

# A Comparison between Conventional Throat Packs and Pharyngeal Placement of Tampons in Rhinology Surgeries.

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## Abstract

**Objective:** the aim is to evaluate the incidence of postoperative throat pain, nausea and vomiting in patients that have been packed with either conventional gauze or pharyngeal tampons.

**Methods:** We included adult patients who were booked for a rhinology surgery that needed throat packs. They were allocated into two groups, pharyngeal tampons, and conventional ribbon gauze. They were then assessed using visual analog scales and Post-operative nausea and vomiting impact scale respectively in the 1st, 4th, and 24th hour. Data was analyzed using SPSS software version 25.

**Results:** There is evidence to suggest that using pharyngeal tampons reduces the mean VAS score at 4 hours compared to using Gauze. [ $t_{87}=3.294$ ,  $p=0.001$ ], there is no statistical evidence that shows a difference in the other Visual analogue scores or post-operative nausea and vomiting scores.

**Conclusion:** The study shows that the use of pharyngeal tampons is associated with decreased pain scores, however, it also shows that there is no difference in postoperative nausea and vomiting.

**Keywords:** rhinology surgeries; surgical patients; rhinology surgeries

## Introduction

The nose and para nasal sinuses are anatomically known to be highly vascular therefore a substantial amount of bleeding is expected from rhinology surgeries [1, 2]. Ingested blood is known to be a powerful emetic [1, 2]. And the risk of aspirating blood into the lungs is present due to the fact that an endotracheal tube is not 100% effective in protecting the airway [3, 4]. Post-operative nausea and vomiting (PONV) is a frequent problem that is encountered in surgical patients with a 4 to 6-fold increase in nasal and endoscopic sinus operations [1, 4].

Posterior throat packs are often-used in rhinology surgery to help in protecting the airway against aspiration and in the reduction of ponv [5]. However, many studies concluded that posterior throat packs are associated with higher amounts of post-operative pain, nausea [2,6,7], vomiting, and in some rare cases even forgotten in the patient leading to mortality [8]. Despite poor evidence in the literature, the placement of posterior throat packs is commonly practiced by surgeons and anesthetists because the possible risk of aspiration is worrisome [9].

A conventional throat pack consists of gauze, but an alternative practice involves the pharyngeal placement of tampons. The aim of this study is to evaluate and compare the post-operative throat pain, nausea, and vomiting in patients that have been packed with either conventional gauze throat packs or pharyngeal tampons.

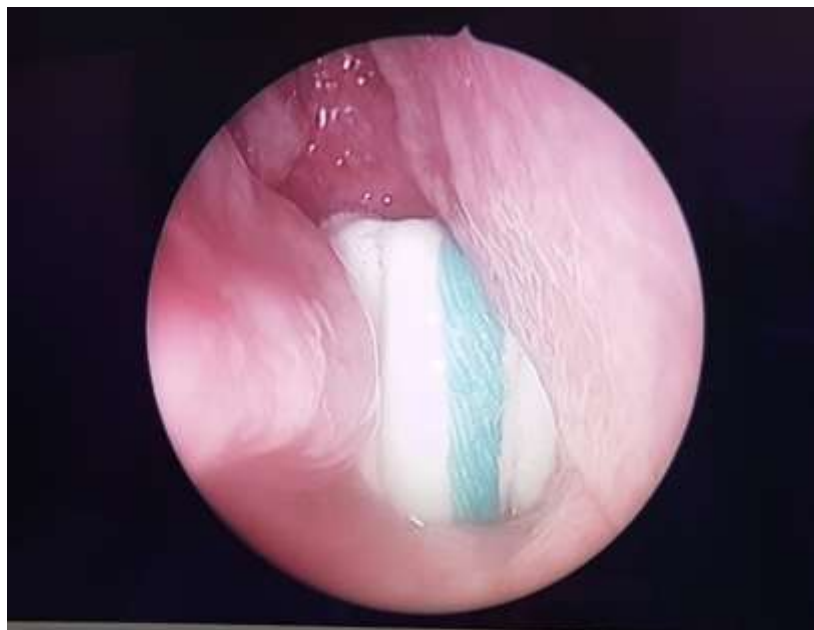
## Material and methods:

Our sample size was calculated based on the population of patients that are covered by the hospital catchment area and we tried to include a size that would allow us to achieve a confidence interval of 95 %

In this prospective clinical trial, all surgeries were done by a single surgeon as to decrease variability in the management of each patient. Patients were randomly divided into two groups, one that received the conventional gauze throat packs and those that received pharyngeal tampons (**figure 1.1 and figure 1.2**).



**Figure 1.1:** Pharyngeal tampons (left) and conventional gauze throat packs (right).



**Figure 1.2:** Surgical Tampon seen from the post-nasal space

The allocation of patients was done on the day of the surgery dependant on the first patient that was admitted in the morning, the allocation of the first patient was decided by coin toss, if the first patient was kept in the pharyngeal tampon group the subsequent patient was kept in the conventional gauze throat pack group and it alternated till the end of the list. This allowed for randomisation and equal distribution among the 2 groups.

