DOI: https://doi.org/10.53350/pjmhs211561262

ORIGINAL ARTICLE

Midfacial Degloving Approach Facilitated with Endoscope for Nasal, Paranasal and Nasopharyngeal Pathologies

TAHIR RASHID[1], AAMIR AYOUB[2], MAQSOOD AHMED[3], SOHAIL QADIR[4], MASOOM JAN[5], ABDUL GHAFOOR[6]
[1]*Professor of ENT, Lahore General Hospital, Lahore*
[2]*Asspcoate Professor of ENT, Lahore General Hospital, Lahore*
[3]*Senior Registrar, Department of ENT, Lahore General Hospital, Lahore*
[4,5,6]*PGR ENT, Lahore General Hospital, Lahore*
Correspondence to Dr. Maqsood Ahmed, Email: maqsoodahmed162@yahoo.com, Cell:0321-4800971

ABSTRACT

Background: Endoscopic sinus surgery is mostly conducted for the removal of the inflammatory as well as infectious diseases of sinus and malignant or benign nasal, paranasal & nasopharyngeal pathologies. The various surgical approaches that have been used range from transpalatine to a lateral rhinotomy and to mid-facial degloving.
Aim: To determine the outcome of mid-facial degloving approach facilitated with endoscope for nasal, paranasal and nasopharyngeal pathologies.
Methods: Forty five patients that fulfilled the inclusion criteria were enrolled in the study. All the patients were then underwent surgery by the researcher along with a surgical team under general anesthesia by using Mid-facial degloving approach. The patients were followed - up on 3 & 6 months after the surgery and underwent clinical examination and endoscopic nasal examination to assess the complications, cosmetic outcome and recurrence after the procedure during the follow-up period. Data was entered & analyzed using SPSS v. 23.
Results: Mean age of the patients in the sample was 25.47±10.52 years. There were 39(86.7%) male patients and 6(13.3%) female patients. Cosmetic outcome was excellent in 31(68.9%) cases, satisfactory in 12(26.7%) while 2(4.4%) variable comments about the cosmetic effects of the procedure. Bleeding was most common complication 3(6.7%), however recurrence occurred in 3(6.7%) cases.
Conclusion: It is concluded that mid-facial degloving approach is a highly successful method for removal of nasal, paranasal or nasopharyngeal pathologies.
Key words: Mid-facial degloving, endoscope, nasal, paranasal, nasopharyngeal, pathologies

INTRODUCTION

The extensive collection of lesions grow in the nostrils, nasal cavity, as well as in nasopharynx. These tumors or pathologies may develop from nasal ala or other nasal structures. These includes the mucosa which is the covering of any surface inside the nasal cavity, cartilaginous or osseous part of nasal septum, nasal turbinate and nasal bones. These tumors may also grow from nasopharynx or neighboring structures of the nose and also include the nasal parts during metastasis or the direction of the extensive growth[1]. There is a wide range of several neoplastic lesions including lesions develop from epithelial, mesenchymal or neuro-ectodermal diversity that may grow inside the sino-nasal tract and must be deliberated in the diagnosis of neoplasms of the sino-nasal tract[2,3].

In these growths, benign lesions were categorized as the salivary gland tumours, sino-nasal papillomas, respiratory epithelial tumours and also soft tissue tumours. In contrary to that, inflammatory maladies usually show tumor - like forms[4]. Sino-nasal malignancies with neuro-endocrine characteristics have similar clinical, radiological & pathological structures; but, these lesions usually display variable grades of antagonistic behaviour displaying substantial therapeutic challenges[5]. The differential diagnosis of neuroendocrine neoplasms arising in the sinonasal tract is broad and includes lesions of epithelial, mesenchymal, and neuroectodermal origin[6]. Consequently, studying the several features of the different varieties of the nasal and paranasal benign lesions on computed tomography scan and magnetic resonance imaging, is clinically essential to decide an appropriate treatment[4].

A substantial exposure of the mid-facial region is important for the complete and detailed performance of the mid-facial surgical processes, particularly in bilateral surgeries. Conventional methods for the mid-facial surgeries is the mid-face like lateral rhinotomy and Weber – Fergusson / Dieffenbach incision with their adjustments have a little poor results regarding cosmetic outcome and leave a scar on face. They have also limitation when applied for unilateral exposure. The mid-facial degloving method along with its limited intra-nasal & intra-oral incisions showed no scars on face after surgery. It provides the excellent bilateral exposure of maxilla, paranasal areas, zygoma and infra-orbital margins from one side to other side. Predominantly, the mid-facial degloving method is applied for the exposure of the maxillary, nasal, paranasal, naso-pharynx pathologies as well as central parts of anterior & middle cranial base[7].

