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Vascular Anomalies involving Lip: experiences at Rajshahi

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Original Research Article **Abstract:** **DOI:**

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Background: Vascular anomalies in the head and neck area is not rare. It is especially common for vascular anomalies to involve the lip. The lips are functionally and aesthetically very important component of the head and neck area. A retrospective analysis of data from our center was performed to understand the characteristics and treatment requirements of vascular anomalies of the lip and to establish the reconstructive approaches to make the involved lip aesthetically more acceptable. ***Methods:*** A retrospective study was performed on patients diagnosed with vascular anomalies of the upper or lower lip from July 2015 to June 2021. Using clinical photographs, radiologic findings, and patient records, the diagnosis of each case and the location of the vascular anomaly were recorded along with information about treatment and follow up. Patients' satisfaction level was observed. ***Results:*** A total of 40 patients were diagnosed with vascular anomalies of lip over this time. Surgical treatment without embolization, sclerotherapy, medication only and observation were the treatment strategies adopted in these cases. ***Conclusions:*** Vascular anomalies of the lip should be diagnosed accurately. Several techniques were used to treat vascular anomalies of the lip. When surgical excision is indicated for the correction of vascular anomalies of the lip, the aesthetic and functional characteristic of the lip should be considered.

Keywords: Vascular Anomalies / Lip / Clinical approaches.

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INTRODUCTION

Arteriovenous malformations (AVM) are structural vascular anomalies which occur as the result of errors in the morphogenesis of vessels between 4th and 6th weeks of gestation[1,2]. Histologically, AVMs are composed of numerous aberrant arteriovenous shunts without normal interconnecting capillary bed and these tangled vessels consist of multiple arterial and venous compartments without muscular support, endothelial proliferation, and giant cells. They are usually present at birth but sometimes may not be clinically evident. They have a normal growth rate and endothelial turnover, showing proportionate growth in relation to body volume and present no signs of spontaneous involution. On occasions, rapid expansion can occur following trauma, Infection, and hormonal changes including puberty or pregnancy[3–10].

AVMs are rare lesions and approximately half of them are in head and neck region. They can be asymptomatic or compress and destroy the surrounding tissue to cause functional and cosmetic problems like facial asymmetry, pain, bone destruction and unexpected hemorrhage. With this circumstance, treatment is inevitable and varies between nonsurgical and surgical modalities e.g, using sclerosing agent like ethanol or glue, ligation of feeding arteries, curettage and resection. Nowadays, surgical resection following endovascular embolization is the treatment of choice and immediate reconstruction of the remnant defect is necessary [1, 2, 6, 8,11, 12]. At our center we did surgical excision without embolization, and we advised propranolol drug at follow up period.

Vascular anomalies can occur throughout the body but are more common in the head and neck than in the extremities [13]. Vascular anomalies occur more frequently in the lips than in any other single area of the body. The lip is important both functionally and cosmetically. Thus, vascular anomalies of the lips can affect the facial anatomy and result in anatomical distortions, depending on the degree of severity. In sense of the functional and aesthetic importance of the lips, we always preferred surgical excision of the vascular lesion followed by reconstruction to restore its anatomy as possible.

METHODS

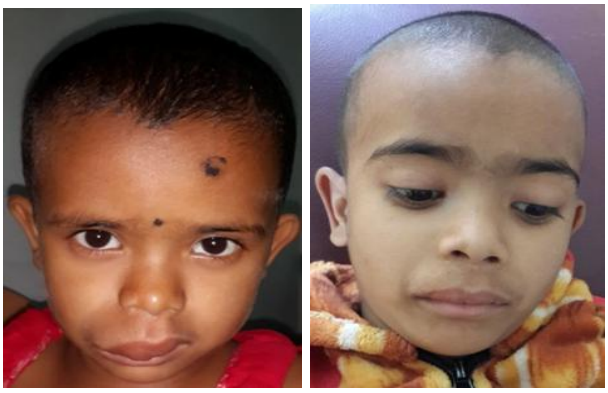
In this retrospective study, we screened patients of all age group who visited our OPD between July 2015 and June 2021 diagnosed as vascular anomalies of the lip. The clinical photographs and radiologic findings of each patient were analyzed, along with the location and of the vascular anomaly. We collected patient histories and performed physical examinations,

determined the vascular anomaly subtype using Doppler ultrasonography, and assessed the extent of the lesion using magnetic resonance imaging (MRI).

When surgery was performed, histological findings were confirmed through biopsy[3]. Treatment outcomes were continuously assessed, and treatment was repeated when necessary. Surgical excision without embolization, sclerotherapy, medication only, and observation were employed to treat vascular anomalies. Patients received multiple treatment in cases involving postoperative marginal remission or recurrence, as noted through observational monitoring. The outcomes were reviewed and were the basis for formulation of an algorithm for the clinical treatment of vascular anomalies.

RESULTS

A total of 40 patients were diagnosed with vascular anomalies of lip in our center.



Case:1 (a) Baby with upper lip AVM, (b) 2 years after excision

The age range of the patients was 10 months to 55 years. 16 of the patients were male and 24 were female. The follow-up duration was ranged 1–36 months.

