

Clinical outcome of no nasal packing in patients undergoing endoscopic sinus surgery

Amit Prakash

Senior Resident, Department Of ENT, Darbhanga Medical College & Hospital, Darbhanga, Bihar, INDIA.

Email: amitprakash_123@yahoo.co.in

Abstract

Background: Nasal packing after endoscopic sinus surgery is frequently used to control postoperative bleeding, enhance the wound healing process, and prevent lateralization of the middle turbinate, which causes insufficient ventilation. The present study was designed to evaluate the necessity of post operative nasal packing and to compare its outcome with no nasal packing in patients undergoing endoscopic sinus surgery (ESS). Furthermore, the present study was conducted to find out the factors relevant in determining whether nasal packing is necessary after ESS. **Methods:** 50 consecutive patients who underwent bilateral ESS in the Department of ENT, Darbhanga Medical College and Hospital, were subjected to the present study during the study period from November 2019 to May 2020. The present study was designed as a prospective, single blinded, intra-patient, randomized controlled study. Demographic characteristics, clinical history, extent of disease, surgical procedures, subjective and objective amount of intra-operative bleeding were analyzed. Postoperative bleeding, nasal block, facial pain and headache were monitored for 5 days, endoscopic findings were also evaluated. **Results:** Nasal blockage was significantly higher in packing side only on the second post operative day. Nasal pain was also significantly more on 1st and 2nd postoperative day with a p value of 0.001 and 0.021 respectively. Nasal bleeding was more in the packed side from 1st to 4th postoperative day. There was no statistically significant difference among two arms regarding lateralized headache. **Conclusion:** Nasal packing after ESS for chronic sinus diseases is not essential in most of the cases to reduce either the incidence of post-operative bleeding or poor surgical outcome.

Key Words: Nasal Packing, Endoscopic Sinus Surgery (ESS).

*Address for Correspondence:

Dr Amit Prakash, Senior Resident, Department Of ENT, Darbhanga Medical College & Hospital, Darbhanga, Bihar, INDIA.

Email: amitprakash_123@yahoo.co.in

Received Date: 06/12/2019 Revised Date: 17/01/2020 Accepted Date: 02/02/2020

DOI: <https://doi.org/10.26611/10161521>

This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). 

Access this article online

Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 20 August 2020

INTRODUCTION

The prevalence of nasal-sinus disease is much higher throughout the world^[1]. Chronic sinus disease is one of the most important chronic public health issues affecting the quality of life of almost more than 5% people². In the US alone, upto 16% of the adult population is afflicted with this condition at least once during their lifetime. Several

previous studies from tertiary care centers indicate high prevalence of chronic sinus disease in India⁴⁻⁶. This condition can lead to various symptoms such as nasal obstruction, purulent rhinorrhea, facial pain, headache, chronic cough and hyposmia. These complications can have a negative effect on the quality of life of the patient. Endoscopic sinus surgery (ESS) is now considered to be one of the most common techniques for the management of chronic sinus diseases⁷. In the US only, the usage of this technique for treating refractory sinusitis is 200,000 times annually. The success rate of ESS is as high as 98%⁸. It is a highly sophisticated technique of surgery, which has revolutionized in the surgical management of chronic sinus diseases⁹. In terms of surgical failure, it usually happens due to postoperative scarring or unaddressed outflow tract obstruction in the frontal recess region⁸. After endoscopic sinus surgery nasal packing are frequently used despite debate regarding their necessity to reduce the post-operative hemorrhage and to reduce the aspiration of blood

postoperatively. The purpose of the nasal packing is to reduce the amount of post-operative bleeding, enhance the healing process of the wound and to prevent adhesion and lateralization of the middle turbinate, which can cause insufficiency in ventilation^[10].

