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Anterior nasal packing in nasal surgeries and epistaxis: advantages of nasal tampon over conventional framycetin ribbon packs.

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Abstract:

Background: Nasal packs in the form of conventional framycetin ribbon guaze pack and nasal tampons have been used since a long time. Both are very effective in nasal packing for epistaxis and post nasal surgery packing.

Objective: The objective of this study was to compare the outcome of nasal tampon packing and framycetin ribbon guaze packing method for post nasal surgery packing and epistaxis.

Materials and methods: A study of two methods of nasal packing done in 462 patients done from January 2008 to September 2011 for post nasal surgery cases and epistaxis were included in the study. Three parameters were analyzed namely pain (visual analogue scale VAS 10cm), control of hemorrhage and reduction in crusting and adhesions post-operatively.

Result: The average VAS scores with ribbon pack was 4.97 and tampon pack 4.63 and tampon packs caused significantly lesser pain. But Kennedy and Lund grading system scores of crusting and adhesions showed no significant difference.

Conclusion: Framycetin ribbon pack and nasal tampon pack are equally effective in managing bleeding post-operatively in nasal surgeries and epistaxis. No difference in crusting and adhesions were seen among the two packs but lesser pain with pack insitu and at removal were seen with tampon pack. Nasal tampon packs were more comfortable among patients.

Introduction:

Nasal packs have been used routinely following septoplasties, endoscopic sinus surgeries, nasal fracture management and also following uncontrolled epistaxis.[1,2] Nasal packing results in good muco-perichondrial flap apposition, minimize risk of bleeding, reduce septal hematoma and synechia formation.[3] They should be less damaging to the nasal mucous membrane and provoke minimal tissue reaction.[4]

Nasal packing is an uncomfortable procedure and often patients complain removal of packs after nasal surgery is the worst part of their surgical experience.[2,5] Classic anterior packing is performed with Vaseline-impregnated narrow gauze, placed in the nose until sufficient pressure exists to tamponade the bleeding.[2,5] As the discomfort at removal of the pack is maximum at removal, nasal packing is avoided whenever it is possible.[2,5] Some bleeding is inevitable after surgery and leaves the cavity with clots which cause adhesions later.[2,5] Moderate bleeding causes nausea and vomiting when swallowed and packing postoperatively in the wards causes more pain than the surgery itself.[2,5]

This has led to the search for a better nasal pack.[2,5] Functions of an ideal pack include prevent bleeding from the operated areas, no abrasion while insertion, prevent recurrence of bleeding on removal should be

comfortable in place and discomfort on removal.[2,5] Newer packing materials have additional features of faster healing, reducing crusting and adhesions.[2,5] Novel nasal packs of the newer generation include packs injected into the nasal cavities as foam which remain for 24-48 hours and dissolve and have additional haemostatic effect, improved healing and reduced adhesion formation.[2,5]

Here we have compared two methods of packing one conventional with framycetin ribbon pack and the other nasal tampon pack. Nasal tampons consists of a foam polymer of hydroxylated polyvinyl acetate and are easy to insert and cause little discomfort while removal.[6] The use of tampons after nasal septum surgery is important for both prevention of postoperative bleeding and stabilization of the nasal flaps and the septum.[7] One of the most important factors in achieving rapid postoperative recovery is the choice of the nasal tampon material, among many, to produce minimal damage on the nasal mucosa.[7] The expandable sponge nasal tampon has minimal effect on the post-operative nasal mucosa which is proved on histopathological study.[7] Our objective was to compare these two nasal packs both for control of bleeding and comfort and also for their effects on postoperative healing.[2]

<u>Materials and methods:</u>

This is a study of two methods of nasal packing done in 462 patients using conventional ribbon pack and nasal tampon pack. The cases were analyzed during the study period of 45 months from January 2008 to September 2011. Patients with nasal packing done septoplasties, endoscopic nasal surgeries, epistaxis and reduction of fracture nasal bones were included in the study.