Rationale of this study was to determine the outcome of mid-facial degloving approach facilitated with endoscope for nasal, paranasal and nasopharyngeal pathologies. This is a new method for removal of nasal pathologies. But very few work has been done in this regard. So we conducted this study a public hospital to implement the results in future and implement the application of mid-facial method. So that more successful procedures can be done without

Received on 02-01-2021
Accepted on 17-05-2021

compromising the health of the The objective of the study was to determine the outcome of mid-facial degloving approach facilitated with endoscope for nasal, paranasal and nasopharyngeal pathologies.

METHODOLOGY

This descriptive case series was conducted in the Department of Otolaryngology, Lahore General Hospital (PGMI), Lahore for a period of two years i.e. from: October 2017 to October 2019. Sample size of was calculated by using Confidence level = 95%, margin of error = 10% and percentage of success = 86.7% by applying the mid-facial degloving approach facilitated with endoscope for nasal, paranasal and nasopharyngeal pathologies. Sampling technique used was non-probability, consecutive sampling.

Inclusion Criteria: Patients of age range between 15 and 55 years of either gender were included who were diagnosed for nasal, paranasal and nasopharyngeal pathologies including nasopharyngeal juvenile angiofibroma, inverted papilloma, paranasal sinus osteoma, malignant melanoma and hemangioparycytoma

Exclusion Criteria: Patients with prothrombin time >15 sec, diabetes (blood glucose level > 200 mg/dl), patents with neurological or psychological problem, patients with recurrent disease or undergoing surgery for previous failed procedure were excluded from the study. Research was approved by the Ethical Committee of the institution.

Data Collection Procedure: Forty five patient that fulfilled the selection criteria were registered in the study. Informed written consent was taken from the patients before enrollment and all the pros and cons of the procedure were explained. Their demographic details like name, age, sex, type of pathology, were noted. All the patients were then underwent surgery by the researcher along with a surgical team. General anesthesia was applied in all patients undergoing surgey. The patients lied in reversed Trendelenburg position with about 150º head-up tilt. Mid-facial degloving method was applied. The extensive tumor plane was incised and the tumor was gradually excised from its position. After completion of the surgical excision, the empty cavity was surrounded by posterior wall of sphenoid sinus and nasopharynx & pterygoid plates with the nearby muscles and ipsilateral posterior wall of maxillary sinus developed as the posterior boundary of resection. The superior limit was shaped by cribriform plate, roof of ethmoids, planum ethmoidale & sphenoidale. Laterally, it was confined by coronoid process of mandible. Endoscopes was applied to remove the residue of tumor which were difficult to access by mid-facial degloving method. After surgery, the excised cavity was filled with the layers of ribbon gauze that was soaked in the gentamycin cream for three days. Early postoperative complications were noted if detected. Patients were followed-up in OPD after 3 & 6 month of the surgery and underwent clinical examination and endoscopic nasal examination to assess the complications, cosmetic outcome and recurrence after the procedure during the follow-up period. Cosmetic outcome was noted as excellent or satisfactory. Magnetic resonance imaging was done on patients who had high probability of recurrence after surgery.

Data Analysis: Data was entered & analyzed using SPSS v. 23. Qualitative variables like gender, cosmetic outcome and complications were presented as frequency and percentages. Quantitative variables like age, were presented as mean & standard deviation. Chi-square test was applied to compare the outcome in surgery groups. P - value less than or equal to 0.05 was considered statistically significant.

RESULTS

The mean age of patients in the sample was 25.47±10.52 years. There were 39(86.7%) male patients and 6(13.3%) female patients. The male to female ratio in the study was 6.5:1. The most common procedure performed in the study was nasopharyngeal juvenile angiofibroma, followed by inverted papilloma 7(15.6%), paranasal sinus osteoma 6(13.3%)] while 1(2.2%) case had malignant melanoma and 1(2.2%) case had hemangioparycytoma. Cosmetic outcome was excellent in 31(68.9%) cases, satisfactory in 12(26.7%) while 2(4.4%) variable comments about the cosmetic effects of the procedure. Regarding the postoperative complications, bleeding was most commonly observed 3(6.7%), while alar drop was noted in 1(2.2%) case, cheek numbness in 1(2.2%) case, nasolacrimal duct obstruction in 1(2.2%) case while septal perforation in1(2.2%) case, however 38(84.4%) cases did not had any complication. But recurrence occurred in 3(6.7%) cases.