Nowadays, it is a frequently used technique to tightly pack the nasal cavities after endoscopic sinus surgery in India for at least a day and up to 3 to 5 days as well. Many surgeons use nasal packing frequently irrespective of whether there is excessive intra-operative bleeding or not. Nasal obstruction, postnasal discharge, headache, pain, epiphora and dry mouth are the most common adverse incidences related to the postoperative nasal packing which can affect the quality of life of a patient^[11,12]. Moreover, there can a risk of toxic shock syndrome but very rarely when it exists for a long time^[12,13]. Another problem with the postoperative nasal pack is nasal pain and bleeding due to which patient can be anxious^[14,15]. Previous studies showed that the most unpleasant part of the ESS as considered by the patients is removal of nasal packing^[16,17]. The whole technique of postoperative nasal packing and its removal can cause mucosal trauma which can enhance the healing procedure and increase the incidence of scarring and synechiae^[18]. Nasal packing materials include absorbable and non-absorbable nasal packing. Non-absorbable packing proved to be uncomfortable for the patients for some reasons, such as nasal airway obstruction, headache and rhinalgia, can be painful and can cause rebleeding at the time of removal. Moreover, septal perforation and foreign body granuloma can also happen^[10]. Several absorbable ingredients has been introduced to reduce the drawbacks of the non-absorbable nasal packing. Absorbable nasal packing include porcine gelatin, topical anti-fibrinolytics, hyaluronic acid etc.^[19-21]. It showed a remarkable effect in reducing the incidence of painful removal procedure and also lowers the incidence of postoperative bleeding and adhesion^[5,16]. PVA packs are the most commonly used nasal packing worldwide^[18,9,11]. But due to the high cost and unavailability, BIPP packs or Vaseline gauze pack are continued to be used in India. While, nasal packing after ESS is a traditional effective method to prevent excessive post-operative bleeding, adhesion formation and restenosis^[10,22], many surgeons questioned for no packing. No packing after ESS has been introduced because it might be most physiologic. It might have some advantages as well like reduced incidence of sino-nasal discomfort, reduction in post-operative complication and no costing for packing material^[16]. The purpose of the present study is to determine with the view that whether nasal packing is effective in patients undergoing endoscopic sinus surgery (ESS) as compared to without packing.

METHODS

It was a prospective, single blinded, intra-patient, randomized controlled study. This study was carried out in the Department of ENT, Darbhanga Medical College and L.S.K Hospital, Kishanganj, Bihar between November 2019 and May 2020. Fifty (50) consecutive cases of bilateral ESS were enrolled for the present study. Written consent form was obtained from every patient. The present study was designed to compare the outcome of PVA packing with no packing in the same patient after ESS for chronic sinus disease. The age of the patients were ranged between 18 to 70 years. The Lund-McKay computed tomography (CT) scan score was used to evaluate the degree of sinus involvement^[24]. Patients only with a difference of 3 or less in the Lund-McKay computed tomography (CT) scan score between the sides were included in the study.

Inclusion Criteria: Patients with bilateral ESS. Patients aged between 18 to 70 years. Patients with a difference of 3 or less in the Lund-McKay computed tomography (CT) scan score between the sides.

Exclusion Criteria:

Patients with previous history of ESS. Patients with comorbidities such as uncontrolled hypertension or diabetes mellitus. Patients with hemoglobin concentration of 10mg/dL or less. Patients with bleeding diathesis or systemic disease. Pregnant women.

Preoperative Analysis: Lund-McKay^[24] CT scan score was used to assess the symptoms and endoscopic findings preoperatively. Quality of life evaluation was assessed by the SNOT-22 questionnaire^[25]. All the 50 patients were given hypotensive general anesthesia prior to bilateral ESS. Cottonoids soaked in 1:10,000 adrenaline-saline solutions for 5 minutes followed by infiltration with 2% lignocaine and 1:1, 00,000 adrenaline were used to pack both the nasal cavities immediate after surgery. Messerklinger technique was used as the surgical procedure. Grading of intra-operative bleeding were assessed by Boezaart and colleagues.^[26] After completion of surgery and arriving at complete hemostasis the patients were kept for observation for at least 5 minutes to look after whether there is any incidence of re-bleeding. Selection of side for nasal packing was randomly allocated prior to the surgical procedure. Accordingly, the selected side was packed PVA sponge tampons. The packing was placed in the middle meatus and floor of the nose. The no packing side of the nose was temporarily packed with cottonoid soaked in adrenaline-saline solution immediate after the surgery, and was removed in the recovery room, before moving the patient to the ward. A separate suction tip, suction apparatus and cottonoids were used for each nasal cavity to calculate the actual amount of blood loss. Total fluid volume in the suction bottle excluding the

volume of saline and saline–adrenaline solution plus the volume of blood soaked in cottonoids was calculated separately for each nasal cavity and noted.

