



A comparison between Different Surgical Approaches of Nasopharyngeal Angiofibroma: A Cross-Sectional Observational Study in BSMMU, Bangladesh

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Abstract

Background: The Otolaryngologist is currently dealing with a dramatic problem the nasopharyngeal angiofibroma. The posterolateral wall of the nasal cavity, close to the superior margin of the sphenopalatine foramen, is where the tumor commonly first appeared. **Material & Methods:** The Otolaryngology & Head Neck Surgery department at Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, and Shaheed Suhrawardy Medical College Hospital in Dhaka undertook this retrospective cross-sectional study. The research was done from February 2012 to November 2012. The study's overall sample size was 30. **Results:** The majority of individuals (54%) who have nasopharyngeal angiofibroma are between the ages of 16 and 20. The majority of patients have similar symptoms such as epistaxis, nasal blockage, nasal discharge, anemia, and masses in the nasal cavity. At presentation, anaemia is present to various degrees in 90% of cases. The lateral rhinotomy method is employed (40%) more often than other approaches. Three blood units were to be transfused into a maximum of 36.66% of the patients throughout the surgery. **Conclusion:** Nasopharyngeal angiofibroma is currently a difficult issue for otolaryngologists. When endoscopy was used instead of open techniques, we discovered that the mean length of the procedure was shorter, which may be related to endoscopy's decreased morbidity.

Keywords:- Surgical Approaches, Nasopharyngeal Angiofibroma, Juvenile Nasopharyngeal Angiofibroma, Otolaryngology.

INTRODUCTION

The otolaryngologist is currently dealing with a dramatic problem “nasopharyngeal angiofibroma”. The posterolateral wall of the nasal cavity, close to the superior margin of the sphenopalatine foramen, is where the tumor commonly first appeared.^[1] Patients typically have unilateral nasal blockage, discharge, or

epistaxis when they first appear. Proptosis, blindness, facial abnormalities, and cranial nerve palsies can all develop as the condition worsens.^[2] A thorough history, nasal endoscopic examination, and imaging tests employing computed tomography (CT) and magnetic resonance imaging are the main components of the diagnosis of JNA (MRI).

When determining intracranial extension, MRI investigations are probably more reliable than CT scans.^[3] Histological diagnosis by means of biopsies is not recommended; instead, angiography, which also acts as therapy because embolization of the tumor-feeding vessels can be done concurrently, provides a definitive diagnosis.^[4] Main Recurrent episodes of epistaxis, nasal blockage, nasal discharge, blood-tinged sputum, a feeling of a foreign body in the nasal cavity, and headache are clinical symptoms. Nasopharyngeal angiofibroma surgical intervention has long been a difficulty for head and neck surgeons due to the tumor's abundant vascularity. The preferred method of treating nasopharyngeal angiofibroma is still surgery. Despite the fact that chemotherapy, radiotherapy, hormone therapy, cryotherapy, and electrocoagulation have all been discussed in books. Numerous surgical techniques, such as transantal, transpalatal, transzygomatic, transmandibular, lateral rhinotomies, midfacial degloving, and concurrent craniotomies, have been employed. The preferred method of treatment for juvenile nasopharyngeal angiofibroma is surgery. Other treatments for this condition include radiotherapy, hormone therapy, cryotherapy, electrocoagulation, and chemotherapy. Endoscopic, open, or combination procedures can be used to treat juvenile nasopharyngeal angiofibroma.^[5,6,7] The amount of the tumor and the surgeon's experience determine the type of surgery to be performed. The Radkwski, Chandler, Sessions, Andrews, or Fisch classifications may be used as the basis for staging; the latter is more frequently utilized [8]. When cancers are in stages I and II (Fisch), endoscopic surgery is a potential therapy option because the morbidity is lower.^[6] To lessen

surgical problems and tumor recurrences, it can also be utilized in conjunction with conventional surgery.^[9] This study assessed the length of surgery using each strategy (open, endoscopic, and combination surgery), and evaluated whether intraoperative blood transfusion was necessary in relation to the amount of time since embolization. Complete elimination and less bleeding during surgery are the main goals of surgery.

Objective of the Study

The goal of this study was to compare various surgical techniques for treating nasopharyngeal angiofibroma.

MATERIAL AND METHODS

The Otolaryngology & Head Neck Surgery department at Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, and Shaheed Suhrawardy Medical College Hospital in Dhaka undertook this retrospective cross-sectional study. The research was done from February 2012 to November 2012. The study's overall sample size was 30.

Inclusion Standards

1. All nasopharyngeal angiofibroma cases that will undergo surgery at Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, and Shaheed Suhrawardy Medical College Hospital in Dhaka throughout the designated research period.
2. The patient's entire age range will be considered.

