ORIGINAL RESEARCH PAPER

Otorhinolaryngology

A COMPARATIVE STUDY OF COMPLICATIONS BETWEEN HYDROXYLATED POLYVINYL ACETATE (MEROCEL) WITH CONVENTIONAL RIBBON GAUZE NASAL PACKING IN POST-OPERATIVE SEPTOPLASTY PATIENTS

KEY WORDS: Septoplasty, Merocel, Ribbon Gauze

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ABSTRACT

To study & compare the different complications of hydroxylated polyvinyl acetate(merocel) anterior nasal packing with that of conventional ribbon gauze impregnated with framycetin(soframycin) anterior nasal packing done in post-operative septoplasty patients. Methodology: Retrospective study for complications assessment was conducted for 80 post-septoplasty patients. Results: 46 patients (57.5%) were given anterior nasal packing using ribbon gauze & the rest 34 patients (42.5%) were given anterior nasal packing using merocel. Conclusion: Merocel nasal packing method better than conventional ribbon gauze method.

INTRODUCTION:

- Nasal obstruction is the most common complaint in rhinologic practice and a deviated nasal septum is the most common cause of nasal obstruction. The evaluation of septal deviation causing nasal obstruction depends heavily on physical examination and imaging.[1]
- Treatment is mainly surgical, if deviated nasal septum is symptomatic and assessment is made of the patient's subjective symptoms and degree of septal deviation before operation.[2]
- Septoplasty is the operation meant for surgical correction of deviated septum which can be done both with conventional way using head-light under direct vision of the surgical field or can be done endoscopically using endoscope to view the surgical field.
- Nasal packs have been used routinely following septoplasty surgery.[3,4]
- Nasal packs are placed following nasal surgery to arrest hemorrhage, to prevent septal hematoma, septal abscess formation and internal stabilization following operations on the cartilaginous/bony skeleton of the nose.[5]
- However, nasal packing has some inherent disadvantages, such as causing pain, bleeding during pack removal, nasal mucosal damage, septal perforation, nasal synechia, sleep respiratory disturbance, decreased oxygen saturation during sleep, eustachian tube dysfunction and toxic shock syndrome.[6]
- Commonly practiced anterior nasal packing with ribbon gauze impregnated with an antibiotic ointment soframycin (framycetin). Merocel, a non-absorbable nasal packing material is a compressed dehydrated sponge, composed of hydroxylated polyvinyl acetate that can increase in size within the nasal cavity and compress a bleeding vessel through rehydration with normal saline. The surface of Merocel promotes platelet aggregation. It is fibre free and minimizes trauma to nasal mucosa.[7]
- Both techniques of anterior nasal packing are routinely practiced in our tertiary care set up. The present research is meant to study & compare the different complications of conventional ribbon gauze impregnated with soframycin (framycetin) anterior nasal packing with that of merocel (hydroxylated polyvinyl acetate) anterior nasal packing done in post-operative septoplasty patients in the Department of ENT at TMC & Dr. BRAM Teaching Hospital.

OBJECTIVES:

- To study & compare the different complications of conventional ribbon gauze impregnated with soframycin (framycetin) anterior nasal packing with that of merocel (hydroxylated polyvinyl acetate) anterior nasal packing done in post-operative septoplasty.

METHOD & MATERIALS:

- **STUDY TYPE:** Retrospective Study.
- **STUDY DURATION:** 19 months (1st October 2017 to 30th April 2019)
- **STUDY AREA:** Department of ENT, Tripura Medical College & Dr. BRAM Teaching Hospital, Agartala, Tripura West, Pin – 799014.
- **STUDY POPULATION:** Patients presenting with symptomatic deviated nasal septum to the Department of ENT, Tripura Medical College & Dr. BRAM Teaching Hospital & undergone septoplasty operation for the same.
- **STUDY SIZE:** All patients were included (total of 80 patients) in the study who presented with symptomatic deviated nasal septum & underwent septoplasty for the same in the Department of ENT at TMC & Dr. BRAM Teaching Hospital during 1st October 2017 to 30th April 2019.