Postoperative Care

Saline solution was started on the unpacked side as soon as the patient was fully awake. If any patient had bleeding from the side that was left unpacked, which did not stop within 5 minutes of removal of the temporary pack in the recovery room, a PVA sponge pack was inserted in that nasal cavity. All data were collected even for this group of “crossover” patients. The nasal pack was removed the next morning by a surgeon who was different from the one who had performed the surgery. After discharge, the patient was advised oral antibiotics for 5 days, nasal saline douches every 2 hours for 3 weeks and thrice daily saline sprays for 3 months. In those patients with sinonasal allergy, fluticasone nasal spray two puffs in each nasal cavity once daily was prescribed for a period of 3 months. The primary outcome was early postoperative bleeding, which was noted by the on-call doctor in the ward and by the patient

in a proforma from the day of discharge until the first postoperative visit on the 5th to 7th day. Nasal bleeding was scored on a scale of 0 to 2 where 0 = no bleeding, 1 = spotting of gauze/traces of clotted blood in the vestibule, and 2 = continuous bleeding (anterior or postnasal bleed).

RESULTS

A total of 50 patients who underwent bilateral endoscopic sinus surgery and met the inclusion criteria were selected for the present study after obtaining the consent form during the study period of November 2019 to May 2020. The patients were aged between 18 to 70 years. Among the total 50 patients 35 were male and 15 were female with a male to female ratio of 2.3:1. Regarding the clinical presentation nasal discharge was the commonest finding found in almost 96% patients, followed by nasal obstruction in 86%, headache in 65%, hyposmia in 40% and facial pain in 8% patients. Distribution of the side of nasal packing was done exactly in a 1:1 ratio.

Table 1: Comparison of postoperative symptom scores between no-packing and packing sides

Symptoms	No packing Side (Mean ±SD)	Packing Side (Mean ±SD)	p value
Nasal Block (0-3)			
POD 1	1.120±0.75	2.451±0.99	0.658
POD 2	1.114±0.85	1.651±0.87	0.021
POD 3	1.241±0.68	1.442±0.99	0.523
POD 4	1.182±0.85	1.324±0.75	0.598
POD 5	1.095±0.86	1.129±0.66	0.423
Nasal Pain (0-3)			
POD 1	0.325±0.07	0.951±0.22	0.001
POD 2	0.369±0.02	0.752±0.12	0.021
POD 3	0.512±0.03	0.651±0.13	0.159
POD 4	0.421±0.03	0.521±0.25	0.586
POD 5	0.322±0.01	0.419±0.22	0.745
Nasal Bleeding (0-2)			
POD 1	0.412±0.22	0.091±0.24	0.001
POD 2	0.358±0.21	0.745±0.33	0.001
POD 3	0.342±0.29	0.641±0.25	0.001
POD 4	0.299±0.19	0.455±0.21	0.002
POD 5	0.245±0.24	0.321±0.19	0.119
Lateralized headache (0-3)			
POD 1	0.311±0.21	0.421±0.21	0.122
POD 2	0.324±0.45	0.452±0.22	0.452
POD 3	0.411±0.35	0.558±0.31	0.754
POD 4	0.436±0.44	0.579±0.42	0.254
POD 5	0.498±0.52	0.651±0.41	0.335

While comparing the post-operative complications of packing and no-packing side it showed that nasal blockage was significantly higher in packing side only on the second post operative day with a p valuer of 0.021.(Table 1). Regarding nasal pain it showed that nasal pain was also significantly more on 1st and 2nd postoperative day with a p value of 0.001 and 0.021 respectively. In terms of nasal bleeding we observed that nasal bleeding was more in the packed side from 1st to 4th postoperative day with a p value of 0.001,0.001,0.001 and 0.002 respectively. There was no statistically significant difference regarding nasal bleeding on the 5th postoperative day between two arms. There was no statistically significant difference among two arms regarding lateralized headache (p value =>0.05).

