Posterior Nasal Pack After Transpalatal Excision of Juvenile Nasopharyngeal Angiofibroma: Can It be Avoided?

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Abstract The evolution of the packing of postnasal space following transpalatal excision of JNA in the last 7 decades is described and a modification is presented for minimizing the immediate postoperative morbidity.

Keywords Juvenile nasopharyngeal angiofibroma · Hemostasis · Transpalatal approach · Hemostatic technique

Introduction

Amongst the various surgical approaches for juvenile nasopharyngeal angiofibroma (JNA) the transpalatal approach has been the most popular. This has been patronised at our facility since more than 7 decades and our institution has also contributed various modifications of this approach [1, 2] in the world literature. We present the evolution of post operative packing of the postnasal-space following open transpalatal excision of JNA at our department during the last 7 decades. During the review of charts we found three methods that were undertaken to achieve post-nasal hemostasis at our facility and accordingly their analysis with inherent advantages are presented.

Evolution and Description of Postnasal Packing Since 1970s at Our Department

During early 70s when anaesthetic techniques were not so improvised, the most important factor considered in excision of JNA was the rapidity with which an experienced surgeon could complete the tumour excision and achieved haemostasis through packing thereafter. In the absence of endoscopic assistance, the per-operative as well as immediate postoperative assessment of incomplete excision was possible by finger palpation only. The use of dissectors/raspatory guided by the surgeon's feel were the key components for a successful excision. Since the residual cavity was pooled with blood, the thermal cautery was often ineffective particularly for the brisk bleeding arising from the residual disease. Hot packs therein were used more often than not to reduce intra-cavity bleed immediately post-excision. The final step was the introduction of a tight posterior nasal pack (PNP) of appropriate size (comparable to the post nasal space depending on the age of patient) that could snugly fit the residual cavity and exert sufficient pressure across the bony walls to achieve hemostasis. Lastly a tight anterior nasal packing was done with PNP in position before extubation. This methodology was practiced for more than 5 decades at our facility.

The second method of postnasal packing started with the introduction of safe anaesthetic facility (hypotensive anaesthesia), preoperative selective arterial embolization (PSAE), and endoscopic control, when a better tumour visualization during/after excision was possible as opposed to finger palpation of the earlier times. Immediately after excision a moistened ribbon gauze was used to tightly pack the postnasal space layer by layer while its other end was drawn out of the anterior nares and this was further reinforced with additional anterior nasal packing as needed.

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Accordingly the posterior end of the pack (drawn out anteriorly) tightly fitted the residual cavity while a small PNP was also pulled anteriorly for supporting the posterior end of the previous pack and preventing its slippage of into the oropharynx. The probable advantage of this modification was a reduction in the size of PNP while the overall packing was less tight but equally effective.

The third method that we started in our practice was with an aim to overcome the immediate postoperative discomfort associated with PNP. This method of post nasal space hemostasis without a PNP is now undertaken routinely in our department. With current anaesthetic techniques the bleeding is more controlled while visualization during/after excision is possible with endoscopic assistance. After tumor delivery the cavity is packed for 10 min and pressure is exerted continuously to achieve hemostasis. Subsequently as this pack is gently removed layer by layer, it is quite easy to visualize the prominent bleeding points with endoscopic assistance. Not only is it easy to detect a minor residual disease (simultaneously excised endoscopically) but the source of a moderate ooze/bleed/spurter can be easily located for subsequent packing. Hence the packing becomes more targeted than a generalized tight packing of the entire space. The modification we have used with this method consists of copious imbibing of antibiotic (soframycin) ointment and streptochrome solution in the ribbon gauze meant to pack every nook and corner of postoperative residual cavity. The packing is started layer by layer first from the more 'significant' bleeding areas, in an inside to outside direction until the entire cavity is fully packed. A finger pressure is exerted for another 10 min across the sphenopalatine foramen area as well as across the pterygoid base. Thereafter the outer 'exposed layer of this composite pack soaked with ointment is contoured parallel with the soft palate. The bleeding always stops and the other end of the ribbon pack that happens to be in continuation with the most outer (inferior) aspect of the pack, is delivered out of the external nares. A light anterior nasal packing may be required as per the need. After another 10 min the pack gets appropriately plugged in the post nasal space as a one composite mass consisting of layers of gauze pack adhered due to stable blood clotting and adhesive quality of soaked ointment. The anchorage of the most inferior end of pack inside the nose, further prevents its slippage into oropharynx. In addition a single thread is pulled out of the nose and oral cavity in order to negotiate a posterior nasal pack if needed. We have not encountered any situation when this method of targeted packing has not been effective or a PNP is needed.

Materials and Methods

A total of 30 cases were analysed with 3 subsets of 10 random cases each corresponding to the 3 methodologies of packing. All these cases had undergone a transpalatal approach. The oldest subset of data was missing in large in our archival records and hence burrowed from the personal summary maintained by our past professor and chairman Dr SC Mishra who has been a known authority on JNA. The other subsets were analysed through our own experience. No quality of life measurement was done but the close observation in the immediate postoperative phase was carried out in terms of ease of swallowing/feeding, sense of obstruction, quality of voice, dependence on Ryles tube or tracheostomy, sinus headache, drooling of saliva and degree of oedema. Each of the method was compared and inconsistently available long term follow up was discarded.

