

Arteriovenous Malformation of Upper Lip - a short cure for gross deformity

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ABSTRACT

Aim: To evaluate the safety and success of facial artery ligation alone in arteriovenous malformation of upper lip in non-affording patients.

Methodology: This prospective study was conducted at Department of Plastic surgery, on 11 consecutive patients with recurrent upper lip arteriovenous malformation who couldn't afford angioembolization and frequent hospital visits for staged procedures. We did debulking of lesion after facial artery ligation and cosmetic lip correction.

Results: Total 11 patients (9 males and 2 females) were included in this study. Majority of patients showed satisfactory results with facial artery ligation alone. One patient lost the follow up. No significant complication was noted in any patient. No recurrence was noted at 6 months and 1 year follow-up. Patient satisfaction rate remained 8.6 ± 0.96 as per VAC.

Conclusion: facial artery ligation alone provides an easy and approachable option for arteriovenous malformation where cost affordability for angioembolization and repeated hospital visits are main limitations.

Keywords: Arteriovenous malformation, endovascular embolization, debulking, recurrence, cosmetic

INTRODUCTION

Vascular tissue anomalies are the group of lesions originated from blood vessels and lymphatics. Mullikin and Glowacki broadly classified these lesions into haemangioma and vascular malformation¹. In 1818, James wardrop, a London surgeon was the first who recognized the difference between the two². Both the haemangioma and the vascular malformation vary significantly in their clinical behaviour, radiological and histological appearance. Vascular malformations can be categorized either according to the type of vessel involved or as high flow and low flow lesions. AVM is included in high flow lesions. Head and neck AVMs are very rare and accounts for only 0.1% of population³. These lesions can be asymptomatic or may increase in size to the extent causing cosmetic and functional problems. Besides the detailed history and clinical presentation, radiological investigations have their own importance in determining the extent and flow dynamics of such lesions². Multidisciplinary approach always remains the treatment of choice for high flow malformations though it always remains challenging⁴. In this era of medical advancement, surgical resection following endovascular embolization is considered the treatment of choice^{5,6,7,8,9,10}.

Though this treatment modality has its own benefits but it has certain limitations like cost affectivity and multiple visits to hospital setting. In the developing countries where cost affectivity is the major concern of majority of patients and in the era of covid-19 when minimum hospital visits should be a priority, such lesions need a treatment which can decrease the burden of disease in minimum cost and single hospital visit.

We represent a case of recurrent AVM of cheek and upper lip in 17 years young male which got treated by fascial artery ligation alone.

METHODOLOGY

This is a retrospective observational study conducted at Plastic & Reconstructive Surgery Department, Services Institute of medical sciences, Lahore from March 2020 to March 2021. The study protocol was approved by the Institutional Review Board, Services Institute of Medical Sciences / SHL (Ref No. IRB/2021/847/SIMS). Demographic and clinical data of eleven patients with arteriovenous malformation of upper lip who were non-affording for angioembolization and refused for multiple hospital visits is

collected. Patients having incomplete pre-operative, per-operative findings and follow up less than 6 months were excluded. Patients of age group between 5 years and 70 years of either gender were considered. Demographic data including age, gender and comorbidities were noted. All patients were advised initial radiological investigations. Outcomes were assessed in terms of recurrence and patient satisfaction scoring.

Surgical technique: All the patients underwent initial Doppler study to check the nature of lesion followed by CT angiogram to locate the main feeding vessel. Initial plan was of angioembolization followed by complete excision within 48 hours of embolization, but the treatment was costly. Whole plan was discussed with the patients but few patients refused for this treatment modality because of cost affordability and concerns for multiple hospital visits in the time of COVID-9 pandemics. Keeping in view the physical discomfort and cosmetic disfigurement, an alternative plan was made to ligate the facial artery with maximum debulking in the same setting. Surgery was scheduled and procedure was done under general anaesthesia. All patients enrolled in this study were operated by same operative team. Initially, control of facial artery was taken and was ligated. Upper labial incision was made along the vermilion border, bleeders were identified and circumferential ligation was done using 4'0 vicryl (Fig. 1d, 1e). Orbicularis oris muscle reduction was done minimally; debulking of excess tissue was done. Two third of lesion was excised. Lip deformity was corrected with this excision (Fig. 1f). Intravenous analgesics were prescribed for postoperative pain control. Patients remained admitted for initial 5 days and discharged on 5th postop day. Chin belt was advised for 3 months.