Table 2: Comparison of postoperative endoscopic scores between no-packing and packing sides

Endoscopic Findings	No packing Side (Mean ±SD)	Packing Side (Mean ±SD)	p value
Synechia (0-3)			
Post-operative 1 week	-	-	-
Post-operative 4 weeks	0.212±0.22	0.227±0.12	0.954
Post-operative 12 weeks	0.301±0.17	0.302±0.22	0.857
Edema (0-3)			
Post-operative 1 week	0.09±0.21	0.08±0.32	0.958
Post-operative 4 weeks	0.69±0.78	0.74±0.54	0.741
Post-operative 12 weeks	0.54±0.41	0.77±0.35	0.235
Pus Discharge (0-2)			
Post-operative 1 week	0.05±0.12	0.05±0.22	0.951
Post-operative 4 weeks	0.09±0.32	0.21±0.12	0.456
Post-operative 12 weeks	0.08±0.22	0.24±0.22	0.221
Stenosis (0-2)			
Post-operative 1 week	0	0	0
Post-operative 4 weeks	0.08±0.23	0	0.241
Post-operative 12 weeks	0.05±0.13	0.06±0.12	0.955
Crust (0-2)			
Post-operative 1 week	0.59±0.22	0.68±0.33	0.452
Post-operative 4 weeks	0.14±0.32	0.13±0.33	0.935
Post-operative 12 weeks	0	0.09±0.16	0.181
Total Points			
Post-operative 1 week	0.68±0.25	0.79±0.52	0.441
Post-operative 4 weeks	1.25±0.56	1.56±0.65	0.781
Post-operative 12 weeks	0.99±0.45	1.34±0.77	0.211

Postoperative endoscopic finding is mentioned in **Table 2**. It is evident from the above table that endoscopic findings of synechia, edema, pus discharge, stenosis and crusting were comparable in both groups.

DISCUSSION

Endoscopic sinus surgery is usually accepted as the gold standard for the management of chronic sinus diseases²⁷. Appropriate postoperative care is mandatory to improve surgical outcomes and reduce patient discomfort. But there is no standardized procedure of postoperative care after ESS across India. Middle meatal packing use very common practice among surgeons despite the debating factor whether nasal packing is necessary. Removal of nasal packing was the most unpleasant part of post ESS experienced by the patients. Moreover, inappropriate use of nasal packing and possibility of trauma during the removal can enhance the mucosal healing process¹⁸. But for many surgeons may not be very certain to keep the nose unpacked as it can cause postoperative bleeding in the ward and repacking is required in such cases. The present study was designed to assess the necessity of nasal packing in Indian setting where hot weather is an important factor. Currently complete disease removal is possible with hypotensive anesthesia for ESS with minimum amount of bleeding. At the end of the study we are able to demonstrate that we couldn't find any benefit of using nasal packing after ESS for chronic sinus diseases. These findings are supported by several previous studies which reveal that nasal packing is not essential and may be avoided in patients undergoing ESS^{16,18,28}. Similar findings were also observed by Bugten *et al.* where they found no significant difference in the incidence of epistaxis postoperatively with or without nasal packing²². Eliashar *et al.*, Orlandi and Lanza also showed that