A total of 462 patients with 271 males and 191 females.Most of patients with epistaxis were seen in the age group 4th, 5th and 6th decade. Patients below 18, with bleeding disorders, malignancies and bleeding with any systemic diseases were excluded from the study. (table 1,2,3) 3 parameters were analyzed namely pain (visual analogue scale, VAS 10cm), control of hemorrhage, reduction in crusting and adhesions post-operatively. Among the 462 patients in our study nasal packing was done with ribbon guaze with framycetin cream in 318 patients and with nasal tampon pack in 144 patients.

Among the 318 patients where ribbon packs were used 228 were in post nasal surgery cases 90 in epistaxis. Among the 144 patients who were treated with nasal tampon 98 were in post nasal surgery cases and 46 in cases of epistaxis.

Classic anterior nasal packing is performed with narrow ribbon with 1% framycetin cream.(fig 1-3) Packing is done from the back and bottom of the nasal cavity forwards. Gauze should be inserted with Tilley's nasal packing forceps until sufficient pressure exists to tamponade the bleeding.

The most common error is failure to adequately pack the posterior aspects of the anterior nasal cavity. The nasal packs were left in place for 48 hours.In 97 cases we used nasal tampon packs.Tampon was inserted, after lubrication with an antibiotic ointment (e.g. bacitracin), parallel to the nasal septal till barely the threads seen outside.Rehydration of the tampon with saline was done after insertion into the nasal cavity. Systemic antibiotics are given to all patients with nasal tampon pack to prevent sinusitis. Tampon pack usually stays in for 48 hours.(fig 4-8) 326 cases of nasal surgeries where in 227 cases nasal packing with ribbon gauze was done and in 99 cases 8 cm nasal tampon was used in both nostrils. Nasal packing was done in both nostrils for all cases except for endoscopic dacryocysto-rhinostomy surgeries and minimal endoscopic surgeries on one side.(fig 9)

<u>Result:</u>

Among the 326 patients who had nasal surgeries and packing done 108 underwent septoplasty, 91 underwent FESS, 37 underwent ethmoidal polypectomy, 27 surgery for antrochoanal polyps, 48 underwent endoscopic dacryocysto-rhinostomies and 8 underwent other endonasal surgeries. (table 2)

The most common risk factor for epistaxis was hypertension. Among the 136 patients with epistaxis 37 were hypertensives on treatment, 46 were hypertensives undiagnosed, 27 with nasal bones fractures, 26 with trauma to nose and face.(table 3) VAS scores were significantly higher in ribbon nasal packs compared to tampon packs in all the time intervals and even at the time of pack removal.Nasal tampon had better compliance compared to ribbon packs in nasal surgeries as well as in epistaxis.The average VAS scores with ribbon pack were 4.97 and tampon pack 4.63.(fig 10,table 4,graph 1)

142 external dressings were changed in the 318 patients with ribbon packs during the 48 hours of packing. Similarly 69 external dressings were changed in the 144 nasal tampon groups. No significant difference in bleeding was seen in the two groups. Total crusting score at 2 weeks was 47 in 318 ribbon pack patients and 17 in 144 nasal tampon cases. Total crusting score at 6 weeks was 39 in 318 ribbon pack patients and 14 in 144 nasal tampon cases.Total adhesion score at 2 weeks was 23 in 236 ribbon pack patients and 8 in 97 nasal tampon cases. Total crusting score at 6 weeks was 18 in 318 ribbon pack patients and 6 in 144 nasal tampon cases. No

significant difference in rates of crusting and adhesion formation were seen with both the packs. (table 5)

Discussion:

Nasal packing after septoplasty and endoscopic sinus surgeries are important both to minimize discomfort for the patient and to obtain the best results. Also packing is needed in controlling epistaxis when local measures are unsuccessful.[2,5]