Results

In absence of exhaustive data or any validated QOL assessment measures, some basic parameters that could be available through our records were analysed. The summary is shown in Table 1. Swallowing was most difficult with a compromised oropharynx that corresponded to a great extent with the sense of subjective obstruction. Despite different oropharyngeal calibres the subjective sense of obstruction was same in both the first and second categories. Although the patients were primarily on a liquid/semisolid diets, 2 of them from the first category needed ryles tube insertion since the palatal bulge with surrounding oedema virtually blocked the oropharynx so much so than one of these 2 needed a tracheostomy. Data for snoring in the first category is not available. The third category was associated with minimal morbidity as evidenced in the table. Relatively more chances of residual disease in the first category can in no way be linked with post nasal packing technique as such but rather attributed to the absence of endoscopic visualization of postoperative cavity (carried out routinely in the third category). As expected largest and the tightest pack was most painful to remove. There was no way to grade the facial/oropharyngeal oedema but our general observation suggested it to be a function of the size and tightness of packing. The headache was more of a reflection of sinus blockage than nerve compression and was found to be similar with the first 2 categories.

Table 1 Performance parameters in the immediate postoperative phase

	Category I: large PNP (N = 10)	Category II: small PNP (N = 10)	Category III: no PNP (N = 10)
Difficulty in swallowing/feeding	8	6	1
Sense of obstruction	10	10	6
Dependence on Ryles tube	2	0	0
Tracheostomy	1	0	0
Nasal twang	10	10	10
Drooling of saliva	5	4	2
Degree of oedema	++	+	—
Headache	9	10	7

Table 2 Comparison of evolving techniques for packing postnasal spaces

Category I: large PNP	Category II: small PNP	Category III: no PNP
Compromised oropharyngeal space needing oropharyngeal airway at times	Minimal compromise of oropharyngeal space never needing any airway	No compromise of oropharyngeal airway
Palatal stitches under maximum tension	Minimum tension	No tension
Maximum obstruction often needing Ryles tube insertion	Minimum obstruction in feeding	No obstruction in oral feeding
Maximum difficulty in swallowing owing to immobile soft palate often needing Ryles tube insertion	Moderate difficulty in swallowing owing to less mobile soft palate but may need Ryles tube	Minimum difficulty owing to palatal stitches
Maximum chances of dehiscence (palatal fistula)	Minimum chances	No chances
Some chances of residual disease	Minimal	No
Painful removal of pack	Less painful	Least painful

Discussion

The first method of tight packing with anterior and a large PNP caused some compromise in the quality of life for initial few days postoperatively. Moreover introducing the anterior nasal pack tightly over the pulled PNP, was likely to miss certain lateral spaces known for bleeding and hence constant trickling thereafter was sometimes seen. This was managed by repeated attempts of anterior packing and replacing PNPs of larger sizes. Sometimes oropharyngeal airway or even a tracheostomy was needed. The normal feeding owing to obstruction was compromised so much so that a few cases required nasogastric tube for a couple of days. It is theoretically possible that sometimes in addition to the missed lateral source of trickling, the posterior end of nasal septum may prevent an adequate pressure to be exerted along the bleeding walls of nasopharynx. The techniques corresponding to the later 2 categories per se deal with such spaces primarily and hence are more effective with reduced effort. The whole philosophy behind this evolution focuses on achieving a better hemostasis more comfortable to the patient. A minimal size of PNP therefore assisted the composite pack to exert sufficient

pressure rather than being instrumental in directly compressing the bleeding points (a philosophy of the earlier technique). This also reduced the immediate post-operative palatal bulge and hence tension over the palatal stitches. Accordingly the oropharyngeal airway became less obstructed. It would be rather incorrect to associate the incidence of palatal fistula purely with PNP as it depends on several other more important factors. Our latest modification totally prevents any palatal bulge and theoretically lessens the chances of palatal fistula arising out of stitch tension. Moreover the venous drainage is least compromised and therefore minimal oedema is seen with the last category. Table 2 summarises the comparison of various nasal packing techniques.

The main limitation of this work is the absence of any validated scale assessment for quality of life for initial few days. Secondly the grading of oedema is more subjective based on the surgeons consensus and notions. Finally with inconsistent records for the past 7 decades, this write up is as per the authors' personal experience since 1993 in addition to valuable inputs from a known authority on angiofibroma (Professor SC Mishra) who has served the department for over 35 years and has the credit of

introducing a novel classification [3] as well as surgical approach [2] for JNA. Since JNA is more often seen in less privileged countries, our modification may be adapted to further ease the transpalatal approach. The reader is encouraged to read an exclusive article in defence of transpalatal approaches for JNA [4] in this regard that is especially applicable to the third world which caters a higher burden than the west. The presented modification may not be of much relevance for the institutions preferring pure endoscopic approach, but will certainly be important for the majority of centres across the globe where facilities of endoscopic excision are yet unavailable and transpalatal approach is carried out as a routine.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Sardana DS (1965) Nasopharyngeal fibroma extension to cheek. *Arch Otolaryngol* 81:584–588 **PMID:14304017**
2. Mishra SC, Shukla GK, Bhatia N, Pant MC (1991) Angiofibromas of the postnasal space: a critical appraisal of various therapeutic modalities. *J Laryngol Otol* 105:547–552
3. Mishra SC, Shukla GK, Bhatia N, Pant MC (1989) A rational classification of angiofibromas of the postnasal space. *J Laryngol Otol* 103:912–916
4. Mishra A, Mishra SC, Verma V, Singh HP, Kumar S, Tripathi AM, Patel B, Singh V (2016) In defence of transpalatal, transpalatal-circumaxillary (transpterygopalatine) and transpalatal-circumaxillary-sublabial approaches to lateral extensions of juvenile nasopharyngeal angiofibroma. *J Laryngol Otol* 130(5):462–473. <https://doi.org/10.1017/S0022215116000773>