

CASE REPORT

Sclerotherapy for the management of venous malformations: Experience from a single institution in Afghanistan

Mohammad Tareq Rahimi¹ | Tawab Baryali² | Ahmad Rashad Akbari³ |
Ramin Saadaat⁴  | Mohibullah Salehzai⁵ | Ahmed Maseh Haidary⁴ 

¹Department of Paediatric Surgery, French Medical Institute for Mothers and Children Kabul, Kabul, Afghanistan

²Department of Quality Assurance, French Medical Institute for Mothers and Children Kabul, Kabul, Afghanistan

³Department of Anaesthesia and Renimation, French Medical Institute for Mothers and Children Kabul, Kabul, Afghanistan

⁴Department of Pathology and Clinical Laboratory, French Medical Institute for Mothers and Children Kabul, Kabul, Afghanistan

⁵Department of Radiology, French Medical Institute for Mothers and Children Kabul, Kabul, Afghanistan

Correspondence

Ahmed Maseh Haidary, Consultant Haemato-pathologist and Blood Banker, French Medical Institute for Mothers and Children, Kabul, Kabul, Afghanistan.

Email: ahmed.maseh9t9@gmail.com

Key Clinical Message

Sclerotherapy is a convenient modality for the treatment of venous malformation. Ethanol as a sclerosing agent is easily available and cheap. Sclerotherapy for venous malformations has both functional as well as aesthetic outcome.

KEYWORDS

Afghanistan, sclerotherapy, venous malformations

1 | INTRODUCTION

Vascular malformation occurs due to different intra-uterine developmental abnormalities, which result in anomalous angiogenesis involving the vascular and lymphatic system.¹ According to Mullikin and Glowacki classification, vascular abnormalities can be broadly classified as hemangiomas which are benign vascular lesions with a proliferative and involution phase, and vascular malformations involving arterial, venous, capillary, and lymphatic tissue as well as fistulae.^{2,3}

The incidence of vascular malformations is estimated to be 0.5% of all newborns when it is present in the form of a small lesion.³ The proliferation of vascular malformation is induced by several factors, including hormonal changes especially during puberty, sepsis, ischemia, and trauma.^{1,3}

If we consider the pathological features, only one vessel is involved following trauma-induced vascular malformations whereas multiple vessels are affected following an inherited condition.⁴ The condition can even rarely be familial where the lesion is mostly associated with RASA1 gene abnormalities.⁵

The head and neck are involved in two-third of cases causing cosmetic and functional aberration.⁶ The abnormality remains silent until adolescent age when the lesion evolves into an expansile mass in response to the hormonal changes.⁶

Color Doppler ultrasound, computed tomography (CT) scans, magnetic resonance imaging (MRI), and angiography may be utilized to evaluate the extent of the disease and to rule out skeletal involvement.⁷ Sclerotherapy is the mainstay of treatment with absolute alcohol and sodium

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tetradecyl sulfate being the most commonly used sclerosing agents. Surgery is indicated only in those cases where residual lesions remain after sclerotherapy or for aesthetic purposes.⁷ Alternatively, laser therapy can be useful especially in superficial venous malformations and in oromucosal lesions.^{7,8} Here we present three patients who presented with venous malformations (VMs) involving the lip and requiring 98% ethanol injection as sclerosing agent.

2 | PRESENTATION OF THE CASES

2.1 | Case number 1

A 6-year-old girl, presented with lower lip mass that resulted in significant deformity of the lower lip. The patient also had recurrent bleeding episodes from the lesion. Doppler ultrasound study revealed well-defined hypoechoic mass of heterogeneous echotexture with multiple cystic spaces within the lesion. On color Doppler, there was no detectable signal. Patient underwent two-time sclerotherapy under general anesthesia followed by one minor procedure for lower lip correction. The images before as well as after the procedure are given in [Figure 1A,B](#), respectively.