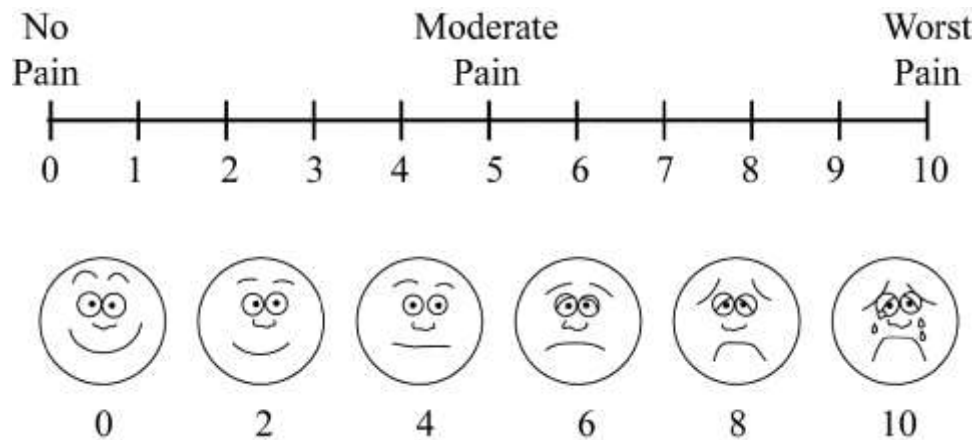
Our study population included all adult patients above the age of 18 that underwent rhinology procedures that required the use of a throat pack

between January of 2018 to January of 2019. Minors below the age of 18 and rhinology procedures that required no throat pack were excluded from the study these procedures were often too short and did not have involve enough bleeding to warrant the use of a throat pack. The Institutional review board provided ethical approval for approved the study, and signed informed consent was obtained from all patients.

Post-operative pain was assessed using the visual analogue scale[10] , **(figure 1.3)** patients were asked on a scale of 1 to 10 on the amount of pain they were experiencing in various post op periods, where 1 was the

lowest amount of pain and 10 was the highest amount of pain. Patients were seen at 1 hour and on the 4<sup>th</sup> hour post operatively and were called

via phone 24 hours later to assess the amount of pain they were experiencing.



**Figure 1.3:** the visual analogue scale [10]

Post-operative nausea was assessed using the PONV impact scale [11] (**figure 1.4**).

**Q1.** Have you vomited or had dry-retching\*?

0. No
1. Once
2. Twice
3. Three or more times

**Q2.** Have you experienced a feeling of nausea ("an unsettled feeling in the stomach and slight urge to vomit")? If yes, has your feeling of nausea interfered with activities of daily living, such as being able to get out of bed, being able to move about freely in bed, being able to walk normally, or eating and drinking?

0. Not at all
1. Sometimes
2. Often or most of the time
3. All of the time.

To calculate the PONV Impact Scale score, add the numerical responses to questions 1 and 2. A PONV Impact Scale score of  $\geq 5$  defines clinically important PONV.

*\*count distinct episodes: several vomits or retching events occurring over a short time frame, say 5 min, should be counted as one vomiting/dry-retching episode; multiple episodes require distinct time periods without vomiting/dry-retching.*

**Figure 1.4:** PONV Impact scale [11]

It includes 2 questions, one of which is whether the patient had experienced any dry retching or vomiting, and the second one being if they experienced nausea. A final score (PONV Impact scale) was calculated using the responses to the previous two questions. A PONV Impact Score of  $\geq 5$  defines clinically important PONV. Patients were seen at 1 hour and on the 4<sup>th</sup> hour post operatively and were called via phone 24 hours later, to assess the amount of nausea and vomiting they were experiencing.

The reason these time were chosen was because it represented the different stage of a patients post-operative journey where the 1 hour mark was when the patient was shifted to the ward post operation, the 4 hour mark was the time the patient was discharged from the hospital and the

24 hour mark was included to check to see if the symptoms has subsided or increased.

Our sample size was calculated based on the population of patients that are covered by the hospital catchment area and we tried to include a size that would allow us to achieve a confidence interval of 95 %. All data collected was recorded in an excel sheet and t- test was the statistical mode used to interpret it. All data was analyzed using SPSS Statistics software version 25.

## Results

The total number of patients included in this study was 89, with 46 (51.6%) being placed in the pharyngeal tampon group and 43 (49.4%) in the conventional throat pack group. The average age of the patients was

32.8 years (ranging from 18-72). Out of the 89 patients, 49 patients were male, and 40 patients were female, with a ratio of 1.225:1.

Eighty-nine procedures were performed in this year, and of those Functional endoscopic sinus surgery comprised of 27, septoplasties 25, rhinoplasties 23, septoplasty/turbinoplasty 8 and turbinoplasties 6.