The pain and distress caused by nasal packing brings into question whether there is a need to pack the nose.[8,9] Various modifications in the design and type of nasal packing have been suggested to improve patient comfort.[8,9] However, the advantages of these modified nasal packings are counterbalanced by both real and potential drawbacks.[8,9] Avoiding nasal packs after minimal nasal surgeries decreases the discomfort of the packs being in the nose and by their removal.[2,5] Patients often report that removal of the nasal packs was the worst part of their surgical experience.[2,5] Most of the rhinologists are of the opinion that packing is necessary as some bleeding after surgery is inevitable even after meticulous nasal surgeries.[2,5]

Orlando and Lanza in their study reported that packing is not compulsory in all cases of endoscopic sinus surgeries and is needed in cases where the bleeding sites are not cauterized or ligated.[10] Inserting a pack for epistaxis is painful for the patient and so packs are developed which are more comfortable and less painful at insertion and removal.[10] Studies on the efficacy of various nasal packs are done for nasal septal and turbinate surgeries and less on endoscopic sinus surgeries.[10] In our study a comprehensive analysis was done comparing ribbon packs and nasal tampons used for all nasal surgeries and epistaxis.[10]

Garth and Brightwell compared four packs namely paraffin guaze (Jelonet), Telfa, merocel (foam rubber tampon) and bismuth iodoform paraffin pack(BIPP) in their 48 cases study on post nasal surgery packing.[11,12] They remarked that Telfa pack was better of all with better patient comfort and efficacy.[11,12] Also rare granulomas were seen with paraffin packs.[11,12]

Watson et al., compared three packs namely pneumatic balloon pack, paraffin ribbon guaze and polythene glove fingers filled with ribbon guaze randomly in 106 patients and found paraffin ribbon more uncomfortable in patients.[13]
Pneumatic balloon was easy to insert and comfortable but caused more crusting, adhesion formation and nasal obstruction.[13] The balloons caused more mucosal ischaemia due to uneven pressure and caused more adhesions and crusting.[13] Illium et al., in their 59 patient study compared fingerstall guaze packs with merocel packs with ventilation tube and

remarked that bleeding at pack removal was more with merocel compared to fingerstall pack.[14] Only mild advantage was ventilation possible in the tube with merocel.[14] They also reported foam rubber nasal packs were more adherent to the nasal mucosa causing mucosal granulations.[15] Von Schoenberg et.al, found ribbon guaze packs, BIPP packs and Telfa packs to be significantly painful compared to patients without packs.[4] They also found more complications with BIPP pack group in their 95 patient study.[4] They found Telfa packs more comfortable compared to ribbon and BIPP.[4]

Sirimana et al, compared calcium sodium alginate fibre (Kaitostat), paraffin guaze and glove finger pack in their 92 patients study after inferior turbinectomy.[16] Kaltostat releases calcium ions setting off platelet aggregation and coagulation.[16] No added advantage was seen with any of the three packs as far as hemostasis is concerned with pack insitu but less bleeding cavities seen after kaltostat pack removal.[16] Shinkwin et al, in their 90 patient study compared Surgicel Nu-Knit, Vaseline ribbon guaze and merocel packs for their pain reducing capacity.[17] Surgicel is oxidized regenerated cellulose and is procoagulative both through platelet aggregation and activation of intrinsic and extrinsic clotting pathways.[17]

Surgicel Nu-Knit caused less discomfort than vaseline guaze and merocel sponges while the pack in position and at removal.[17] Even bleeding on removal of the pack was less compared with other two packs. Sometimes the Nu-knit pack fragmented at the time of removal causing problems.[17] Arya et al, compared the rapid rhino Goodman pack with the merocel packin a 14 cases study.[18] The efficacy of the pack in hemostasis was same but pain at removal was significantly more with merocel pack compared to Goodman pack.[18]
The patients in the study underwent septoplasties and endoscopic sinus surgeries.[18]