nasal packing is not essential for patients undergoing ESS^{16,28}. But with contrary Wee JH found that nasal packing is necessary and beneficial in both cost and efficacy in his recent trial²⁹. Saedi *et al.* also found significant difference regarding the incidence of postoperative bleeding in patients without nasal packing²³. Xu and others conducted a study to determine the patient sensation and post treatment effect among no nasal packing and nasal packing group and come to a conclusion that no packing could relieve the discomfort and can lower the incidence of re-bleeding and pain while removing the nasal stents³⁰. Significant nasal blockage, pain, and headache are the common complications which patients usually experience who have nasal packing. We also found that most of the patients with nasal packing experienced the same. Bugten *et al.* in their study found no significant difference regarding nasal congestion, pain or headache between with or without packing group²². We observed there is no significant difference regarding the presence of synechia, edema, crusting or stenosis in with or without packing side. Several previous studies also reported the same^{18,23,29}. These findings also support that no nasal packing is more beneficial in cases after ESS. However, no significant difference in cases with and without packing was recorded with post-operative bleeding. The present study, similar to other showed that leaving the nose unpacked resulted in no greater prevalence of synechia, granulations, or stenosis than in those patients whose noses had been packed.

CONCLUSION

The result of the present study shows that nasal packing is not essential after ESS for chronic sinus diseases in cases with hypotensive anesthesia. Nasal packing can be safely used less frequently to help the patients experience less discomfort after ESS. The need for nasal packing after ESS can be decided by judicious estimation of bleeding during and after the surgery. Further studies are required to validate our findings.

