

# Assessing Patient Reported Outcomes after Septorhinoplasty with and without Nasal Packing Using the Glasgow Benefit Inventory

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**Abstract:** *Introduction:* Patient-reported outcomes are an invaluable tool to guide clinical decision-making. Nasal packing is a traumatic, painful event for patients, which could negatively impact patient-reported outcomes. We aimed to evaluate if avoiding postoperative nasal packing in septorhinoplasty and rhinoplasty affects patient-reported outcomes.

**Methods:** All septorhinoplasty and rhinoplasty operations performed over 5 years were identified. The case notes were reviewed to obtain patient demographics, operative details and any post-operative complications. The Glasgow Benefit Inventory (GBI) was administered via telephone to measure patient-reported outcomes.

**Results:** 167 patients were identified. In 11 the case notes were unavailable. Of the 156 patients remaining, 126 completed the GBI questionnaire (who had undergone 132 operations). No significant difference in GBI scores was found with or without the use of nasal packing.

**Conclusion:** This study suggests that routine nasal packing can be avoided in the majority of patients, but can be used with confidence that patient-reported outcome is not being compromised.

**Keywords:** Septorhinoplasty, rhinoplasty, nasal packing, rhinology.

## INTRODUCTION

The postoperative management of rhinoplasty/septorhinoplasty patients remains debated with respect to the use of nasal packs. A survey of 282 UK otorhinolaryngologists (including those with and without a subspecialty interest in rhinology) revealed a wide variation in practice and a trend by rhinologists towards less routine packing [1]. A survey of US surgeons found that nasal packing practice tended to split surgeon opinion with 37% of surgeons reporting they used it in less than 20% of cases and 39% of surgeons packing noses in more than 80% of cases [2].

There is a great difference in practice amongst surgeons with proponents arguing it decreases complications such as bleeding, adhesions and haematomas [3-6]. Packing is also advocated as a method to stabilise the nasal skeleton in the early postoperative period to maximise the cosmetic and functional outcome [5].

However the use of nasal packs following surgery is also associated with complications including vagal reflexes (having negative effects on cardiac function), septal perforation and hypoxaemia [7-11]. Rhinosinusitis and vestibulitis are well-recognised

complications of nasal packing and life-threatening sequelae of this such as endocarditis have been reported [3, 8].

We aimed to evaluate if avoiding routine postoperative nasal packing in rhinoplasty and septorhinoplasty patients affected patient reported outcomes. As a secondary outcome measure the complications after surgery in both groups were evaluated.

## MATERIALS AND METHODS

This study was registered with Bradford Teaching Hospitals NHS Trust research and development department.

All septorhinoplasty and rhinoplasty operations performed over a 4 year period were identified. These patient casenotes were then reviewed to obtain patient demographics, operation details (including details of whether the patient was packed or not at the time of surgery) and any post-operative complications.

The Glasgow Benefit Inventory (GBI) was administered via telephone to measure patient-reported outcomes. This was performed over four months, at least 6 months following the most recent surgery but up to 4 years after the earliest surgery performed in this patient group. The GBI is a validated tool to measure patient benefit developed especially for otorhinolaryngological interventions [12]. These scores

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were analysed to evaluate if there was any difference in patient outcomes between those who were packed and those who were not packed. The Mann-Whitney test was used with p-value significance level set at 0.05.

The rates of complications between patients who were packed and those who were not were compared using Pearson's chi-squared test.

## RESULTS

In total 167 patients were identified. Casenotes were unavailable for 11 patients. Of the 156 patients remaining, 126 completed the GBI questionnaire (who had undergone 132 operations).

Out of the patients who completed the GBI 120 septorhinoplasties and 12 rhinoplasties were performed. The mean age of patients was 28.2yrs (range – 16-69yrs). Primary surgery was performed in 110operations whilst 22 were revision cases (previous surgery for 18 of these cases was performed at another hospital). No other surgery was performed concomitantly (e.g. functional endoscopic sinus surgery, reduction of inferior turbinates).

In 105 operations the surgical approach was closed whilst in 27 operations an external approach was used. The primary operating surgeon was a consultant in 83 operations and a registrar or associate specialist in 49 cases.

