

Conservative Management of Oral Hemangioma Using Boiled Saline: A Case Report with Review of Literature

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Abstract

Hemangiomas are common tumors that exhibit microscopic blood vessel proliferation. Congenital hemangiomas frequently present from birth and may become increasingly noticeable over time. Their origin is most likely developmental rather than malignant. This report describes a 6-year-old girl's gingival hemangioma and the way a sclerosing agent was used to treat it. The aim of this case report is to demonstrate the therapeutic benefits of boiled saline as a sclerotherapy for oral hemangiomas. Boiled saline is a safe and effective sclerosing therapy for oral hemangiomas. This method provided our patient with significant symptom relief at a minimal cost with few complications.

Keywords: Boiled Saline, Hemangioma, Injection.

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INTRODUCTION

Congenital lesions with aberrant vascular development are known as vascular abnormalities. Vascular abnormalities, formerly known as vascular birthmarks, are now categorized based on the system formulated by Mulliken and Glowacki in 1982 using a method created that takes into account these entities: histology, biological behavior, and clinical presentation [1].

Hemangiomas are benign blood vessel abnormalities that fall under the category of vascular malformations. These tumors are actively growing and have a distinctive pattern of rapid postnatal development followed by slow involution. They frequently occur in the head and neck areas. The lips, tongue, buccal mucosa, gums, and palate are among the affected areas. Preterm newborns, twins, and females have a higher prevalence (65%) [2, 3]. They range in size from millimeters to centimeters and are typically asymptomatic. The degree of vascular congestion in the affected area, as well as the location and depth of tissue invasion, determine the color, which ranges from red to

purple [2, 3]. It may appear as a flat or elevated lesion with a smooth or nodular surface, well-defined margins, sessile or pedunculated, with a palpably soft consistency [2].

History, clinical characteristics, diascopy, aspiration of the lesion, and imaging studies are used to make the diagnosis [4]. Histopathology analysis reveals that they have numerous blood vessels, a thicker subendothelial basement membrane, and hyperplastic endothelial cells [5, 6].

The hemodynamics of the lesion—whether it has high flow or low flow—are taken into consideration when planning treatment [4]. Surgical excision, laser surgery, cryotherapy, chemotherapeutic drugs, corticosteroids, B Blocker drugs taken orally or topically, embolization, and sclerotherapy are among the available treatment options [6, 7].

Sclerosing agents are inexpensive, readily available, and have a high response rate. Nonetheless, a number of sclerosing drugs have been effectively

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employed to treat these lesions, including ethanol, boiling contrast media, sodium morrhuate, sodium tetradeethyl sulphate (STS), and bleomycin [8].

When the treatment with boiling saline as the sclerosing agent is used, the heat from the boiling saline dehydrates the red blood cells and endothelium, resulting in necrosis-induced obliteration of the vessel lumen. This increases blood coagulation and vascular death [9, 10,11]. It is also easily accessible, affordable, hypoallergenic, and acceptable to patients because it is not a chemical.

The aim of this paper was to present a simple non-surgical alternative treatment for hemangiomas with boiling saline.

CASE REPORT

A 32-years-old female patient presented at the College of Dentistry, Jazan (KSA) oral surgery clinics with a red, purplish lesion on the right attached gingiva below her right lateral incisor and canine. The chief complaint was dark color on her gingiva. The lesion was there for about 2 years, painless, there used to be a slight increase in size then it would return back again (Figure 1). There was no gingival bleeding while she brushed. There were no significant findings from the patient's medical history. There was no lymphadenopathy.

Examining the mandibular right attached gingiva in regard to the lateral incisors and canine revealed an uneven, non- stemmed, painless, bluish

purple maculopapular lesion that was around 3 x 5 mm. When pressure was applied, the lesion blanched, no pulsations were present. Palpation did not reveal any tenderness. Diascopy examination showed vascular lesions. A vascular malformation was strongly suggested by these clinical findings. There was no radiolucent area in the lateral incisor and canine teeth's periapical region, according to a diagnostic panoramic radiograph.

Conservative treatment with an injection of boiling saline was recommended for the patient. Written informed consent was acquired from the patient after she was briefed about the surgery and potential complications. Following a buccal infiltration with 2% lidocaine and 100,000 epinephrine, Saline was heated to 100°C and then placed to a 3-cc syringe. To make sure the needle had penetrated the depth of the vascular lesion, aspiration was performed before injection. The patient had an injection of 3 cc of boiling saline. The injection was administered carefully and immediately afterward. The injection site was compressed with gauze until the bleeding ceased (Figure 2). Following sclerotherapy with boiling saline, antibiotics and analgesics were given along with ice-pack applications.

After three weeks, the patient was called back. At the recall appointment, the same process was carried out again (Figure 3) and given postoperative instructions. The hemangioma lesions' surface area decreased as a result of the weekly evaluations after fifth week (Figure 4). No hemangioma lesions (Figure 5) showed up on the attached gingiva after seventh week following the third stage of boiling water injection.



Figure 1: Clinical photograph of Hemangioma when first presented on the right attached gingiva



Figure 2: Clinical photograph immediately after injection with boiling saline



Figure 3: 3 weeks post-operatively



Figure 4: 5 weeks post-operatively



Figure 5: 7 weeks post-operatively, showing complete remission of the lesion

DISCUSSION

The head and neck area accounts for up to 50% of vascular lesions [12]. Arteriovenous malformations (AVMs), which account for roughly 1.5% of all recorded cases, are the least prevalent tumors among infants, while hemangiomas are the most common [13]. Clinically and biologically, hemangiomas and vascular malformations differ from one another. While AVMs are

abnormal connections between ectatic arteries and veins without an intervening capillary bed, hemangiomas are benign tumors in infants that are defined by abnormal proliferation of endothelial cells and blood vessels [14].