Cruise et al, in their 45 patient study compared Telfa pack with Rapid Rhino Riemann pack found both packs to be simlarly effective in controlling hemorrhage and reducing pain insitu and at removal.[1] Telfa pack consists of a layer of cotton fleece enclosed in a perforated inert water-repellent plastic film.[1] This dressing has been adapted from surgical wound care and can be cut to fit the patient's nose.[1] The cotton fleece provides absorbency and the outer layer is non-adherent and by its occlusive effect keeps the wound moist, promoting epithelialization.[1]

Rapid Rhino Riemann has been specifically designed for use after endoscopic sinus surgery. It has a polyurethane foam core with a polyvinyl chloride (PVC) cover.[19] This is covered by a hydrocolloid fabric which when wet creates a moist gel. In this way, it also keeps the wound moist promoting epithelialization and remains slippery for easy removal without damage to recovering tissues.[19] The fabric coat is reinforced knitted

carboxy-methylcellulose (CMC) fibre.[19] CMCs have been shown to reduce adhesion formation post-surgery.[19]

We have compared conventional framycetin smeared ribbon packs popularly used by all rhinologists in India with nasal tampon packs. Our results show both packs perform well. Bleeding was equally well controlled while the packs were in situ. We compared bleeding by counting the times of external dressing changes done during 48 hours in post operative period. A more accurate method would be a system of weighing dressings to assess bleeding. Both packs were well tolerated while in the nose but the VAS score with the ribbon pack insitu was significantly higher than the tampon pack. Also significant less pain was seen at tampon pack removal compared to ribbon pack removal.

Kelly et al, found Telfa pack and Rapid Rhino Riemann pack to be both equally effective as far as hemostasis is concerned and no much difference in pain scale seen in the two groups.[20] Our main aim was to look at the issue of discomfort caused by nasal packing, but we also evaluated the two packs for their effect on healing, crusting and adhesion formation. In our trial, we removed the packs 48 hours after surgery. Many authors suggest leaving nasal packing for up to 24-48 hours.[14]

Some studies are of the opinion that longer the stays of nasal pack better the healing and some others are of the opposite opinion.[1] Cruise et al, reported that at 2 and 6 weeks postoperatively the Telfa pack appeared to be associated with less crusting while the Rapid Rhino Riemann pack tended to cause less adhesions.[1] At 6 weeks there were no adhesions on the Rapid Rhino Riemann side, but 9.4% of patients had adhesions on the Telfa side.[1]

The nasal tampon is made of compressed, dehydrated sponge composed of hydroxylated polyvinyl acetate.[21] The pack requires rehydration with normal saline in order to achieve optimal size within the nasal cavity and compress the bleeding vessel.[21] The surface of the tampon promotes platelet aggregation, and does not support bacterial or fungal growth.[21] It is fiber-free and this minimizes trauma to the nasal mucosa.[21] It is less complicated and more acceptable to both patients and casualty personnel.[21] Importantly there is no significant difference in term of effectiveness in arresting epistaxis.[21]

The use of tampons after nasal septum surgery is important for both prevention of postoperative bleeding and stabilization of the nasal flaps and the septum.[7] One of the most important factors in achieving rapid postoperative recovery is the choice of the nasal tampon material, among many, to produce minimal damage on the nasal mucosa.[7] Nasal tampons serve as an expandable sponge which snugly fits as an anterior pack.[7]

Nasal tampon comes in two types one with and the other without airway and also of 6 cm,8 cm and 10 cm.[22] The expandable sponge tampon which snugly fits in the anterior and posterior chambers controls bleeding immediately.[22] 8 cm tampon is ideally suited for anterior nasal packing.[22] 10 cm pack is used for both anterior and posterior nasal pack.[22] The study shows that nasal tampon with airway has better patient compliance because it is less painful than ribbon gauze anterior packing.[22] Nasal tampon with partial airway provide better comfort to the patient.[22]

<u>Conclusion:</u>

Rhinologists are divided over the issue of whether post operative packing is necessary after septoplasties and endoscopic sinus surgeries. Research is on to search for a newer pack which does not require removal. Nasal tampon used for the management post nasal surgery packing and epistaxis is more comfortable with pack insitu and at removal. Framycetin ribbon pack and nasal tampon pack are equally effective in managing bleeding post-operatively in nasal surgeries and epistaxis. No difference in crusting and adhesions were seen among the two packs.