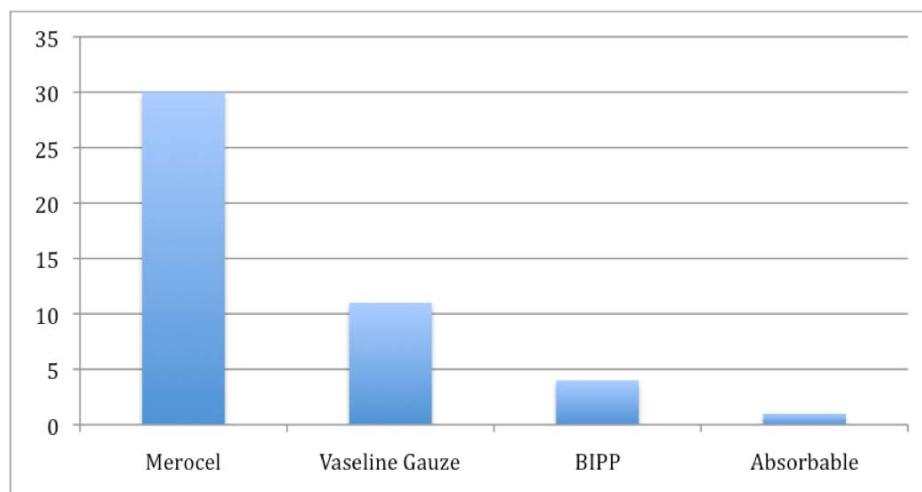
Primary nasal packing was avoided in 86 operations (65%) whilst 46 cases (35%) were packed. Of interest 4/12 (33%) rhinoplasties were packed primarily and 42/120 (35%) septorhinoplasties were packed primarily.

Indications for primary packing were not always clear in the operation notes and varied from surgeon preference to excess bleeding to skeletal support. As this was variably stated this information was collected (where available). In operations performed by a consultant 24/83 (29%) were packed primarily, whilst trainees packed 22/49 (45%) cases.

One of the patients, in whom primary packing was avoided, required packing postoperatively for bleeding. The range of different types of nasal packs used is shown in Figure 1. The mean duration until nasal packs were removed was 21.6 hrs (range: 4 – 168 hrs). In four cases BIPP was used specifically to provide extended skeletal support (ranging from 72-168 hrs). All other nasal packs were removed at 18 hrs or less postoperatively. Excluding the four as outliers, the mean duration until pack removal was 14.1 hrs.

Antibiotics were prescribed for patients having cartilage or bone grafts and for those having nasal packs in situ for more than 1 night. In all cases this was co-amoxiclav.

The most common postoperative complication was bleeding, encountered after 11 operations (8.3%). Ten of these cases were managed with simple first aid measures and only one case required packing. Four suffered postoperative infection requiring antibiotics. One patient developed a septal haematoma postoperatively requiring drainage and one patient suffered a haemotympanum (subsequent to cortical bone being harvested from the mastoid region), which was managed conservatively. These are summarised in Table 1. The rates of complications between groups were compared using the chi-squared test.



**Figure 1:** Chart to show different nasal packs utilised.

**Table 1: Comparison of Complications**

Complication	Not Packed (n=86)	Packed (n=46)	p-value
Bleeding requiring packing/readmission	1	0	0.478
Septal Haematoma	1	0	0.478
Infection	3	1	0.129

**Table 2: Comparison of Mean GBI Scores**

	Packed (95% CI)	No Packs (95% CI)	Z (p-value)
Mean Total GBI Score	27.9 (24.8 – 31.2)	30.2 (27.7 – 32.7)	-0.44 (0.66)
Mean General Health GBI Score	37.7 (33.4 – 42.0)	38.0 (32.8 – 43.2)	-0.05 (0.96)
Mean Social Support GBI Score	2.78 (0.93 – 4.63)	4.37 (0.39 – 8.35)	-0.81 (0.42)
Mean Physical Health GBI Score	13.7 (8.2 – 19.2)	14.7 (8.8 – 20.5)	-0.09 (0.93)

The GBI scores for both groups are shown in Table 2. The mean scores for each GBI subscale as well as the total score were compared between each group using the Shapiro-Wilk test for normality and a subsequent Mann-Whitney test to look for significant differences. These p-values are shown in Table 1. The mean time period from operation to completion of GBI was 23.6 months (range: 4 – 41 months).

## DISCUSSION

Septorhinoplasty and rhinoplasty is a challenging area in surgery. There are a great variety of techniques available to the surgeon and as such all approaches were included in this study. Nasal packing has been used routinely in the past and extolled for the virtues of haemostasis, prevention of haematoma and considered crucial by some to support the cartilaginous and/or bony skeleton and obtain the best functional and aesthetic results in the immediate postoperative period [4, 5, 13].