SELECTION CRITERIA:

Inclusion Criteria:

- Age more than 18 years & upto 65 years.
- Patients with symptomatic deviated nasal septum.
- Traumatic deviated nasal septum

Exclusion Criteria:

- Age less than 18 years & age more than 65 years.
- Patients with asymptomatic deviated nasal septum.
- Patients with acute nasal infection.
- Patients with pregnancy, diabetes, hypertension or any systemic diseases
- Previous surgery like septoplasty and submucous resection.
- Perforated nasal septum and insufficient nasal valve.
- Granulomatous conditions of nose and sinuses.
- Craniofacial malformation.
- Associated with other nasal pathologies like nasal polyp, sinusitis, Allergic Rhinitis, etc

STUDY TOOLS: Previous hospital based Out-door patients records of the ENT Department, In-door patients records of the ENT Department, Operation Theatre records of the ENT Department, etc

STATISTICAL ANALYSIS: Data collected was entered in Microsoft Excel and analyzed by SPSS version 20.0 software.

ETHICAL CLEARENCE: Prior ethical clearance was taken from the concerned ethical clearance committee of the institute

METHOD OF STUDY:

- All previous records from 1st October 2017 to 30th April 2019 of Department of ENT comprising of Out-door patients records of the ENT Department, In-door patients records of the ENT Department, Operation Theatre records of the ENT Department,etc was analyzed for the study to sort out the patients presented with symptomatic deviated nasal septum & underwent septoplasty for the same .
- The patients presented with symptomatic deviated nasal septum to the Department of ENT at Tripura Medical College and Dr. BRAM Teaching Hospital, Hapania, Agartala were considered for the study subject.
- Data of both subjective & objective examination of all patients done pre-operatively by Cold spatula test were noted followed by anterior rhinoscopy & nasal endoscopy & details were noted. Pre-operatively posterior rhinoscopy was done where ever possible (depending on patient's co-operation).
- Overall 80 patients, all underwent septoplasty either by conventional septoplasty method or by endoscopic septolasty method. Post-operatively all patients were given anterior nasal packing either with merocel (hydroxylated polyvinyl acetate) or with ribbon gauze impregnated with soframycin(framycetin).
- Patients were put on appropriate antibiotics atleast for a week along with analgesics, anti-histaminines & decongestants, haemostaticagents (tranexamic acid).
- Nasal packs were removed 48 hours (2nd post-operative day) after surgery. Nasal decongestant drops (3 times daily) were advised for a week.
- Post-operatively, subjective & objective assessments were done. Subjective assessment was done by asking about nasal obstruction, headache, post nasal discharge & hyposmia. Objective assessments were done by cold spatula test & nasal endoscopy.
- Detailed study was done in categorizing the cases depending on their post-operative clinical outcomes & complications encountered in each group of anterior nasal packing method.

RESULTS & OBSERVATION:

POST-OPERATIVE NASAL PACKING ASSESSMENT IN REGARD TO COMPLICATIONS ENCOUNTERED

Table 1 – Post-operative nasal packing assessment

Outcome		Type of Septoplasty						Grand Total	
		CONVENTIONAL SEPTOPLASTY			ENDOSCOPIC SEPTOPLASTY				
		Ribbon Gauze	Merocel	Total	Ribbon Gauze	Merocel	Total	Ribbon Gauze	Merocel
Complications	Negative	23(88.46%)	11(78.57%)	34	17(85%)	19(95%)	36	40(86.95%)	30(88.23%)
	Deviation	0(0%)	1(7.14%)	1	1(5%)	0(0%)	1	1(2.17%)	1(2.94%)
	Bleeding	1(3.84%)	1(7.14%)	2	1(5%)	0(0%)	1	2(4.34%)	1(2.94%)
	Bleeding with Deviation	1(3.84%)	1(7.14%)	2	1(5%)	0(0%)	1	2(4.34%)	1(2.94%)
	Synechiae	1(3.84%)	0(0%)	1	0(0%)	1(5%)	1	1(2.17%)	1(2.94%)
Total		26	14	40	20	20	40	46	34

STATISTICAL ANALYSIS:

- **Null hypothesis:** There have no difference between Ribbon Gauze method & Merocel method.
- **Alternative hypothesis:** There have difference between Ribbon Gauze Method & Merocel method.

