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Therapeutic Difficulties in the Surgical Management of Vascular Anomalies oft Face: About 04 Cases

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Abstract **Case Series**

Vascular malformations are rare, their therapeutic management is multidisciplinary and still remains one of the most difficult today, essentially involving the plastic surgeon in excision and reconstruction. Surgery is a main therapeutic weapon being reserved for progressive and/or complicated forms in combination or not with prior selective embolization. We conducted a retrospective and descriptive study including five patients collected from the plastic surgery department of the CHU Mohammed VI in Marrakech with a vascular malformation. Through this study we will report our experience, case by case in the surgical management of vascular malformations with the various difficulties encountered during this one.

Keywords: Hemangioma, Arteriovenous Malformations, Embolization, Excision, Recidivism.

INTRODUCTION

Vascular anomalies are often congenital, they are rare, mainly represented by hemangiomas and vascular malformations which are quite distinct. Hemangiomas are a vascular tumor related to a transient proliferation of endothelial cells, they are circumscribed benign tumors, they double in size the first year, stabilize up to 18 months. Total regression is not the rule but is observed at the age of 5-6 years. This spontaneous regression can leave unsightly skin (sagging skin). Malformations are acquired during embryonic life and never regress. The arteriovenous malformations are abnormal communications between arteries and veins where the nidus is found, they are aggressive. Their therapeutic management is multidisciplinary and still remains today one of the most difficult. Surgery is a main therapeutic weapon reserved for progressive and/or complicated forms in combi- nation or not with selective embolization.

The originality of this study is, on the one hand, to present a series of vascular anomalies treated and monitored in our plastic surgery department, and on the other hand, to compare the rapeutic results with those of the literature.

MATERIEL AND METHODES

This work is a retrospective study with a descriptive aim and analytical from January 2017 to January 2022 in patients admitted to the surgery department plastic from the Marrakech University Hospital for vascular anomalies. Patient data was collected on the basis of medical records and opera- ting reports using the archives and the HOSIX administrative system and finally a previously established operating sheet. in terms of methods, our patients benefited from surgical excision preceded by selective sclerotherapy.

RESULTS

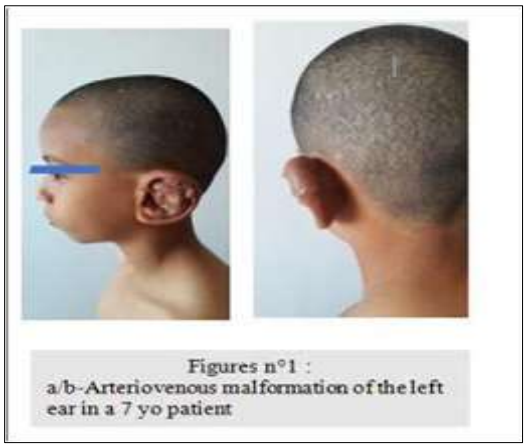
Case N°1

The first patient is a child who consulted at the age of seven with an arteriovenous mal- formation of the left ear evolving since birth, and fed by a branch of the posterior auricular artery. The patient benefited from targeted sclerotherapy at the level of the nidus for 13 sessions thus allowing this malformation to regress in size, then the patient benefited from ligation of the feeder artery.

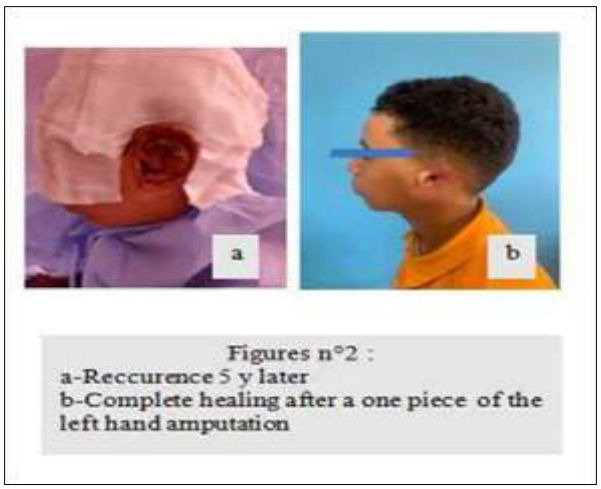
Five years later, the patient consulted for an in- crease in size and spontaneous bleeding, both explained by neovascularization, an embolization was discussed then indicated and scheduled, something not achieved for

reasons related to the state health emergency related to covid.