Exclusion Standards

1. Patients with nasopharyngeal angiofibromas that are incurable.

RESULTS

The patients for this study were chosen after a review of the hospital's nominal register for otolaryngology and head and neck surgery. The hospital's course of care and treatments were accurately documented. The surgical strategy over the course of ten years took into account the surgeon's endoscopic surgery learning curve and the progressive abolition of the open technique. The staging was done according to the Fisch classification: stage I was a tumor that was limited to the nasopharynx and nasal cavity with no bone destruction, stage II was a tumor that invaded the pterygomaxillary fossa, the

maxillary antrum, the ethmoid and sphenoid sinuses with bone destruction, stage III was a tumor that invaded the infratemporal fossa, the orbit, and the (tumor with invasion of the cavernous sinus, the optic chiasm or the pituitary fossa) 3,9. The fourth day, which saw the highest concentration of patients, was identified through an examination of the time that passed between embolization and surgery, and it was contrasted with the other days. All surgeries were done by the same surgeons (E.F.G). For data processing, SPSS version 21.0 statistics software was used. The foundation for data analysis included simple and percentage frequencies, parametric measurements, means, and the standard deviation. P 0.05 was the significance threshold. The hospital's administrative staff approved the ethical decision.

Table 1: Age distribution of the patients

Age group(years)	No. of patients (n=30)	Percentage (%)
0-10	00	00
11-15	08	24
16-20	18	54
21-25	04	12
25 onwards	00	00

The nasopharyngeal angiofibroma patient with the youngest age was 13 years old, and the patient with the oldest age was 23 years old. The majority of individuals (54%) who have nasopharyngeal angiofibroma are between the ages of 16 and 20. The average patient age was 16 years.

Table 2: Clinical Features.

Clinical Feature	Number (n=30)	Percentage
Epistaxis	30	100
Nasal Obstruction	30	100
Nasal discharge	25	83.33
Anemia	30	100
Facial deformity	05	30
Orbital proptosis	02	6.66



Cheek swelling	02	6.66
Visible mass in nasal cavity	24	80
Visible mass in post. rhinoscopy	27	90
Features of secretory otitis media	18	60
Rhinolalia Clausa	15	50

According to the above table, the majority of patients have similar symptoms such as epistaxis, nasal blockage, nasal discharge, anemia, and masses in the nasal cavity.

Table 3: Investigation Findings

Investigation	Number (n =30)	Percentage
Anaemia	27	90
Plain X- ray nasopharynx (L / V)		
Soft tissue mass in nasopharynx	30	100
Anterior bowing of post. Wall of maxillary sinus in lateral view	12	40
CT. SCAN		
Nasopharynx and nasal involvement	30	100
Paranasal sinus involvement	09	30
Pterygopalatine fossa involvement	15	50
Infratemporal fossa involvement	06	20

At presentation, anaemia is present to various degrees in 90% of cases. At presentation, half of the patient's pterygopalatine fossa is extended, and all patients have soft tissue mass in the Nasopharynx.

Table 4: Surgical approaches

Approaches	Number(n=30)	Percentage
Endoscopic	02	7.67
Lateral rhinotomy	12	40
Transpalatal	10	33.33
Transnasal- Maxillary using weber –Fergusson’s Incision	03	10
Transantral	01	03
Combined lateral rhinotomy and transpalatal	02	7.67
Total	30	100

The lateral rhinotomy method is employed (40%) more often than other approaches.

Table 5: Average surgical blood loss (ml)

Amount of blood loss(ml)	Number of patient(n=30)	Percentage
Below 500	06	20
500-1000	13	43.33
1000-1500	08	26.66
Above 1500	03	10

The majority (43.33%) of operations noticed an average blood loss of 500–1000 ml.

Table 6: Average operation time (in minute)

Time (minutes)	Number(n=30)	Percentage
30-60	06	20
60-90	12	40
90-120	09	30
Above 120	03	10

Average operation took 1-1.5 hours to complete at maximum (40%) efficiency.

Table 7: Number of unit of blood transfused

Number of unit of blood	Number of patient(n=30)	Percentage
01	03	10
02	07	23.33
03	11	36.66
04	07	23.33
Above 04	02	6.66

Three blood units were to be transfused into a maximum of 36.66% of the patients throughout the surgery.

Table 8: Postoperative complications

Complication	Number(n=30)	Percentage
Reactionary haemorrhage	03	10
Infection	01	03
Fistula	02	7.66
Bad scar	04	13.33

Maximum consequences were a severe scar and recurrent bleeding.