REFERENCES

1. Khademi B, Gandomi B, Chohedri AH, Emaili AA, Eghadami H. Endoscopic Sinus Surgery: Results at two Year follow-up on 200 patients. *Pak J Med Sci* 2007;23:607-9
2. Pleis JR, Lucas JW, Ward BW. Summary health statistics for U.S. adults: National Health Interview Survey, 2008. *Vital Health Stat* 2009; 242:1 –157.
3. Benninger MS, Ferguson BJ, Hadley JA, Hamilos DL, Jacobs M, Kennedy DW, *et al.* Adult chronic rhinosinusitis: definitions, diagnosis, epidemiology, and pathophysiology. *Otolaryngol Head Neck Surg.* 2003 Sep;129(3 Suppl):S1-32.
4. Chakrabarti A, Sharma SC. Paranasal sinus mycoses. *Indian J Chest Dis Allied Sci* 2000; 42: 293–304.
5. Panda NK, Sharma SC, Chakrabarti A, Mann SB. Paranasal sinus mycoses in north India. *Mycoses* 1998; 41: 281–6.
6. Singh N, Bhalodiya NH. Allergic fungal sinusitis (AFS)–earlier diagnosis and management. *J Laryngol Otol* 2005; 119: 875–81.
7. Alipanahi R, Sayyahmelli M, Sayyahmelli S. Ocular complications of functional endoscopic sinus surgery. *JPMA* 2011;61:537.
8. Benjamin Y, Huang, Kristen M. Lloyd, John M, Jablonowski E, Patricia A. Failed Endoscopic Sinus Surgery: Spectrum of CT Findings in the Frontal Recess. *RadioGraphics* 2009;29:177-95.
9. Al-Mujaini A, Wali U, Alkhabori N. Functional Endoscopic Sinus Surgery: Indications and Complications in the Ophthalmic Field. *Oman Med J* 2009;24(2):70–80.
10. Valentine R, Wormald PJ, Sindwani R. Advances in absorbable biomaterials and nasal packing. *Otolaryngol Clin North Am.* 2009 Oct; 42(5):813-28.
11. Weber R, Hochapfel F, Draf W. Packing and stents in endonasal surgery. *Rhinology* 2000 Jul;38(2):49-62.
12. Fairbanks DN. Complications of nasal packing. *Otolaryngol Head Neck Surg* 1986 Mar;94(3):412-415.
13. Abram AC, Bellian KT, Giles WJ, Gross CW. Toxic shock syndrome after functional endonasal sinus surgery: an all or none phenomenon? *Laryngoscope* 1994 Aug;104(8 Pt 1): 927-931.
14. Chheda N, Katz AE, Gynizio L, Singer AJ. The pain of nasal tampon removal after nasal surgery: a randomized control trial. *Otolaryngol Head Neck Surg* 2009 Feb;140(2):215-217.
15. Kuo MJ, Zeitoun H, Macnamara M, Wagstaff K, Carlin WV, Turner N. The use of topical 5% lignocaine ointment for the relief of pain associated with post-operative nasal packing. *Clin Otolaryngol* 1995 Aug;20(4):357-359.
16. Eliashar R, Gross M, Wohlgelemerter J, Sichel JY. Packing in endoscopic sinus surgery: is it really required? *Otolaryngol Head Neck Surg* 2006 Feb;134(2):276-279.
17. von Schoenberg M, Robinson P, Ryan R. Nasal packing after routine nasal surgery—is it justified? *J Laryngol Otol* 1993 Oct;107(10):902-905.
18. Mo JH, Han DH, Shin HW, Cha W, Chang MY, Jin HR. No packing versus packing after endoscopic sinus surgery: pursuit of patients' comfort after surgery. *Am J Rhinol* 2008 Sep-Oct;22(5):525-528.
19. Woodworth BA, Chandra RK, LeBenger JD, Ilie B, Schlosser RJ. A gelatin-thrombin matrix for hemostasis after endoscopic sinus surgery. *Am J Otolaryngol* 2009; 30: 49-53.
20. Athanasiadis T, Beule AG, Wormald PJ. Effects of topical antifibrinolytics in endoscopic sinus surgery: a pilot randomized controlled trial. *Am J Rhinol* 2007; 21: 737-742.
21. Berlucchi M, Castelnuovo P, Vincenzi A, Morra B, Pasquini E. Endoscopic outcomes of resorbable nasal packing after functional endoscopic sinus surgery: a multicenter prospective randomized controlled study. *Eur Arch Otorhino- laryngol* 2009; 266: 839-845.
22. Bugten V, Nordgård S, Skogvoll E, Steinsvåg S. Effects of nonabsorbable packing in middle meatus after sinus surgery. *Laryngoscope* 2006 Jan;116(1):83-88.
23. Saedi B, Sadeghi M, Farschi S. Effect of polyvinyl acetal sponge nasal packing on post-operative care of nasal polyposis patients: a randomised, controlled, partly blinded study. *J Laryngol Otol* 2012 Apr;126(4):380-384.
24. Lund VJ, Kennedy DW. Staging for rhinosinusitis. *Otolaryngol Head Neck Surg* 1997 Sep;117(3 Pt 2):S35-S40.
25. Hopkins C, Gillett S, Slack R, Lund VJ, Browne JP. Psychometric validity of the 22-item Sinonasal Outcome Test. *Clin Otolaryngol* 2009 Oct;34(5):447-454.
26. Boezaart AP, van der Merwe J, Coetzee A. Comparison of sodium nitroprusside- and esmolol-induced controlled hypotension for functional endoscopic sinus surgery. *Can J Anaesth* 1995 May;42(5 Pt 1):373-376.
27. Govindaraj S, Adappa ND, Kennedy DW. Endoscopic sinus surgery: evolution and technical innovations. *J Laryngol Otol.* 2010 Mar; 124(3):242-50.
28. Orlandi RR, Lanza DC. Is nasal packing necessary following endoscopic sinus surgery? *Laryngoscope* 2004;114(9): 1541-4.
29. Wee JH, Lee CH, Rhee CS, Kim J. Comparison between Gelfoam packing and no packing after endoscopic sinus surgery in the same patients. *European Archives of Oto-Rhino-Laryngology* 2012;269:897-903.
30. Xu W1, Xu G, Li B, Li Y. [The application of no nasal packing after functional endoscopic sinus surgery in type I and type II chronic sinusitis]. *Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi.* 2012;26(24):1123-6.

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

Policy for Articles with Open Access:

Authors who publish with MedPulse International Journal of ENT (Print ISSN: 2579-0854) (Online ISSN: 2636-4727) agree to the following terms: Authors retain copyright and grant the journal right of first publication with the work simultaneously licensed under a Creative Commons Attribution License that allows others to share the work with an acknowledgement of the work's authorship and initial publication in this journal. Authors are permitted and encouraged to post links to their work online (e.g., in institutional repositories or on their website) prior to and during the submission process, as it can lead to productive exchanges, as well as earlier and greater citation of published work.