Case 2: upper lip AVM, (a) before and (b) after excision

The anomaly was in the lower lip in 07 patients, the upper lip in 29 patients, and both lips in 04 patients. Most of them were satisfied with this drug therapy. A total of 17 patients underwent surgical excision without embolization, 14 received sclerotherapy only.

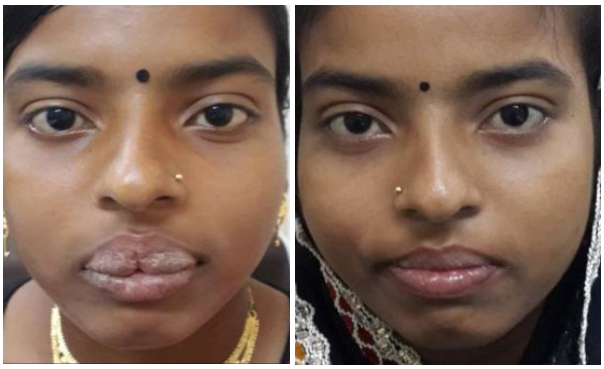
Case 3: (a) Thrombosed AVM, (b) 6 months after excision

We gave a trial on propranolol therapy to all 40 patients. All were observed for improvement as well as further regression.

Case 4: (a) upper lip AVM, (b) 3months after operation

In 27 of the patients, treatment resulted in nearly complete remission, and 09 experienced recurrence and required other procedures, such as sclerotherapy or additional surgical excision.

In addition, 04 were lost to follow-up after three months.



Case 5: AVM both upper and lower lips (a) before and (b) after operation

DISCUSSION

The lip has special anatomical characteristics, such as the white line, white skin roll, red line, vermilion, and Cupid's bow[14]. First, the vascular anomaly subtype should be diagnosed using Doppler ultrasonography, and the extent of the lesion must be determined by MRI to guide the direction of treatment.

Case 6: AVM lower lip with gross deformity (a) before (b) after operation

Various masses can develop on the lips, including malignancies and neurologic tumors, such as neurofibromas as well as vascular tumors and malformations. In occasional cases where the diagnosis was difficult or uncertain, a definitive diagnosis was made through biopsy. The most frequent diagnosis in this study was hemangioma, followed by capillary malformation and arteriovenous malformation. Hemangioma is the most common tumor of infancy, and 65% of such cases of hemangioma involve the head and neck region [15].

Case 7: Neglected AVM lower lip (a) before and (b) after operation

Histologically hemangioma can be divided into two subtypes: hemangioma of infancy and congenital hemangioma. Hemangioma is caused by vascular endothelial cell hyperplasia, the cause of which is not yet clearly understood. Propranolol is commonly administered to treat cases of hemangioma before involution[16,17], and surgical excision or sclerotherapy is considered after involution.

Venous malformation occurs due to errors in vascular morphogenesis. Various types of venous malformation occur, ranging from small and well-localized masses to diffuse. According to Boon et al [18], 47% of cases of venous malformation occur in the head and neck region, 40% on the extremities, and 13% on the trunk. Furthermore, venous malformation is typically sporadic and 90% of cases show a solitary lesion [19]. Venous malformation also occurs on the lip, presenting as a solitary lesion. Sclerotherapy is the first choice for the treatment of venous malformation, but surgical excision may be performed in cases where the lesion is small, solitary, and well localized.

Capillary malformation is a vascular malformation known as a port wine stain that can occur throughout the body. It can be well localized or extensive. Pulsed-dye laser treatment is the first line treatment for capillary malformation, although CO2 laser can be also effective. Pulsed-dye laser treatment is known to be more effective in treating capillary malformation in the head and neck region than in the extremities [20-22]. Surgical excision can be performed when the area is either functionally or aesthetically important.

Arteriovenous malformation is caused by direct blood shunting from an artery to a vein due to the absence of a capillary bed. The artery and vein can be directly connected by a fistula or indirectly connected by an abnormal vessel channel termed nidus. This occurs frequently in the central nervous system, and the most common extra cranial site is the head and neck [23,24]. Therefore, arteriovenous malformation is commonly observed on the lip and a palpable thrill or bruit may exist. Arteriovenous malformation of the lip is also diagnosed using Doppler ultrasonography and MRI, after which a treatment plan is proposed. The main options for the treatment of arteriovenous malformation are surgical excision with or without preoperative embolization and sclerotherapy.

Indications for the surgical excision of vascular anomalies of the lip must be strictly applied. Surgical excision should be considered with care, because the lip has a diverse and unique anatomy. And damage to these structures during excision may result in aesthetic problems [25].

Moreover, considering the common recurrence of vascular anomalies and invisible pathological lesions, complete resection is not guaranteed, so before surgical treatment adequate counselling is mandatory.

CONCLUSION

Treatment options of AVM on lip or near lip area include surgical excision, sclerotherapy, laser therapy, and medical treatment. Sometimes combination therapy may be needed. The unique anatomical characteristics of the lips should be considered when performing surgical excisions as lip result important both functionally and aesthetically.

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