A one-piece amputation of his left ear was programmed with simple and satisfactory postoperative.



Figures n°1 :
a/b-Arteriovenous malformation of the left ear in a 7 yo patient



Figures n°2 :
a-Reccurence 5 y later
b-Complete healing after a one piece of the left hand amputation

Case N°2

The second patient is a six-year-old child with a hemangioma on the forehead that has been evolving since birth. She benefited from five sclerotherapy sessions in combination with beta-blockers, which allowed us to obtain a limitation with a regression of the size of the tumor, thus facilitating its surgical excision with simple post-operative follow-ups and without complications.

She thus facilitating its surgical excision with simple and uncomplicated post-operative follow-up.

Figures n°3 :
a-Forhead hemangioma in a 5yo child
b-Intraoperative photo of tumor excision

Case N°3

The third case is a twenty-nine-year-old patient with a hemangioma of the lower and up- per right eyelid who underwent excision of each of the lesions but in two stages starting by the upper eyelid one.

Figures n°4 : Intra-operative figures
a- Upper eyelid hemangioma excision
b- Lower eyelid hemangioma excision

Case N°4

The last case is a fourteen-year-old patient with an untreated hemangioma of the right labial commissure with an unsightly scar after spontaneous regression of the tumor.

A surgical time was indicated in order to improve this scar by opting for a zigzag incision then a direct suture in three planes.

Eighteen months after the patient consults again for an unsightly appearance of the scar for which Further management will be discussed.

Figures n°5 :
a- unsightly scar after spontaneous regression of a hemangioma of the right labial commissure
b- immediate post operative surgical time (zigzag incision)
c- eighteen months postoperative with an unsightly appearance requiring surgical revision

DISCUSSION

Vascular malformations can be broadly classified into high and low flow, and the former includes capillary, venous, and lymphatic mal-formations. Unlike vascular tumours, they dis- play no proliferative cellular activity and, given that they do not usually involute, they require treatment at some point.

For extensive cervicofacial lesions the management is not easy because of the functional and aesthetic importance of the different parts of the face, and the presence of several delicate structures (such as the facial nerve) that are sometimes captured inside the mass. Currently, combined treatment is usually suggested for such cases, and several reports have described different treatments, although there is still a controversy about which is the most suitable [1–4]. Options include sclerosing agents, resection, or laser, alone or in combination.

Concerning the Lip case, Haemangiomas and capillary–venous malformations, more often involve the lip than arteriovenous malformations. Haemangiomas are usually present during the neonatal period and grow rapidly, whereas vascular malformations are present at birth and grow at the same rate as the child [8]. Some authors have advocated conservative treatment for such lesions, particularly when resection carries high morbidity. However, the results after conservative treatment in terms of recurrence have not been completely satisfactory or any kind of vascular malformation. For this reason, we add some clarifying indications to offer simple and effective management for large vascular malformations located in the lower face. However, some authors have re- ported that for very large tumours complete resolution cannot be obtained with any of the techniques currently available [5]. Reconstruction of labial defects remains a the rapeutic challenge, as it has [2], fundamental requirements: achievement of good cosmesis and conservation of labial function [5]. A malformation that affects the lip can severely affect a patient's quality of life by causing cosmetic and functional impairment. In such cases, patients must be offered the most suitable and definitive approach. Conservative treatment of these cases in

particular can be time-consuming and of doubtful efficacy.

For large tumours, resection should be the first choice even though sclerotherapy first can be helpful to overcome complications such as haemorrhage and the mutilating effect of the procedure. We think that to attempt to treat these lesions solely non-surgically is not entirely correct, as neither sclerotherapy nor laser can eliminate the malformation completely, and although they can shrink the tumour and give symptomatic improvement, recurrence is often evident only a few months after treatment [6].

For other authors, when the lesion is cosmetically and functionally acceptable, the authors propose conservative management waiting for therapeutic progress expected from genetics re- search. Otherwise management require embolization and complete surgical treatment with lip reconstruction [7]. Vascular malformations of the head and neck are rare lesions. Several cases have reported unusual locations, including the face, lips, and eyelids [9–11].

Concerning our patient presented with a face Arteriovenous malformations (AVM) specifically located on the right upper eyelid. To our knowledge, only a few cases of eyelid Arteriovenous malformations have been reported to date [12]. Diagnosis of these lesions is primarily made based on the patient's history and clinical presentation. AVMs mostly present as painful pulsating swelling, and a bruit is usually heard over the lesion.

