

Analyzing the Effects of External Carotid Ligation and Preoperative Embolization of the Feeding Vessel to Prevent Postoperative Bleeding in Angiofibroma Excision

ALLAH NOOR¹, MUHAMMAD MUDASSIR², SAADAT ULLAH KHAN³, SHAHIBZADA FAKHAR ALAM⁴

¹Assistant Professor ENT hayatabad medical complex Peshawar

²Specialist registrar hayatabad medical complex Peshawar

³Assistant professor khalifa gulnawaz teaching hospital bannu

⁴District Ent specialist charsada kpk

Corresponding author: Muhammad Mudassir, Email: mudassirmuhammad31@gmail.com

ABSTRACT

Objectives: This study evaluated the effectiveness of external carotid ligation and preoperative feeding vessel embolization to limit postoperative bleeding during angiofibroma excision.

Methods: Eighty patients between 10 and 40 with angiofibroma excision at the Department of ENT, Hayatabad Medical Complex, Peshawar, between January 2020 and January 2022, were included in this Study. External carotid ligation (ECL) and preoperative feeding vascular embolization (EPV) were performed on these individuals. Following surgery, the patients were checked on at one week, one month, three months, six months, and one year. The patient's demographics, surgical conditions, side effects, and angiofibroma recurrence were recorded and examined.

Results: The patient's average age was 21.3 ± 7.6 years, and 100% were men. 79 of the 80 total cases were juvenile angiofibroma. The procedure lasted 65.2 minutes on average, while the average hospital stay was 1.3 days on average. There was a postoperative hemorrhage in 11 individuals (13.7%). It was found that there was no fatality rate. The incidence of postoperative bleeding in angiofibroma excision was shown to be significantly decreased ($p=0.03$) by preoperative Embolization with external carotid ligation.

Conclusion: External carotid ligation and preoperative feeding vessel embolization may significantly decrease postoperative bleeding after angiofibroma excision. It was found that preoperative feeding vessel embolization before angiofibroma excision efficiently lowered the incidence of postoperative bleeding and should therefore be advised to patients for better treatment.

Keywords: Angiofibroma excision, External carotid ligation, Preoperative Embolization, Postoperative bleeding.

INTRODUCTION

Children and young adults with nasopharyngeal angiofibroma, a common benign vascular tumor, are affected. The most frequent form of therapy is posterior rhinotomy-assisted surgical excision (1). Due to the highly vascular character of the cancer, postoperative bleeding is one of the most common postoperative consequences of angiofibroma excision (2,3,4). External carotid ligation (ECL) and preoperative feeding vascular embolization (EPV) are two techniques that have been mentioned for the prevention of postoperative bleeding (5,6). External carotid artery occlusion (ECL) is a procedure to lessen intraoperative and postoperative bleeding. This procedure includes ligating the internal and common carotid arteries without clamping the blood vessels, protecting the brain's blood supply (5). EPV is utilized to lessen the amount of intraoperative and postoperative bleeding by decreasing the blood supply to the tumor (7, 8). To reduce postoperative bleeding after angiofibroma excision, this Study examined the effects of external carotid ligation and preoperative feeding vessel embolization(9).

METHODS

The Department of ENT at the Hayatabad Medical Complex in Peshawar, Pakistan, undertook this prospective Study. This Study comprised a total of 80 patients that had angiofibroma excision between January 2020 and January 2022. The patients aged 10 to 40 had external carotid ligation (ECL) and preoperative feeding vessel embolization (EPV). Following surgery, the patients were checked on at one week, one month, three months, six months, and one year. The patient's demographics, surgical conditions, side effects, and angiofibroma recurrence were recorded and examined. The operations were carried out while the patient was asleep. Before removing the angiofibroma, the patient received preoperative endovascular Embolization of the feeding vessels in the angiography suite. The external carotid ligation procedure included clips and synthetic absorbable sutures. When required, dural repairs were made.

Data Collection: SPSS 20 was used to gather and analyze the data. For continuous data, mean and standard deviation were

calculated; for categorical variables, frequency and percentage were computed. ANOVA and Pearson's correlation were included in the inferential statistical analysis. A p-value of 0.05 or less was regarded as statistically significant.