Table 2 - Check whether the two methods of nasal packing are same or not

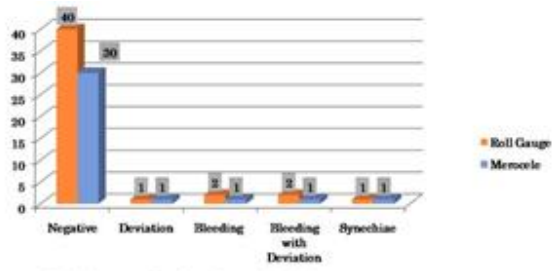
Results						
	No Complications	Deformity	Bleeding	Bleeding with deformity	Synichiae	Row Totals
Ribbon Gauze	40 (40.25) [0.00]	1 (1.15) [0.02]	2 (1.72) [0.04]	2 (1.72) [0.04]	1 (1.15) [0.02]	46
Merocel	30 (29.75) [0.00]	1 (0.85) [0.03]	1 (1.27) [0.06]	1 (1.27) [0.06]	1 (0.85) [0.03]	34
Column Totals	70	2	3	3	2	80 (Grand Total)

The chi-square statistic is 0.302. The p-value is .923683.

Here, P-value is less than 0.10.So,we accept the alternative Hypothesis or we reject the Null Hypothesis.

INTERPRETATION: There have a significant difference between the two procedures in terms of complications at 10% level of significance.

Finally, we can say that Merocel method is better than Ribbon gauze Method because 1.3% more cases have no Complications in Merocel method than Ribbon gauze method.



Bar diagram - Post-Operative nasal packing assessment.

Fig 1: Anterior Nasal Packing with HYDROXYLATED POLYVINYL ACETATE (MEROCEL)

DISCUSSION:

POST-OPERATIVE NASAL PACKING ASSESSMENT:

In the present study, data of all the patients were assessed regarding both intra-operative & post-operative complications. There were over all 3 cases of bleeding alone, out of which 2 (4.34%) belonged to Ribbon gauze group & 1 (2.94%) was from Merocel group – the results are opposite to the study made by Joshi RR et[8].

The present study had reported two cases of post-operative synechiae one each from ribbon gauze group & the other from merocel group i.e similar in both groups. However, Study made by Swaroop Dev M et al[7] reported more for ribbon gauze group.

Statistically, the present study showed that there have a significant ($p<0.10$) difference between Ribbon gauze method and Merocel method by chi-square test at 10% level of significance. Here the chi-square statistic is 0.302. The p-value is .923683 which was less than 0.10.

Fig 2: Anterior Nasal Packing with Ribbon Gauze

CONCLUSION:

The ideal packs should be easy to insert and remove without causing discomfort. Also they should be comfortable when in place, should prevent postoperative bleeding without damaging the mucous membrane of the nose and should provoke minimal tissue reaction.

The present study shows merocel anterior nasal packing is comparatively better than conventional ribbon gauze anterior nasal packing method as having less post-operative bleeding incidence.

Drawback of Conventional Ribbon gauze anterior nasal pack impregnated with soframycin is because of its roughness can cause abrasion to the delicate nasal mucosa leading to bleeding, synechiae, etc.

However, hydroxylated polyvinyl acetate (merocel), being biocompatible & rather less traumatic, which expands to fill up the nasal cavity by soaking up the blood, provides overall better patient compliance.

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