

Clinical Study of Sclerotherapy of Oral Vascular Malformations Using Absolute Per-Mucosal Ethanol Injection

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Abstract

Background and objectives: vascular malformations are a difficult entity to treat because they are often extensive and have a tendency to recur after treatment. This study aimed to assess the efficacy of permucosal sclerotherapy with use of absolute ethanol.

Methods: In a clinical prospective study all patients with oral vascular malformations, were enrolled sequentially in this study from Jan 2010-Jan 2012. The provisional diagnosis made upon accurate history and physical examination. Needle aspiration from the vascular malformation was also used for more confirmation. The ethanol was injected very slowly using single puncture with the needle moved in different directions within the lesion to distribute the ethanol throughout the lesion.

A descriptive statistical analysis was performed.

Results: A total of 18 patients (7 male and 11 female) with an age range of 13-38 years, and mean age of 23 years, were presented with vascular malformation and treated. Most of the patients cured by a single injection. One case cured with 4 times repeated injections.

Conclusion: Absolute ethanol injection was effective in the treatment of vascular malformations without complications.

Introduction

Congenital vascular anomalies have been and remain poorly understood. Since 1982 haemangiomas and vascular malformations have been recognised as distinct entities that exhibit unique characteristics and demand appropriately tailored treatment plans. However, "haemangioma" still continues to be used as a clinical and pathological description of many different types of vascular anomalies, which complicates both the care of patients and the interpretation of reports in journals.¹

Vascular malformations are thought to be localized defects in vascular morphogenesis, usually caused by a dysfunction of embryogenesis and vasculogenesis regulator components.²⁻⁶

Over the years, a variety of techniques have been used in the treatment of VM, including irradiation, electrocoagulation, cryotherapy, laser therapy, copper implantation, surgical excision, and sclerotherapy.^{7,8}

In the oral cavity, the lips, tongue, cheek mucosa, and palate are the main areas affected,^{9,10} leading to esthetic changes, pain, functional restrictions, ulceration, and bleeding, as well as dental asymmetry, impaired speech, and obstruction of the upper airways.^{3,8,11}

Absolute alcohol, the most destructive and reliable sclerosant, is widely used in the treatment of vascular malformations because of its low cost, antiseptic quality, wide availability, and ease of use.^{8,12,13}

The published data have reported local side effects, such as pain upon injection, partial or temporary scar, psychological tension, local edema and rash, and a risk of necrosis if sclerosis has been performed incorrectly.^{6,10,14}

For smaller vascular lesions (≤ 30 mm), a single application of the sclerosis-inducing agent might suffice for total resolution.¹⁵ The clinical appearance (soft mass, compressible, non pulsating, blue to bluish-red in colour),^{6,9,11} in association with their evolutionary history, is essential to reach a diagnosis, and diascopy is an important tool in differentiating vascular from nonvascular lesions.¹⁶ There have been attempts to use many sclerosants, including boiling water, sodium morrhuate, absolute ethanol, sodium tetradecyl sulfate, and bleomycin.^{7,8,17-20} This study aimed to assess the efficacy of permucosal sclerotherapy with use of absolute ethanol in the treatment of oral vascular malformations.

Methods:

In a clinical prospective study all patients with oral vascular malformations, (who referred to the Department of Oral and Maxillofacial Surgery/ Rizgree Teaching Hospital/ Erbil/ Iraq), were enrolled sequentially in this study from Jan 2010-Jan 2012. Patients with clinically evident oral soft tissue vascular malformations were included (bony lesions excluded). The size of the malformations included in this study ranged from 1cm-4cm. Each patient gave their consent to the treatment. The provisional diagnosis made upon accurate history (presence at birth, rapidity of proliferations, involution, and presence in adulthood),²¹ and physical examination (soft mass, compressible, non pulsating, blue to bluish-red in colour).^{6,9,11} Needle aspiration from the vascular malformation was also used for more confirmation.

Technique: All the procedures were done under local anesthesia. A disposable 5cc syringe was used for

injecting the absolute ethanol (96%). The amount of ethanol injected was about 1/4 of the vascular malformation size for each case. The ethanol was injected very slowly using single puncture with the needle moved in different directions within the lesion to distribute the ethanol throughout the lesion. Then the patients received dexamethasone 8mg (to prevent allergy and to reduce postoperative reaction) immediately after ethanol injection. Amoxicillin 500mg (1*3) and diclofenac 50mg (1*3) used for five days to reduce postoperative pain and swelling.

After 2 weeks the patients were seen and the tissue response (shape, volume, colour), local complications (ulcer, paralysis, and parasthesia) were evaluated. Patients with larger lesions received more than one injection in 2 weeks interval. The patients were followed up for at least 6 months. A descriptive statistics was used to analyze the data.

Table 1: Anatomic distribution

Site	No.	Percent
Upper Lip	2	11.11%
Lower lip	1	5.56%
Tongue	6	33.33%
Buccal mucosa	5	27.77%
Retromolar area	1	5.56%
Corner of the oral cavity	2	11.11%
Diffused	1	5.56%

From a local burning that lasted for up to 2 hours after injection to edema for up to 48 hours and reports of a hardening sensation of the lesion. No cases of paresthesia or paralysis in the areas affected by the sclerosis-inducing agent were found.