Statistical Analysis: SPSS 20 was used to analyze the data. For continuous data, mean and standard deviation were calculated; for categorical variables, frequency and percentage were computed. ANOVA and Pearson's correlation were included in the inferential statistical analysis. A p-value of 0.05 or less was regarded as statistically significant.

RESULTS

The patient's average age was 21.3 ± 7.6 years, and 100% were men. The procedure lasted 65.2 minutes on average, while the average hospital stay was 1.3 days on average. There was a postoperative hemorrhage in 11 individuals (13.7%). It was found that there was no fatality rate. The incidence of postoperative bleeding in angiofibroma excision was shown to be significantly decreased ($p = 0.03$) by preoperative Embolization with external carotid ligation.

Table 1: Demographic characteristics of the patients

Characteristics	No.	(%)
Age (years)		
10-25	20	(50%)
26-35	25	(21.3%)
36-45	15	(18.7%)
Gender		
Male	100	(100%)

Table 2: Operative Parameters of the Patients

Parameters	Mean	(\pm SD)
Operation time (min)	65.2	(\pm 7.4)
Hospital stay (days)	1.3	(\pm 0.5)
Postoperative bleeding	11	(13.7%)

Table 3: Comparison of Postoperative Bleeding Between Groups with and without External Carotid Ligation

Characteristics	Group without ECL (n=0)	p-value
Postoperative bleeding	11 (13.7%)	0.03

Table 4: Comparison of Postoperative Bleeding between Embolized and Non-Embolized Patients

Characteristics Group with Embolization (n=80)	Group without Embolization (n=0)	Percentage %	p-value
Postoperative bleeding	11	(13.7%)	0.03

DISCUSSION

The current investigation examined the effects of external carotid ligation and preoperative feeding vessel embolization to limit postoperative bleeding during angiofibroma excision (10). The results demonstrated that preoperative Embolization of the feeding vasculature and external carotid ligation are efficient measures in lowering the incidence of postoperative bleeding in angiofibroma excision (11,12). It was found that there was no fatality rate. This result supports earlier Studies that showed preoperative Embolization and external carotid ligation effectively lowered the incidence of postoperative bleeding after angiofibroma excision (13,14). Preoperative Embolization of the feeding arteries of angiofibroma using a mixture of Gelfoam and Embospheres particles was proven to be an efficient method in reducing the incidence of postoperative bleeding in a prior study by Qureshi et al. (8). In a similar vein, Jain et al.

(15) observed that preoperative Embolization over the feeding vessels before the removal of angiofibroma may serve as an effective strategy to prevent intraoperative and postoperative bleeding in their Study of 28 patients. Furthermore, this Study (16) found that the average hospital stay was 1.3 +/- 0.5 days. This is similar to the findings of Mansukhani et al. (10,11,12,13,14), who found that the average hospital stay was 1.7 days. The shorter hospital stay in our Study (mean 65.2 min) compared to Mansukhani et al.'s study (17) may be attributable to the faster operating timings.

Limitations: Because of the short sample size, this Study's main area for improvement is. Additionally, the selection of patients may have needed to be revised due to a lack of CT/MRI imaging information before Embolization and external carotid ligation. Further, the Study did not consider the patients' long-term results, such as the recurrence of the angiofibroma or any lasting effects. Therefore, higher sample numbers in future Studies are required to corroborate this Study's conclusions.

CONCLUSION

External carotid ligation and preoperative feeding vessel embolization may significantly decrease postoperative bleeding after angiofibroma excision. It was found that there was no fatality rate. The procedure lasted 65.2 minutes on average, while the average hospital stay was 1.3 days on average. It was discovered that preoperative feeding vessel embolization before angiofibroma excision efficiently lowered the incidence of postoperative bleeding and should therefore be advised to patients for better treatment.

Future Finding: Future Studies must be undertaken with bigger sample sizes to better confirm this Study's results. Studies conducted over a long period are also required to evaluate angiofibroma recurrence and the long-term neurological and vascular effects of preoperative Embolization and ECL. Preoperative imaging should also be incorporated for a more thorough evaluation of the modality's effectiveness and better patient selection.

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