The nasal tampon pack causes significantly less pain while in nose and on removal compared to ribbon nasal pack. Both framycetin ribbon pack and nasal tampon pack are recommended for packing after nasal surgeries and epistaxis. Tampon pack causes fewer traumas to the nasal mucosa, less congestion and pain in the nose.

Fig 1 Conventional ribbon gauze packing being done along with the set of instruments

Fig 2 Conventional framycetin ribbon gauze nasal packing being done.

Fig 3 Nasal cavity before and after packing

Fig 4 Nasal Tampon pack

Fig 5 showing nasal tampon pack inserted and hydrated

Fig 6: Nasal tampon inserted and external plaster seen and after pack removal

Fig 7 Nasal tampon being inserted and being rehydrated.

Fig 8 Ribbon packing and splinting done for septoplasty

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Fig 9 *External pack dressing being changed and VAS score elicited.*

Types of nasal packing	No of patients	Nasal surgery post op packing	Packing for epistaxis
Ribbon guaze with framycetin cream	318	228	90
Nasal tampon pack	144	98	46
total	462	326	136

Table 1: number of patients in the study

	Ribbon pack nasal pack	Nasal tampon pack
Septoplasty	75	33
Functional endoscopic sinus surgery	64	27
Endoscopic ethmoidal polypectomy	27	10
Endoscopic antrochoanal polypectomy	19	8
Endoscopic dacryocysto-rhinostomy	33	15
Other endonasal surgeries	9	6
Total (326)	227	99

Table 2: post surgical nasal surgery packing.

	Ribbon pack nasal pack	Nasal tampon pack
Hypertensive on treatment	25	12
Hypertensive not on treatment	29	17
Fracture nasal bones	19	8
Trauma without fracture nasal bones	18	8
Total (136)	91	45

Table 3: nasal packing for epistaxis.

Surgeries done	Types of packing	8 hours	16 hours	24 hours	48 hours
Septoplasty (108)	Ribbon pack (75)	5.16	5.23	4.23	5.25
	Nasal tampon packs (33)	4.86	4.95	4.04	3.86
Endoscopic sinus surgeries (218)	Ribbon pack (152)	5.20	5.18	4.34	5.19
	Nasal tampon packs (66)	4.95	4.62	4.80	4.55
Epistaxis (83)	Ribbon pack (54)	5.02	4.95	4.85	5.04
	Nasal tampon packs (29)	4.85	4.75	4.65	4.90
Fracture nasal bones (53)	Ribbon pack (37)	5.08	5.04	4.86	5.04
	Nasal tampon packs (16)	4.7	4.6	4.5	4.7

TABLE 4: VAS score with pack in situ and during removal.

Surgeries done	Types of packing	Bleeding measured by the no of external dressing changed before pack removal (48 hours)	Crusting		Adhesions	
			2nd week	6th week	2nd week	6th week
Septoplasty (108)	Ribbon pack (75)	32	11	9	5	4
	Nasal tampon packs (33)	12	3	2	2	2
Endoscopic sinus surgeries (218)	Ribbon pack (152)	46	22	17	14	11
	Nasal tampon packs (66)	22	7	6	6	4
Epistaxis (83)	Ribbon pack (54)	11	11	10	3	2
	Nasal tampon packs (29)	7	4	3	0	0
Fracture nasal bones (53)	Ribbon pack (37)	12	3	3	1	1
	Nasal tampon packs (16)	5	3	3	0	0

TABLE 5: Control of hemorrhage counted by the number of dressings changed and crusting and adhesions analysed according to Kennedy and Lund grading system.

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