The mean PONV score at 1 hour for the tampon group was 0.28 and the mean score for the gauze group was 0.54. Mean difference between the groups was 0.264. The mean PONV score at 4 hours for the tampon group was 0.37, and the mean score for the gauze group was 0.41. Mean difference between the groups was 0.41. The mean PONV score at 24 hours for the tampon group was 0.21 and the mean score for the gauze group was 0.26. Mean difference between the groups was 0.52. (Table 1.1 and Table 1.2)

**Table 1.1 : Comparing the Mean PONV Scores at 1, 4, and 24 hour intervals between Gauze and Tampons**

	PACK	N	Mean	Std. Deviation	Std. Error Mean
1hr	Gauze	46	.54	1.130	.167
	Tampon	43	.28	.549	.084
4hr	Gauze	46	.41	.805	.119
	Tampon	43	.37	.757	.115
24hr	Gauze	46	.26	.681	.100
	Tampon	43	.21	.559	.085

**Table 1.2:Independent samples test for results of Mean PONV Scores at 1, 4, and 24 hour intervals between Gauze and Tampons**

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
1hr	Equal variances assumed	1.389	87	.168	.264	.190	-.114	.643
	Equal variances not assumed	1.419	66.085	.161	.264	.186	-.108	.637
4hr	Equal variances assumed	.247	87	.806	.041	.166	-.289	.371
	Equal variances not assumed	.247	86.996	.805	.041	.166	-.288	.370

24hr	Equal variances assumed	.389	87	.698	.052	.133	-.212	.315
	Equal variances not assumed	.392	85.595	.696	.052	.132	-.210	.313

The mean VAS score at 1 hour for the tampon group was 1.51 and the mean score for the gauze group was 2.28. Mean difference between the groups was 0.771. The mean VAS score at 4 hours for the tampon group was 1.28, and the mean score for the gauze group was 2.85. Mean

difference between the groups was 1.569. The mean VAS score at 24 hours for the tampon group was 2.00, and the mean score for the gauze group was 2.17. Mean difference between the groups was 0.174. (**Table 2.1** and **Table 2.2**)

**Table 2.1** Comparing the Mean VAS Scores at 1, 4, and 24 hour intervals between Gauze and Tampons

	PACK	N	Mean	Std. Deviation	Std. Error Mean
1hr	Gauze	46	2.28	3.038	.448
	Tampon	43	1.51	2.175	.332
4hr	Gauze	46	2.85	2.633	.388
	Tampon	43	1.28	1.737	.265
24hr	Gauze	46	2.17	2.783	.410
	Tampon	43	2.00	2.478	.378

**Table 2.2:** Independent samples test of Mean VAS Scores at 1, 4, and 24 hour intervals between Gauze and Tampons

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
1hr	Equal variances assumed	1.368	87	.175	.771	.564	-.349	1.891
	Equal variances not assumed	1.383	81.599	.170	.771	.557	-.338	1.880
4hr	Equal variances assumed	3.294	87	.001	1.569	.476	.622	2.515

	Equal variances not assumed	3.338	78.430	.001	1.569	.470	.633	2.504
24hr	Equal variances assumed	.310	87	.757	.174	.560	-.939	1.287
	Equal variances not assumed	.312	86.803	.756	.174	.558	-.935	1.283

## Discussion

The pattern of data shows that the tampon is better than gauze in terms of VAS. 25 out of 43 patients using tampons had low VAS scores after 24 hours, whereas 23 out of 46 patients using gauze had low VAS scores after 24 hours. In terms of PONV. 36 out of 43 patients using tampons had a low PONV score after 24 hours, and 39 out of 46 patients using gauze showed similar scores.

There is limited research on the use of pharyngeal tampons in rhinology procedures. Marais and Prescott showed that the use pharyngeal tampons are associated with a decreased amount of post-operative throat pain, when compared to conventional gauze throat packs [12]. A research paper by Green et al advises against the use of conventional pharyngeal packs due to higher incidences of post-operative pain [9]. Our study shows that pharyngeal tampon placement is associated with decreased amount of pain and could be suitable alternative to conventional ribbon gauze packs.

We could not find any studies that compared the post-operative nausea and vomiting in the two different types of throat packs, however in Basha et al they established that packing the patient with conventional ribbon gauze was associated with a higher chance of post-operative nausea and vomiting immediately post-operation [13]. Piltcher et al compared post-operative nausea and vomiting in packed and unpacked procedures and came to the conclusion that there is no difference in throat pain or PONV [1]. Our study concluded that use of tampons is equivalent to gauze in terms of PONV.

Our study had several limitations of which that it was dependent on subjective methods of assessment thus each patient experienced a different degree of pain and PONV. Patients around the 1-hour post-operative mark were still under the residual effects of anesthesia and analgesia which would heavily skew their assessment. Also, although the cases were done under the care of a single surgeon, the anaesthetic management was not. The method of throat pack application was not standardized for the study and as in adding an unforeseen variable to the scoring of the. Our study would have benefited from a larger population and further studies should be carried out in order to confirm our results.

## Conclusion

Our study shows that the use of pharyngeal tampons is associated with decreased pain scores, however, it also shows that there are no differences in post-operative nausea and vomiting. We believe that pharyngeal tampons-are a suitable alternative -if not replacement - for conventional ribbon gauze.

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