Excellent cosmetic results were significantly better with nasopharyngeal juvenile angiofibroma i.e. 73.3%, 66.7% with paranasal sinus osteoma, 57.1% with inverted papilloma while one case of hemangiopaycytoma showed excellent cosmetic outcome ($p<0.05$). The complications were noted in few cases i.e. bleeding occurred in 3 cases and all cases had nasopharyngeal juvenile angiofibroma surgery. Out of 3 cases of recurrence, recur occurred in 2 cases who had nasopharyngeal juvenile angiofibroma surgery while in 1 case who had inverted papilloma (Table 2).

Table 1: Findings of the study

n	45
Age (years)	25.47 ± 10.52
Gender	
Male	39 (86.7%)
Female	6 (13.3%)
Procedure	
Nasopharyngeal Juvenile angiofibroma	30 (66.7%)
Inverted papilloma	7 (15.6%)
Paranasal sinus osteoma	6 (13.3%)
Malignant melanoma	1 (2.2%)
Hemangioparycytoma	1 (2.2%)
Cosmetic outcome of procedure	
Excellent	31 (68.9%)
Satisfactory	12 (26.7%)
Variable	2 (4.4%)
Postoperative Complications	
Alar drop	1 (2.2%)
Bleeding	3 (6.7%)
Cheek numbness	1 (2.2%)
Nasolacrimal duct obstruction	1 (2.2%)
Septal perforation	1 (2.2%)
No complication	38 (84.4%)
Recurrence	3 (6.7%)

Table 2: Comparison of outcome according to the procedure performed

Cosmetic outcome	Procedure					P - value
	Nasopharyngeal Juvenile angiofibroma	Inverted papilloma	Paranasal sinus osteoma	Malignant melanoma	Hemangioparycytoma	
Excellent	22 (73.3%)	4 (57.1%)	4 (66.7%)	0 (0.0%)	1 (100%)	0.003
Satisfactory	7 (23.3%)	3 (42.9%)	2 (33.3%)	0 (0.0%)	0 (0.0%)	
Variable	1 (3.3%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	
Complications						
Alar drop	1 (3.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.000
Bleeding	3 (10.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Cheek numbness	1 (3.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Nasolacrimal duct obstruction	0 (0.0%)	1 (14.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Septal perforation	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	
No complication	25 (83.3%)	6 (85.7%)	6 (100%)	0 (0.0%)	1 (100%)	
Recurrence	2 (6.7%)	1 (14.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.874
No Recurrence	28 (93.3%)	6 (85.7%)	6 (100%)	1 (100%)	1 (100%)	

DISCUSSION

Maxillary bone is the most frequent exaggerated part of the face, causing the facial irregularity and functional ailments. Surgery is a very effective choice to resolve the issues of this region and it includes removal of the unhealthy bone through an intraoral method: conventional bone cutting or radical excision & reconstruction[8]. Endonasal surgery has emerged as the standard procedure for the majority of nasal and paranasal sinus pathologies. However, some pathological changes beyond the maxillary sinus seem to be out of the instrumental range and are addressed by open approaches[9]. The mid-facial degloving method provides an excellent surgical entrance to the skeleton of the mid-facial part that is composed of: maxilla, maxillary sinus, paranasal region, zygoma, and the infraorbital rims. The benefits of mid-facial degloving method besides its substantial exposure, has excellent cosmetic results as it offers no visible or external scars[7].

The complete excision of the nasal pathology like juvenile angiofibroma, is necessary to avoid its recurrence, and in most of the cases in which recurrence occurs could be showing the incomplete excision or resection of the lesion. The use of the mid-facial degloving method permits the good unilateral or bilateral disclosure of the maxillary part of face and evades numerous poor functional and cosmetic outcomes related to the open methods. As a consequence of the modular design of this method, it put up the surgical requirements for several different methods / approaches at skull-base and sino-nasal area.[10] Midfacial degloving is used for bigger or bilateral tumors; moreover this approach is cosmetically acceptable as it does not produce any facial scar.[11] The mid-face degloving method was first introduced and explained by Casson et al. It is a very useful surgery in remedial of wide-range of mid-facial problems and pathologies. This method offers an extensive surgical field, which permits a good imagining of the mid-facial skeleton as well as good cosmetic results and scars remain unseen[12].