Vascular abnormalities are categorized using a system developed by Mulliken and Glowacki in 1982 that takes these entities' histology, biological behavior, and clinical appearance into account [1].

Table 1: Classification of vascular anomalies [1]

| Vascular tumors | Vascular malformations |
|---------------------------------|-----------------------------|
| Infantile hemangioma | Slow-flow |
| Congenital hemangioma | Capillary malformations |
| Tufted angioma | Venous malformations |
| Kaposiform hemangioendothelioma | Lymphatic malformations |
| Infantile hemangioma | Fast-flow |
| | Arteriovenous malformations |

Table 2: Difference between Hemangioma and Vascular malformation

| Hemangioma | Vascular malformation |
|--|---|
| May or may not be present at birth | Always present at birth |
| True benign neoplasm of endothelial cells | Localized defects of vascular architecture that results in formation of abnormal tortuous and enlarged vascular channel |
| Females are more commonly affected | No gender predilection |
| Also known as port-wine stain, strawberry hemangioma, and salmon patch | Also known as lymphangiomas, Arteriovenous malformation. |
| Grows faster often faster than the child's growth | Enlarges proportionately with growth of the child |
| They involute over time | They do not involute, in fact becomes more apparent with child's growth |
| Mast cells increase during proliferating phase | No increase in mast cells |

The term "hemangioma" describes a variety of vascular development defects, including diseases brought on by these anomalies [15]. The Greek terms "haema" (blood), "angio" (vessel), and "oma" (tumor) make up the name. In the head and neck region, hemangiomas are frequently found [16]. The lips, tongue, and buccal mucosa are frequently the sites of oral hemangiomas [15, 17].

The most prevalent benign vascular tumors of infancy, hemangiomas, can affect up to 10% of newborns [18]. They often appear soon after birth, and they grow rapidly in the early stages of infancy before gradually involution [19, 20]. While most of these tumors are not medically relevant, they can invade important structures, bleed, ulcerate, infect, or result in significant structural abnormalities [19, 21]. Rarely, underlying congenital abnormalities may be linked to hemangiomas.

Complications from hemangiomas might include ulceration or infection [21].

Hemangiomas are rare in people with dark skin colors, more common in white infants, and more common in females than in males [22]. Premature babies are more at risk, and birth weight is a direct contributing factor [23].

Hemangioma is diagnosed based on clinical symptoms that are supported by additional examinations. Imaging procedures are used to differentiate blood vessel abnormalities from a number of aggressive neoplastic processes. Doppler ultrasonography (USG) is non-invasive and can provide images of increased blood flow that indicate hemangiomas, it is a useful technique. It can

therefore identify locations of feeding vessels and differentiate hemangiomas from solid tumors [15, 17].

Treatment options for hemangiomas include surgery, corticosteroid therapy, sclerotherapy or radiation [24]. When treating hemangiomas, surgery is typically not the first option [15].

Sclerosant ingredients are injected into the lesion to carry out sclerotherapy. Sodium morrhuate, hot water, nitrogen mustard, and sodium tetradecyl sulfate are examples of sclerosant materials that are frequently used to treat symptomatic hemangiomas and embolize high-flow vascular malformations [25].

Three categories of sclerosing agents have been classified according to the mechanism of action that results in endothelium damage [26].

Table 3: Classification of Sclerosing agents according to the mechanism of action that results in endothelium damage

| Categories | Sclerosing agents | Action |
|--------------------|---|--|
| Detergents | Polidocanol, STS, sodium morrhuate, and ethanolamine Oleate | The detergents cause injury by altering the surface tension surrounding endothelial cells. |
| Osmotic Agents | Hypertonic saline, hypertonic saline/dextrose | They act through endothelial damage through dehydration. |
| Chemical irritants | Chromated glycerin, poly-iodinated iodide | Act by a cauterizing action and those which injure cells by a heavy metal effect. |

The sclerosing agent utilized in the current cases was boiling saline. The heat from the boiling saline dehydrates the red blood cells and endothelium, resulting in necrosis-induced obliteration of the vessel lumen, which increases blood coagulation and vascular death [9, 10, 11],

Prasetya DA treated hemangiomas with a combination of boiling water injection and corticosteroid administration, which had good results [17]. Arora GK case report describes the treatment of a 13-year-old boy with a symptomatic tongue hemangioma at a peripheral government hospital in India using frequent injections of 3% boiling saline, highlighting the effectiveness and practicality of the therapy in a setting with limited resources [27].

A prospective study (Al-Alwan) which included 30 cases of hemangioma treated with injection of sclerosing agent like alcohol, steroid, hot water. They assessed most of the patients injected with alcohol and boiling saline materials complained from edema. They suggested a preoperative dexamethasone injection and ice pack application would be beneficial to the patients [28]. Whereas a study by Mishra S comparing intralesional 3% sodium Tetradecyl Sulphate versus hot water in oral cavity hemangioma found 3% sodium tetradecyl sulphate is a better sclerosing agent than hot water in cases of oral cavity hemangiomas [29].

Some possible side effects of sclerotherapy include hemorrhage, allergy, ulcerations, edema, infection, and temporary nerve damage [11].

CONCLUSION

It has been found that conservative treatment in the form of sclerotherapy with boiling saline is a cheap, easily accessible outpatient procedure. Boiling saline is a safe, efficient, and affordable method of treating oral hemangiomas. To minimize unnecessary risks and complexities, however, thorough planning, assessment, and case selection are required.

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