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SINGLE STAGE SURGICAL EXCISION OF FACIAL VASCULAR MALFORMATION WITHOUT PREOPERATIVE ADJUVANT TREATMENT - OUR EXPERIENCE OF 10 CASES

Plastic Surgery

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ABSTRACT

Background: Vascular malformations generally present in young population. Non-invasive techniques with or without surgery are available, however surgical treatment has been found to be most definitive modality of treatment. In this study, we are presenting our experience of single stage partial/total excision with emphasis on the post-operative outcome. The aim of the study was to evaluate criteria for case selection, freedom from symptoms, cosmetic outcome, functional improvement, long term post-operative result and quality of life.

Methods: This study was performed to assess outcome of surgical treatment for facial vascular malformation. All patients were offered primary surgery. The post-operative follow-up period was minimum 6 months and maximum for 2 years.

Results: In selective cases of facial vascular malformation, primary surgical excision is an excellent method of treatment without any adjuvant treatment and gives a good patient satisfaction rate which may be attributed to satisfactory cosmetic outcome.

KEYWORDS

Laser, Sclerotheraphy, vascular malformation

INTRODUCTION

Vascular Malformation (VM) can be congenital or post-traumatic in etiology[1]. Congenital VM usually present in children and adolescents that commonly cause cosmetic disfigurement along with functional symptoms. There are multiple pre-operative adjuvant treatment modalities mainly aimed at reducing the size/extent of the lesion so as to minimize the surgical dissection during excision and reduce the chances of intra-operative bleeding. The various options are Beta blocker in children, sclerotheraphy, embolization, LASER[2-6]. But none of them can be definitive and often not cost effective. Certain cases as individualized on criteria of location, size, extension into surrounding structures and flow rate can be offered primary surgery as the single stage treatment option safely which may help in decreasing total treatment duration and cost and increasing patient compliance and satisfaction without increasing morbidity or complication. The contrast enhanced MRI angiography of the particular region containing the lesion is very helpful in delineating the extent of the VM, the tissue plains, vital structures in the vicinity and the organs involved. The type of the VM and the MRI angiography together guide us to select the surgical/non-surgical method of treatment[7]. Also, it helps us to identify limitations of various treatment modalities and challenges faced during the course of the treatment. Here we are presenting our experience of treatment of VM with surgery as the first modality of treatment.

METHODS

This is a short term observational study to assess outcome of primary surgical treatment for facial Vascular Malformation (VM). Total 10 patients were operated from August 2015 to January 2019. All the patients were offered surgery as the primary modality of treatment on basis of size, location and flow rate through lesion as assessed by MRI/Colour Doppler. The minimum follow up period after surgery was 6 months and maximum of 4 years. During follow up period functional and cosmetic outcome of patients were assessed.

RESULTS

All 10 patients in our study were below age of 40 years. All patients had VM confined to facial region. All were evaluated with Doppler ultrasound/MRI and their extension into surrounding vital structure was ruled out and all were offered single stage surgical excision. Out of 10, 7 were male and 3 were female. Six had cheek tumor while four had lip tumor. All cheek tumors were intraoral except one patient who had lesion extra orally. HPE reports were suggestive of AVM for One patient, venous malformation for seven, haemangioma for one and lymphatic malformation for one patient. None of the patient required blood transfusion nor had any wound complications. Average hospital stay was 4 days. Two patients had recurrence, both of which were smaller than original lesion over period of 3 years, both were managed with sclerotherapy. Among them one patient with venous malformation required single session while the other patient with lymphatic malformation required two sessions of sclerotherapy. All patients were satisfied with the overall surgical outcome. Results are shown in table 1.

