-N versus 09(8.2%) patients in Group-S (p=0.005). Sleep disturbances were experienced by 25(25.5%) patients in Group-N versus 12(10.9%) patients in Group-S (p=0.005) (Table-II).

Table-II: Comparison of Primary Variables (n=220)

Variable	Group-N (n=110)	Group-S (n=110)	*p*-value
Mean time from recvoery room to discharge (hours)	19.19±2.24	12.32±1.36	<0.001
Median pain scores in recovery (fully awake)	6.00(1.00)	4.00(1.00)	<0.001
Mean dose of analgesia post-procedure beofre discharge	3.43±0.58	2.14±0.53	<0.001
	n(%)	**n(%)**	
Laryngospasm	07(6.4%)	02(1.8%)	0.089
Hypoxemia	12(10.9%)	03(2.7%)	0.059
Bleeding	16(14.5%)	05(4.5%)	0.012
Headache	24(21.8%)	09(8.2%)	0.005
Sleep disturbance	25(25.5%)	12(10.9%)	0.005

DISCUSSION

We carried out this study with the aim of assessing the respiratory and anesthesia concerns when patients undergoing septoplasty were applied either bilateral nasal packs or septal stitch. There has been a lot of literature available on the surgical implications of both procedures and recommending septal stitches for better patient comfort and satisfaction.[12,13] But the anesthesia and respiratory complications being studied warrant more diverse results to recommended and prove one procedure to be superior and better to the other.

In most setups around the world, septoplasty is now being shifted to be catered for as a day care procedure.[14] Same day discharge is being followed at various setups worldwide. The criteria for discharge required that the patient be fully awake and completing requirements according to the modified Aldrete criteria for shifting to the ward from recovery and subsequently being discharged from the hospital.[15] It has been seen in various studies that the discomfort and associated respiratory complications associated with supporting the nasal septum by nasal packing prolongs the discharge time and causes considerable discomfort.[16] When compared to septal stitch which does not obstruct the airway, the mean times for recovery and discharge are considerably reduced.[5] Our study was in line with these findings, and we observed a statistically significant difference in the early discharge ratio of patients with a better satisfaction rate. The total dose of analgesia was also reduced to half in the septal stitch patients. Studies done by Ganjeh *et al.*,[17] and K Yadav *et al.*,[18] also confirmed the decreased requirement for analgesia, early discharge times and less incidence of complications with the septal suture technique. This would help in better turnover of patients and easing the burden on our tertiary care setups for better patient management.

When talking about the incidence of compli-cations, there was more incidence of laryngospasm in the nasal packing group, but it was not statistically but clinically significant. Laryngospasm has been well documented as a catastrophic complication of bilateral nasal packing during extubation and the early recovery period post-operatively.[19] Pulmonary edema has also been implicated along with laryngospasm and has been documented in literature in these patients.[19] There was a statistically significant difference in the incidence of hypoxemia, bleeding, and headache in both groups with decreased incidence seen in the septal stitch. The prolonged nasal packing causes obstruction and associated with the effects of

anesthesia in patients causes hypoxic episodes due to poor air entry through obstructed airways and the effects of anesthesia causing hampered mouth breathing.[9] Nasal obstruction is also directly implicated in increased incidence of headaches in patients. Both of these lead to major sleep disturbances especially in patients who are obese and those with obstructive sleep apnea.[20]

LIMITATIONS OF STUDY

The limitations are that the study is single center only. Long term follow-up would help identify complications associated after the 7-day period which was not done in our study.

RECOMMEDATIONS

The study recommends the use of quilted septal stitch as a superior and better alternative to nasal packing post-septoplasty.

CONCLUSION

We conclude that quilted septal stitch provides better pain scores, patient comfort and less incidence of respiratory complications post-septoplasty.

Conflict of Interest: None.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

MAH & GS: Data acquisition, data analysis, critical review, approval of the final version to be published.

SH & AS: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

TM & RI: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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