2.2 | Case number 2

A 17-year-old boy, presented with a mass in the right half of the upper lip that resulted in significant deformity and disfiguring of the upper lip. The patient was otherwise asymptomatic. Apart from preoperative workup,

the patient did not undergo any radiological evaluation. Accordingly, the patient underwent one time sclerotherapy under general anesthesia with intra-operative morphine followed by postoperative nalbuphine and paracetamol for analgesia. The images before as well as after the procedure are given in [Figure 2A,B](#), respectively.

2.3 | Case number 3

17-year-old, girl, presented with purple-brown colored exophytic lesion, measuring 3 × 3 cm, protruding from the buccal surface of the left half of the upper lip up to the junction of the upper and lower lip, that resulted in significant deformity, difficulty in eating, occasional bleeding, and disfiguring. The patient also had recurrent bleeding episodes from the lesion. Contrast enhanced CT revealed a well-defined soft tissue mass with intensely heterogeneous contrast enhancement and coarse focal calcifications involving the skin and subcutaneous tissues in the medial aspect of left cheek (junction of the upper and lower lips) could be representing a vascular malformation they had no problem. Under general anesthesia the patient underwent three times Sclerotherapy with intra-operative morphine for analgesia. Post operatively, nalbuphine as well as paracetamol were advised for analgesia. The images before as well as after the procedure are given in [Figure 3A,B](#), respectively.

3 | DISCUSSION

VMs consist of slow-flow vascular malformations, affecting the venous structures that can vary in size as can



FIGURE 1 (A): VMs involving the lower lip of the 6-year-old girl; (B) image of the same patient after the procedure.

FIGURE 2 (A): VMs involving the lower lip of the 17-year-old boy; (b) image of the same patient after the procedure.

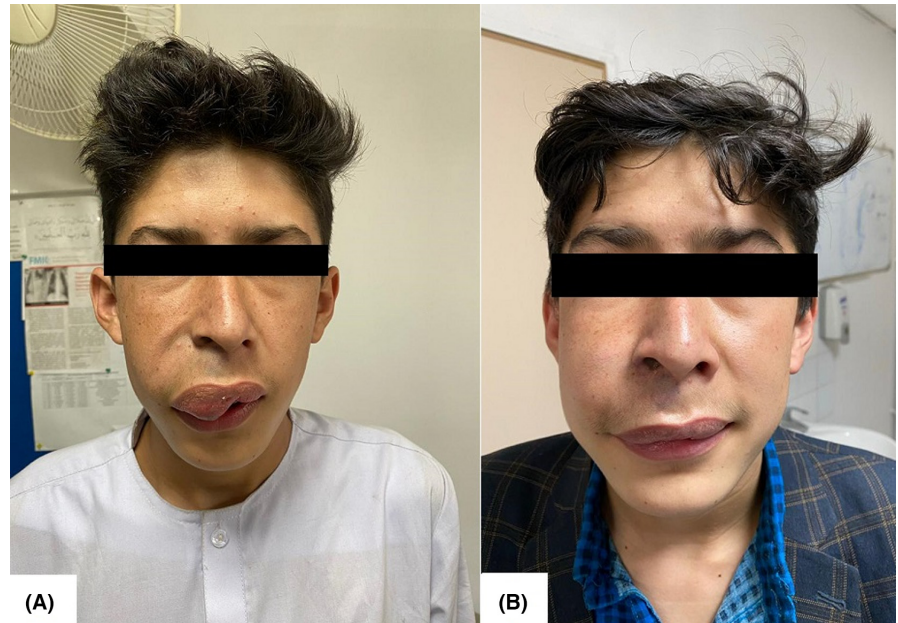


FIGURE 3 (A and B), VMs involving the left upper lip of the 17-year-old girl.



involve any location in the body. VMs occur as a result of developmental abnormalities in the veins.¹ Considering the physical appearance, VMs are characterized by a soft compressible, non-pulsatile tissue mass. In most of the cases the lesion results in a bluish discoloration caused by a bluish tint to the overlying skin.^{2,3}