Table 1

S.no.	Age/sex	Location	Histopathology	Recurrence
1	16y/M	Cheek	Venous malformation	no
2	32y/M	Lip	Haemangioma	No
3	23Y/F	Lip	Venous malformation	No
4	24y/F	Cheek	Venous malformation	yes
5	30y/M	Cheek	Venous malformation	No
6	29y/M	Cheek	AV malformation	no
7	35y/F	Lip	Venous malformation	No
8	27y/M	Cheek	Lymphatic malformation	Yes
9	38Y/m	Cheek	Venous malformation	No
10	33y/M	Cheek	Venous malformation	No

Case 1

A 23y female with lesion over upper lip, managed with surgery only (figure 1).

Figure 1A) pre op

Figure 1B) late post op result

Case 2

A 14yr old male with lesion over upper lip, managed with surgery only (figure 2).

Figure 2A) pre op

Figure 2B) late post op result

DISCUSSION

Vascular tumors are mainly classified into hemangiomas and vascular malformations. Hemangiomas are characterized by a history of rapid neonatal growth, endothelial hyperplasia during the proliferative phase and finally fibrosis with reduced cellularity during the Involutionary phase. On the other hand, vascular malformations are characterized by being present at birth, growing with the child, and have a normal rate of endothelial turnover[8].

The patient with vascular malformation usually present with pain, functional impairment, aesthetic disfigurement of the affected body part and rarely, bleeding[9]. There is no fixed or documented protocol during the selection of various treatment modalities for vascular malformation of any sites in body[10]. The basic factors which decide the treatment modality in vascular tumors/ malformations are:

- Age of the patient
- Site of the lesion
- Involvement of the surrounding vital structure/s on contrast enhanced MRI scan
- Surgeons past experience of treating VM
- Patient's and their relatives' knowledge about the disease/ syndrome and willingness for treatment and long term follow up.

The common non-surgical methods for treatment of various vascular malformations are LASER (Pulses Dye) and 5% monoethanolamine oleate sclerotherapy[3, 4]. There are advantages and disadvantages for both surgical and nonsurgical methods of treatment of large vascular malformations. LASER is in mainly advantageous in cutaneous vascular malformations like port wine stain in pediatric age groups[8]. The disadvantages of the laser photocoagulation are multiple sitting, blistering, tissue necrosis which may cause bleeding, tissue edema, intraoral infection and hyper/hypo-pigmentation[11]. The main reported complications of sclerotheraphy are renal, nerve and muscle damage along with pulmonary embolism and rarely cardiovascular collapse[12]. The main disadvantages of surgical therapy are intra-operative bleeding, injury to nerve/ surrounding structure and post-operative scar.

The patient selection for surgery is based on the site and size of mass in tissue and age of the patient. The surgical approach to any vascular malformation has to be individualized based on clinical examination of the patient, radiological images, intra-operative findings and review of literature on results of surgical treatment of VM. The primary surgical excision of the VM is done in view of the cost factor and non availability of the treatment by interventional angiography and embolization for preoperative reduction in the size of the lesion[13]. There are other measures of minimizing the blood loss like intra-operative hypotension, bipolar electro-cautery, good surgical expertise and knowledge of Anatomy of the feeder vessel. The main aim of this article is to present our experience of 10 cases of facial vascular malformations in various age group and criteria for selection for the primary surgical intervention without any adjuvant therapy[13,14].

CONCLUSION

During this study, we observed that the patients preferred primary surgery over adjuvant treatment for the treatment of VM which can be attributed to immediate resolution of mass, satisfactory functional outcome and acceptable cosmetic appearance. Most patients were initially apprehensive in immediate post operative period for apparent swelling over face due to edema for initial few days which were alleviated with ice fomentation within first week itself. This was also helpful for long term patient compliance and follow up. Therefore, the patients with VM may be offered surgery as the primary treatment modality based on following criteria for case selection:

- Well localized tumor mass
- Well established vascular anatomy by MR angiography
- Feasibility of controlling the feeder vessel intraoperatively
- Well maintained surgical plains between the structures involved by the vascular malformation and absence of invasion of any vital structure in immediate vicinity
- Possibility of minimal blood loss by use of intra-operative hypotension, tourniquet and bipolar electrocautery.

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