DISCUSSION

One tumor that presents constant diagnostic and treatment challenges is angiofibroma. Adolescent men make up the great majority of patients with nasopharyngeal angiofibroma. Clinically, the lesion typically appears as a well-vascularized mass that occupies the back of the nose and the nasopharynx, but it can also affect the nasal cavity, cheek, orbital cavity, cranial cavity, maxillary antrum, pterygomaxillary fossa, infratemporal fossa, and nasal cavity. The frequency, clinical findings, and surgical

management of nasopharyngeal angiofibroma in our nation and elsewhere have recently been the subject of some research. Comparable studies from both domestic and international sources were examined. As we previously discovered, teenage males are the group that is most frequently affected by nasopharyngeal angiofibroma. Adolescent males were the group in my study that was most frequently affected (average age 16 year). This result is in line with findings from other research.[\[10,11,12,13,14\]](#) When researching the literature from earlier studies on



this topic to learn more about the clinical manifestations of nasopharyngeal angiofibroma, we discovered that the vast majority of patients had epistaxis (100%), nasal obstruction (100%) and intranasal mass (91%).^[11,12,13,14] Similar to earlier studies, the patient in my study had epistaxis (100%), nasal blockage (100%), and mass in the nose (80%). The same kinds of findings are found when we examine other research.^[12,15,16] In my investigation, the primary methods of diagnosis were a CT scan of the nose and paranasal sinuses and an X-ray of the nasopharynx. It is consistent with this and other related research.^[17] In a study titled "Surgical approaches used for the excision of angiofibroma" published in January 2001 by Pakistan's Isteraj S, Abdullah J, Iftikhar A, and Aziz K, it was revealed that every patient had a traditional X-ray of the sinuses and a nasopharynx CT scan performed to identify any potential tumor extensions and to help choose the best surgical strategy. A few issues need to be resolved before deciding on the best course of action in a nasopharyngeal angiofibroma instance. It depends on the tumor's size, grade, the surgeon's preferences and expertise, as well as institutional support. Therefore, each patient was thoroughly examined before the preferred surgical method was chosen. According to my research, 40% of patients underwent lateral rhinotomies. 33.33 percent of patients used the transpalatal approach. For the removal of nasopharyngeal angiofibroma, other techniques such endoscopic (7.67%), transnasal maxillary by Weber-incision Ferguson's (10%), transantral (3%) and combined transpalatal and lateral rhinotomy (7.67%) are also used. After evaluating the research, we discovered that Muhammad Ali Tirmizey et al. (2007) used

lateral rhinotomies in 63.63% of their surgical cases, while transpalatal approaches were used in only 3(13.6%) of them. In 3(13.6%) cases, Weber Ferguson's incision was made transnasally and maxillarily. In the majority (83%) of the patients, Isteraj et al. employed a transpalatal technique, which was occasionally supplemented with a sublabial incision.^[17] The majority of grade I and II cancers can be easily addressed by lateral rhinotomy, and this procedure can be expanded to a transnasal maxillary approach by lengthening the incision for grade III tumors. When calculating the typical blood loss during surgery, we discovered that 43.33% of patients had 500-1000 ml of main hemorrhage. Three units of blood were typically transfused intraoperatively each surgery (33.33%). These results are consistent with those of earlier studies.^[16,18] Finally, we looked at postoperative problems. Every instance was monitored from the procedure to the recovery phase. Closed vital sign monitoring, hemorrhage control, regular dressing, pack removal, suction clearance, medicine administration, and stitch removal were all guaranteed in each patient. There were no significant deaths or illnesses reported. We discovered fistula (7.67%), reactive hemorrhage (10%), poor scar (13.33%), and infection (03%). 18 individuals who participated in a study by Deschler et al. at the University of California, San Francisco, between 1980 and 1991 reported rates of facial scarring, paresthesias, and pain at 100% and 5%, respectively.^[19] In 30 patients who underwent surgery at the Mayo Clinic in the USA between 1972 and 1983, Bremer et al. documented the following complications: Four patients had nasolacrimal duct stenosis, three had hemorrhages, one had exotropia, one had mild proptosis, and one had cheek numbness

(1patient).^[20] Transpalatal excision of tumors confined to the nasopharynx was judged by Mann et al. in an evaluation of surgical procedures over a 20-year period to be an appropriate approach.^[21] This method was not shown to be effective for bigger tumors. In our investigation, we discovered that, in terms of tumor clearance and cosmesis, clearance of a tiny mass localized to the nasopharynx via the transpalatal route is achievable. Examining related studies, our belief is that a thorough preoperative evaluation, a well-considered surgical strategy, the complete removal of the tumor mass, and post-operative attentive observation may lessen problems.^[10,11,12,13,14]

CONCLUSIONS

Nasopharyngeal angiofibroma is currently a difficult issue for otolaryngologists. When

endoscopy was used instead of open techniques, we discovered that the mean length of the procedure was shorter, which may be related to endoscopy's decreased morbidity. Patients who underwent embolization four days prior to surgery required less blood transfusion. Preoperative embolization and novel surgical techniques such endoscopic excision for limited stage illness and maxillary swing approach for advanced stage disease are linked to better surgical outcomes. Surgery remains the backbone of therapy for staging. The present study's significant recurrence rate is a result of the cancers' advanced stage upon presentation. Recurring or residual disease that can be removed surgically should only be treated with radical therapy (RT). Aggressive re-excision should never be used for resectable recurrent illness.

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