Results:

A total of 18 patients (7 male and 11 female) with an age range of 13-38 years, and mean age of 23 years, were presented with vascular malformation and treated. Table (1) shows the anatomic distribution of the vascular malformation in the oral cavity.

Most of the lesions (15 cases) were within the range of 0.5-2cm in diameter. Two lesions were about 3cm in diameter, and one (more than 4cm) diffused from buccal mucosa to the lip with obvious extraoral swelling. Fifteen cases (0.5-2cm range) were healed completely with single injection after 4 weeks. Two cases (3cm) were completely healed with 2 injections in 2 weeks interval. The final case healed with 4 injections in two weeks interval. The signs and symptoms noted after injection ranged in intensity

The mean follow up period was 8 months. No recurrent case was reported during the period of this study. No surgical interventions indicated in any case.

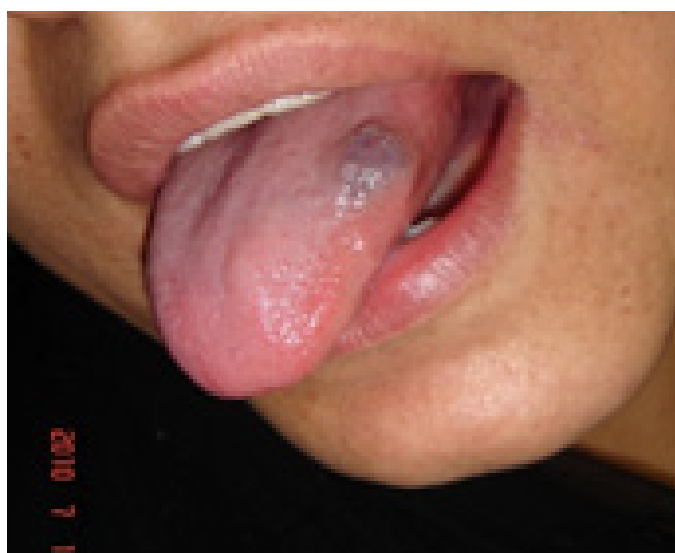


Figure 1: Vascular malformation on the lateral border of the tongue.

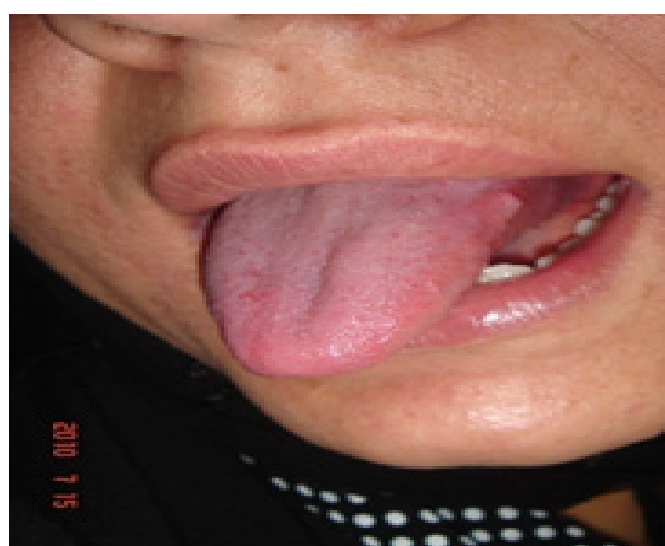


Figure 2: Two weeks after injection of the tongue showing resolution of the lesion



Figure 3: Diffused vascular malformation in a 23 years female patient.



Figure 4: After 4 injections a good resolution obtained

Discussion:

Ethanol sclerosis is well tolerated, without systemic side effects, and is an effective adjunct to the management of vascular malformations. Advantages of ethanol injection include the ability to treat a very localized area without excision as well as the effective treatment of vascular malformations that recurred after operative removal. Conversely, extensive lesions may be palliated as symptoms occur.²² Although the published data have mentioned sclerotherapy as the usual treatment of vascular malformations, the dose and mode of application of the sclerosis-inducing agent has not been standardized. In addition, a standardized definition of the dose of sclerosis-inducing agent has not been reported.

The only explanation has been an “amount compatible with the lesion size,” which implies a high degree of subjectivity. Several studies have reported different protocols with varying degrees of the possibility of complications.^{23,24} Potential complications of sclerotherapy include local skin necrosis, transient nerve palsy, haemoglobinuria, blood loss, and anaphylax-

is.²⁵⁻²⁸ The major disadvantage of this treatment is severe complication can rarely occur and include acute pulmonary hypertension with cardio-pulmonary collapse.¹⁶ No such complications happened in our patients and this is may be due to the fact that slow injection and limited amount of ethanol could reduce the onset of these complications and this view had been supported by other authors.²⁸ Most of the cases were cured by a single injection and similar results were reported by other authors.^{9,29,30,31} An inflammatory response, expressed by painful symptoms and/or low-intensity edema, characterizes the most commonly reported finding, although present for only a brief period.^{10,30,32,33} Some authors^{34, 35} reported that the intensity and occurrence of complications depended on the quality and quantity of the sclerosis-inducing agent used, the size of the lesion, and the professional's experience. The results of this study showed that ethanol is a good sclerotic agent that can be used to treat many vascular malformations in the orofacial regions

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