Head and neck constitute about 50% of the cases while trunk and extremities constitute the rest of the cases.³ Although most venous malformations are in the skin and subcutaneous tissue, they can also involve the underlying muscle, bone, and even the deep abdominal visceral organs.³ Involvement of the skin or underlying tissues may result in light blue discoloration of the skin.³ In patients with large VMs, there is stasis-induced activation of the clothing, that results in consumptive coagulopathy as well as consumptive thrombocytopenia.⁹

VMs are present by birth and rarely associated with congenital syndromes of genetic origin.⁴ VMs overall increase in size as the baby grows.^{4,5} Similarly, the size of the lesion is variable from time to time. VMs have a tendency to grow with the age but then the lesion becomes stable once the individual has attained full growth. They do not regress in size, but sometimes may enlarge secondary to trauma or hormonal changes during puberty or pregnancy.⁵

The classification of VMs was revised in 1992 by the International Society of Vascular Anomalies, on the basis of histological appearance of the abnormal channel, flow characteristics, and clinical behavior as low-flow and high-flow vascular malformations.¹⁰

VMs are visible in the skin and superficial tissue by physical examination. For diagnosis ultrasonography is

useful when the VMs is near the surface but **CT scan and MRI** are the best imaging test to diagnose a VMs, especially to determine the extent of the condition.¹⁰ In our patients, only one case was diagnosed based up on CT scan. The rest were diagnosed either based on the Doppler ultrasound findings or mere physical examination. Treatment options depend upon the location of the lesion, associated symptoms, and complications. Asymptomatic venous malformations must not require any treatment.¹¹ Symptoms may worsen during puberty and pregnancy; therefore, patients must be counseled properly.¹¹ Physical trauma must be avoided and extremity lesions must be supported by elastic stockings.¹¹ In the current case series, we report our experience of managing VMs of the lips with sclerotherapy using 98% ethyl alcohol as the sclerosing agent with very significant aesthetic as well as functional outcomes. Although surgical approaches have evolved with significant advancements, over the past few decades, sclerotherapy by ethyl-alcohol was used because it is easily available and cheap. Other sclerosing agents are not easily available. Surgical techniques have evolved and have advanced over the past few decades. As already described, one of our patients required more than one sclerotherapy procedures, sometimes coupled with surgical repair post operation. Considering the outcome of the procedure and cost-effectiveness, sclerotherapy using 98% ethyl alcohol is a very convenient method for surgical correction of venous malformations.

4 | CONCLUSION

For the VMs affecting the lips, sclerosing therapy using 98% ethyl alcohol as the sclerosing agent is a convenient and efficient modality for the management of VMs, especially in a lower socio-economical setting. As in the cases described here, this method is having good aesthetic outcomes along with preservation of function.

5 | LIMITATIONS OF THE STUDY

1. The case report describes the experience of single institution.
2. Although a weak sclerosing agent, alcohol was used as a sclerosing agent because it is cheap and easily available.

AUTHOR CONTRIBUTIONS

Mohammad Tareq Rahimi: Conceptualization; data curation; investigation; methodology; resources; supervision; validation; visualization; writing – original draft; writing – review and editing. **Tawab Baryali:** Conceptualization; project administration. **Ahmad**

Rashad Akbari: Methodology; supervision; validation. **Ramin Saadaat:** Conceptualization; software; supervision. **Mohibullah Salehzai:** Conceptualization; investigation; resources; visualization. **Ahmed Maseh Haidary:** Conceptualization; methodology; validation; visualization; writing – original draft; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare to have no competing interests.

DATA AVAILABILITY STATEMENT

All generated data is included in this article.

ETHICS STATEMENT

Not applicable.

INFORMED CONSENT

Written informed consents were obtained from the all-patient's legal guardians for publication of this case report and accompanying images. Copy of the written consents shall be made available for review by the Editor-in-Chief of this journal.

ORCID

Ramin Saadaat  <https://orcid.org/0000-0001-8268-6111>
Ahmed Maseh Haidary  <https://orcid.org/0000-0002-4554-8024>

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