In this series four patients were packed for more than 24 hrs, whilst the remaining patients all had packs removed at 18 hrs or less postoperatively. This would suggest that the majority of patients do not require packing for skeletal support and this is only indicated in very specific minority. A limitation of the retrospective nature of this study is being unable to distinguish between surgeon preference for routine postoperative

nasal packing and those cases in which there was excessive bleeding at the end of the operation.

This study demonstrates no significant difference in patient reported outcomes (GBI scores) in rhinoplasty and septorhinoplasty with or without the use of nasal packing. This is reassuring for those who avoid packing in this surgery to know that they are not compromising the patient outcome by avoiding packing where possible. Given the small but real risk of litigation associated with this surgery (calculated at 0.9% per year by Ifeacho *et al.*) it is important for surgeons to be comfortable knowing nasal packing does not seem to affect patient reported outcomes [14].

There is of course a great heterogeneity in rhinoplasty and septorhinoplasty. Each patient has different requirements and it is unlikely that nasal packing will never be needed in any form. Bajaj *et al.*, demonstrated septoplasty can be safely performed without postoperative nasal packing in 96.2% of patients in their study [15]. This study shows that avoiding packing does not put patients at a significant risk of requiring packing postoperatively. It also confirms that the risk of septal haematoma is small.

The pain associated with nasal packing has been well documented [3, 16]. It is interesting that the group without nasal packs did not score a significantly better improvement in GBI scores than the group with nasal packs. The pain associated with nasal packing could

have been expected to reduce the patient-reported benefit gained from surgery. The fact that the two groups gained similar benefit suggests that surgeons should not be concerned over negatively impacting patient-reported outcomes by using nasal packing when necessary.

The rate of bleeding in the group without packs was 8.3% overall. Only one of these cases required packing postoperatively. In the other ten cases neither readmission nor packing was needed. Bleeding in these cases was reported by the patient and recorded in the case notes but ultimately was self-limiting with simple first aid techniques in the vast majority. The bleeding rate requiring intervention was therefore 1.2%, which is consistent with the literature [17-19].

Infection is recognised as a potential risk of nasal packs [20, 21]. These results show that there is no significantly increased risk of infection (whether local or systemic) in the use of nasal packs. However, co-amoxiclav was used in both packed and non-packed groups according to specific indications (packs in situ more than 1 night and if grafts were used). This may have caused this result and the senior authors would still advocate the use of antibiotics in these situations. Some may prefer to use antibiotics routinely whenever a nose is packed postoperatively, regardless of length of time, but no evidence for this practice exists and the potential side effects of antibiotics as well as encouraging bacterial resistance are important considerations.

Avoidance of routine postoperative nasal packing allows the surgeon to disregard controversy over which type of pack to use, how long to leave the packs in situ for and whether to cover the patient with antibiotics during this time. These have all been debated in the literature. Rapid Rhino (Arthrocare ENT) packs have been suggested to produce less pain on removal by Hesham *et al.*, and Chheda *et al.* [22, 23]. A randomised trial comparing the length of time until pack removal found no difference in the risk of postoperative bleeding between 24 hrs and 48 hrs [24]. A separate trial found decreased discomfort scores in those patients in whom nasal packs were removed after 24 hrs compared to 48 hrs [25]. Despite a plethora of publications both Werner *et al.*, and Kelley *et al.*, demonstrated there is no consensus in practice in the United States [2, 26].

This study is limited in several ways however. The retrospective nature of the study combined with the

variable length of time between operation and completion of the GBI could significantly affect the results of the questionnaire. The fact that not all rhinoplasty and septorhinoplasty patients were contacted could also skew the results. We have also not controlled for confounding factors such as the surgeon, type of pack or surgical approach.

## CONCLUSION

This study suggests that routine nasal packing can be avoided in the majority of patients. This can be done with confidence that the patient outcome is not being compromised, nor is there a significant increase in the risk of postoperative bleeding. A minority of patients may warrant nasal packing due to individual concerns over haemorrhage or aesthetic and/or functional outcomes. These patients can have nasal packs inserted, again without concern over nasal packing detrimentally affecting patient reported outcomes.

## CONFLICT OF INTEREST STATEMENT

We have no conflicts of interest.

## FUNDING SOURCES

No funding was received for this work.

## ACKNOWLEDGEMENTS

We would like to acknowledge the Bradford Teaching Hospitals NHS Trust Audit Department for their help in obtaining patient notes.

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Received on 18-02-2015

Accepted on 02-03-2015

Published on 10-03-2015

DOI: <http://dx.doi.org/10.12970/2308-7978.2015.03.014>