In our study, the mean age of patients in the sample was 25.47±10.52 years. There were 39(86.7%) male patients and 6(13.3%) female patients. Cosmetic outcome was excellent in 31(68.9%) cases, satisfactory in 12(26.7%) while 2(4.4%) variable comments about the cosmetic effects of the procedure. The most common postoperative complications was bleeding that occurred in 3(6.7%) cases, however recurrence occurred in 3(6.7%) cases. In a study conducted by El-Banhawy et al., found that 86.5% cases had complete clearance of the tumor without any residue while recurrence was detected in two cases[13]. In another study conducted by Ferreira et al., on 16 patients of nasal pathology, it was revealed that bleeding occurred in 1(6.25%) case only, while recurrence occurred in 12.5% cases and cosmetic outcome was good in all patients (100%)[14]. These findings were inconsistent to the findings of our study. This may be because of very low sample size while in our study, bleeding occurred in 3 cases (n=45).

CONCLUSION

It is concluded that mid-facial degloving approach is a highly successful method for removal of nasal, paranasal or nasopharyngeal pathologies. The success rate of this approach is >80% which showed that it is a reliable method to remove such pathologies. We can now rely on this method and in future, we can recommend to use this approach for such cases that will help us to get success or complete removal of pathology in a single surgery instead of multiple attempts in local setup.

Limitation & suggestions: Study was conducted on a small sample size. It is suggested that further trials should be done on large sample size to get authentic and more reliable results. Time duration was very less and study was conducted in a small set-up. So, study of prolonged durations must be done to get more effect and also the adverse effects. Multi-centric and randomized trials should be done to get authentic and more reliable results. Financial constraints were also the big issue. Financial constraints must be resolved before initiating new trial and major bodies should be involved in the trials to apply results on population level.

Conflict of interest: There was no conflict of interest of any author involved in the study

REFERENCES

1. Rodriguez DP, Orscheln ES, Koch BL. Masses of the Nose, Nasal Cavity, and Nasopharynx in Children. RadioGraphics 2017;37(6):1704-30.
2. Capper D, Engel NW, Stichel D, Lechner M, Glöss S, Schmid S, et al. DNA methylation-based reclassification of olfactory neuroblastoma. Acta neuropathologica 2018;136(2):255-71.
3. Rooper LM, Bishop JA. Sinonasal small round blue cell tumors: an immunohistochemical approach. Surgical pathology clinics 2017;10(1):103-23.
4. Tatekawa H, Shimono T, Ohsawa M, Doishita S, Sakamoto S, Miki Y. Imaging features of benign mass lesions in the nasal cavity and paranasal sinuses according to the 2017 WHO classification. Japanese Journal of Radiology 2018 2018/06/01;36(6):361-81.
5. Soldatova L, Campbell RG, Carrau RL, Prevedello DM, Wakely Jr P, Otto BA, et al. Sinonasal carcinomas with neuroendocrine features: histopathological differentiation and treatment outcomes. Journal of Neurological Surgery Part B: Skull Base 2016;77(06):456-65.
6. Montone KT. The differential diagnosis of sinonasal/nasopharyngeal neuroendocrine/neuroectodermally derived tumors. Arch Pathol Lab Med 2015;139:1498-507.
7. Zachariah T, Neelakandan RS. Utility of the Midface Degloving Approach for Extended Exposure in Maxillary Pathologies. Journal of Maxillofacial and Oral Surgery 2020 2020/06/01;19(2):217-24.
8. Kang M, Jee Y-j, Lee Dw, Jung S-p, Kim S-w, Yang S, et al. Midfacial degloving approach for management of the maxillary fibrous dysplasia: a case report. Maxillofacial Plastic and Reconstructive Surgery 2018 2018/12/06;40(1):38.
9. Kühnel T. [The maxillary sinus via a prelacrimal approach as a gateway to the retromaxillary space and orbital floor]. HNO 2020.
10. Llorente JL, Suarez C. Excision by midfacial degloving approach. Juvenile Angiofibroma: Springer; 2017. p. 165-72.
11. Dubey SP, Molumi CP, Swoboda H. Nose and Paranasal Sinuses Surgery. Color Atlas of Head and Neck Surgery: Springer; 2020. p. 343-91.
12. Ueda M, Hashikawa K, Iwayama T, Terashi H. Rhinoplasty via the midface degloving approach for nasal deformity due to nasal polyps: A case report of Woakes' syndrome. Oral and Maxillofacial Surgery Cases 2017 2017/09/01/;3(3):64-9.
13. El-Banhawy OA, El-Dien AE-HS, Amer T. Endoscopic-assisted midfacial degloving approach for type III juvenile angiofibroma. International journal of pediatric otorhinolaryngology 2004;68(1):21-8.
14. de Brito Macedo Ferreira LM, do Nascimento Rios AS, Gomes ÉF, Azevedo JF, de Paula Araújo R, Moraes RB. Midfacial degloving - acess to nasal cavity and paranasal sinuses lesions. Brazilian Journal of Otorhinolaryngology 2006 2006/03/01/;72(2):158-62.