RESULT

Total 11 patients with AVM were included in this study. It included 9 males (81.8%) and 2 females (18.2). Mean age of patients was 24.55 ± 4.43 . One patient lost the follow up. Patients remained well in initial postoperative period and reported improvement in their physical discomfort as well as cosmetic disfigurement (Fig 2a, 2b). Mean satisfaction score as per VAC remained 8.6 ± 0.96 . Follow up was done at 6 months and 1 year. No recurrence was reported even in late follow-up (Fig 2c, 2d). Hence recurrence rate remained 0%. No significant complication was noted in any patient.

Received on 07-08-2021

Accepted on 27-02-2022

Fig. 1: Pre operative anterior view(A), pre operative basal view(B), pre operative lateral view(C), upper labial incision and facial artery control(D), final closure(E,F)



Fig. 2: Initial follow-up anterior view(A), Basal view(B), Late follow up at 6 month(C), Follow up at 1 year(D).



DISCUSSION

Mullikin and Glowacki classified the vascular lesions into haemangioma and vascular malformation¹. In 1881, James Wardrop, a London surgeon, described the difference in both anomalies². These tumours and malformations show extensive variations in their clinical behaviour, radiological appearance and histological nature. Vascular malformations are the results of abnormal development of vascular element during embryonic and fetal life. These lesions don't have an involution phase therefore do not regress but persist throughout the life. Contrary to it, haemangioma mostly regress spontaneously therefore wait and see approach is recommended for these lesions. Vascular malformation can be classified as hematic or lymphatic in nature depending on the vessels involved. They are subcategorized into high flow lesion and low flow lesions. Facial AVM are high flow abnormal fistulous channels having direct communications between arteries and veins and thus bypassing the capillaries¹. Though these lesions are very rare but they can be appear in any part of body with 0.1% incidence in head and neck³. They are congenital in nature but may be silent. Any external or internal factor like infection, trauma and hormonal changes during puberty or pregnancy may stimulate the rapid expansion⁷.

Clinical presentation may vary from asymptomatic lesions to a functional and cosmetic deformity. Small asymptomatic lesions

do not require any active intervention rather wait and watch approach is recommended at this stage. However active treatment is required once these lesions enter in expansion stage. Though the diagnosis is clinical but the extent of lesion, flow dynamics and the nature of involved vasculature is best diagnosed with radiological investigation like magnetic resonance imaging². Their tendency to grow rapidly makes these lesion a therapeutic challenge¹.

Multidisciplinary approach always remains the right choice for such high flow lesions³. Surgical resection following endovascular embolization may give satisfactory results but cost affordability and frequent hospital visits make this modality less favourable in developing countries. In our patient, facial artery ligation followed by debulking in the same setting not only reduced the burden of cost but also limited his hospital visit. Cosmetic disfigurement was also well corrected by debulking the lesion. 6 month follow-up showed no recurrence.

CONCLUSION

AVM are uncommon lesions in head and neck regions. Treatment is challenging and multimodal therapy is frequently indicated. Though preoperative embolization and surgical resection is best effective modality, we can't ignore the affordability concerns in the setting of developing countries. Keeping in view the issue and demands of current pandemic, facial artery ligation followed by surgical excision / debulking can be a reasonable salvageable option for such lesions.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support: Nil

Conflict of interest: Nil

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