Radiographic evaluation, including Doppler ultra- sonography, CT, and magnetic resonance imaging, is helpful to identify the exact location and for the assessment of the flow dynamics. However, catheter angiography remains the gold standard test [10].

Surgical excision, endovascular embolization, laser therapy, and combination therapy are different approaches to treating AVMs. According to the literature, treatment should be individualized for each patient. Cases treated with endovascular embolization followed by surgical excision showed the highest success rates since embolization is usedto minimize hemorrhage du- ring resection [11, 12]. However, the embolization method carries its risks. A previous study has re- ported a patient with eyelid AVM who had developed retinal artery occlusion after being treated with embolization [13]. Another patient refused to undergo embolization and was successfully treated with surgical excision only [12]. As in our case, endovascular embolization of the feeding vessels before surgery was not possible as dis- cussed earlier. However, the following surgical excision was successful with minimal bleeding. Total surgical excision remains the goal of treatment in head and neck AVMs. Reports emphasize on the importance of complete resection, as incomplete embolization without resection can lead to recurrence of the lesion through recruitment of new feeding arteries. Nonetheless, total excision gives better cosmetic results [11]. Be- cause these lesions have a tendency to recur, follow up is recommended for all patients with AVMs [9-14].

About the Auricular AVMs are a rare but serious condition. Treatment of these lesions is primarily aimed at complete removal to avoid recurrence [15]. The treatment usually recommended involves embolization followed by surgical resection [16, 17]. The ear receives its blood supply via the superficial temporal, posterior auricular, and occipital arteries. The nidus of the AVM typically is supplied by one or more of these main vessels [18]. Due to the fact that the ear is supplied by the terminal branches of the aforementioned arteries, embolization-induced ischemia and necrosis are more likely to occur in cases of ear AVMs than with AVMs treated elsewhere in the body. Due to the rarity of this entity, the few re- ports that described exclusive embolization to treat this condition have included a limited number of patients, and the success of the procedure was based on the expertise of the treating surgeon. Based on established treatment re- commendations, most clinicians usually prefer resection of ear AVMs over ear embolization as a unique approach. Thus, surgical management forms the foundation of treatment to manage postembolization necrosis and block the blood flow at the level of the AVM nidus. Presurgical embolization is useful to reduce intraoperative bleeding. It differs from isolated therapeutic embolization with respect to the agents used for the procedure and specific technical details regarding positioning of the embolization agent. Localized ear AVMs are associated with a low risk of bleeding, and resection can be accomplished without preoperative embolization.

Patients with involvement of the entire ear and those with extra-auricular extension require preoperative embolization regardless of the patient's age. Total resection of AVMs should be planned as an essential step following presurgical embolization, with primary closure of the ear defect whenever possible.

Definitive treatment must be planned based on the resultant defect and cartilage exposure, and such treatment could range from primary closure with local flaps to delayed total ear reconstruction. Ear AVMs have low incidence, and few re- ports in the literature have defined guidelines for its management [19, 20].

Treatment should be focused on the extent of resection. A disease-free outcome is important regardless of the complexity of the final reconstruction and the cosmesis achieved. The high recurrence rate associated with partial resections indicates the need for a more aggressive treatment approach even if it results in a major ear defect. Therefore, complete removal and total ear reconstruction must be considered in patients at high risk of recurrence [21, 22].

Primary closure must be attempted in cases of partial-thickness resection even if this is likely to cause some anatomical distortion, which can be treated by delayed definitive reconstruction. Immediate reconstruction is mandatory, and cartilage coverage methods using local flaps or skin graft are required in cases of partial skin resection without cartilaginous involvement. Total ear reconstruction should be postponed for at least 6 months in cases of ear amputation to confirm the absence of regrowth. The loss of a reconstructed ear (secondary to regrowth) is an extremely com- plex situation in plastic surgery, and secondary reconstruction is rarelycomparable to the first at- tempt [23].

CONCLUSION

Arteriovenous malformations of the face are rare congenital lesions that progress with time. Proper history, clinical examination, and different imaging modalities are required for an accurate diagnosis. Treatment should be individualized according to the patient's needs and the complexity of the lesion. Total excision remains the goalof treatment. A preoperative endovascular embolization, if possible, can be used to minimize the bleeding and achieve better outcomes. Patients with AVMs have a risk of recurrence. As a result, follow-up is advisable for these patients.

Conflict of Interest : No conflit of interest

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