

Characteristics of Oral Hemangioma and Vascular Malformation Cases: A Study at Hasan Sadikin General Hospital, 2019-2023

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ABSTRACT

This observational retrospective study conducted at Hasan Sadikin General Hospital (RSHS) in Bandung from January 2019 to February 2023 aimed to characterise oral hemangiomas and vascular malformations. Out of 52 medical records analysed, infantile hemangioma was the most common type (17%), typically presenting between ages 13 to 24 years. Predominantly located around the lip, tongue, and buccal mucosa, it seldom caused bleeding or pain, with women being more affected. Treatment often involved sclerotic agent injections. Venous malformations accounted for 58% of vascular malformations, showing similar age of presentation and distribution as hemangiomas, and were also treated with sclerotic agents. Accurate diagnosis and tailored treatment are crucial due to the diverse nature of these anomalies. Early detection using imaging techniques like ultrasound and CT angiography is imperative, given the potential impact on patients, including pain, swelling, and cosmetic concerns, particularly in the head and neck area. However, treatment approaches vary based on factors such as type and size, necessitating further research to refine diagnostic and therapeutic strategies and optimise patient outcomes.

Keywords: Hemangioma, Vascular Malformations, Vascular Anomalies, Infantile Hemangioma, Venous Malformation

INTRODUCTION

Vascular anomalies are abnormalities that happen because of dysfunction in vasculogenesis and angiogenesis, as well as congenital abnormalities and dysmorphogenesis neonatal in every area, mostly in the head and neck (60%). The term hemangioma has long been used to describe various anomalies of vascular development in infancy and childhood, which increase the number of blood vessels. Hemangioma appears in neonates at the age of 6-8 months (proliferative phase) and gets slowed down at the age of 5-10 years (involution phase). Vascular malformations appear at birth and develop along with the process of growth and regeneration of endothelial cells in children. The incidence of vascular malformation is 31% found in the head and neck region. Vascular malformations can be categorised based on the type of vessel involved

(capillary, vein or arteriovenous) and based on hemodynamic properties (low flow or high flow) (Steiner & Drolet, 2017).

Pain and swelling are the main complaints in cases of vascular malformations. Aesthetic factors are the main aspect that influences psychological stress and anti-social behaviour (Lee & Chen, 2005). Recurrent bleeding, secondary infections, and ulceration have been found in several reports. The gold standards for supporting the examination are Ultrasound and CT Angiography. Appropriate and regular follow-up is necessary to determine appropriate therapy. Laser therapy, sclerotherapy, embolisation, electrochemical therapy, cooper needle treatment, and resection are options for treating vascular anomalies depending on the type, size, location, patient status, and availability of facilities in the health centres (Tasker, Acerini, Holloway, Shah, & Lillitos, 2021).

The urgency of researching vascular anomalies lies in their significant impact on affected individuals, particularly in terms of health outcomes and quality of life. Vascular anomalies, characterised by abnormalities in vasculogenesis and angiogenesis, pose considerable challenges due to their diverse manifestations and potential complications. These anomalies, including hemangiomas and vascular malformations, predominantly affect the head and neck region, with a considerable incidence rate.

Individuals with vascular anomalies often experience symptoms such as pain, swelling, recurrent bleeding, and secondary infections, which can lead to significant discomfort and complications. Moreover, the aesthetic concerns associated with vascular anomalies can cause psychological stress and anti-social behaviour, further exacerbating the burden on affected individuals.

Early detection and accurate diagnosis of vascular anomalies are crucial for appropriate management and timely intervention. Gold-standard diagnostic tools such as ultrasound and CT angiography are essential for effectively assessing the extent and characteristics of these anomalies. Furthermore, the availability and accessibility of appropriate treatment modalities are paramount for optimising patient outcomes. However, the choice of treatment options for vascular anomalies depends on various factors, including the type, size, and location of the anomaly, as well as the patient's overall health status and the resources available in healthcare facilities.

Therefore, conducting research on vascular anomalies is imperative to enhance our understanding of their pathogenesis, clinical features, diagnostic approaches, and treatment strategies. Such research endeavours can ultimately contribute to improving the management and outcomes of individuals affected by vascular anomalies, thus fulfilling an essential need within the medical community and benefiting patient care.

RESEARCHED METHODS

This research is an observational study with a retrospective descriptive approach. This research was conducted at RSHS Bandung from January 2019 – February 2023. The population and sample of this study were all medical records of a patient diagnosed with Hemangioma and Vascular Malformations at the Oral and Maxillofacial Surgery Department RSHS. The research uses inclusion and exclusion criteria. Inclusion was the patient diagnosed with Hemangioma and Vascular Malformations which in anamnesis patients including type, onset, age, region, gender, main complaint, therapy, history of

reference, supporting examination, bleeding, and pain at the Inpatient Installation of Dr. Hasan Sadikin in the period January 2019 – February 2023. The exclusion criteria in this study were incomplete patient medical record data in anamnesis, including the onset of the occurrence. The variables studied include type, onset, age, region, gender, primary complaint, therapy, history of reference, supporting examination, bleeding, and pain. The categorical data processing was done using a computer program, and the research data were grouped and expressed in proportions. This study has received an ethical approval number from the Health Research Ethics Committee of Dr. Hasan Sadikin General Hospital Bandung with the ethical committee approval number 973/UN6.KEP/EC/2023.

RESULTS AND DISCUSSION

The results of data collection on the Characteristics of Oral Hemangioma and Vascular Malformations at Hasan Sadikin General Hospital Oral and Maxillofacial Surgery Department on January 2019 – February 2023, there were 52 patients, nine patients with Infantile Hemangioma, three patients with Congenital Hemangioma, four patients with Arteri-Venous Malformations, 30 patients with Venous Malformations, and five patients with Lymphatic Malformations.

Table 1. Characteristic Based on Type, Therapy, Age, Gender, Region, Bleeding, and Pain

Criteria	Infantile Hemangioma	Congenital Hemangioma	Arteriovenous Malformation	Venous Malformation	Arteriovenous Malformation	Lymphatic Malformation	Capillary Malformation
Age	0-12 y.o	1	3	0	7	0	4
	13-24 y.o	4	0	3	13	0	1
	25-36 y.o	2	0	1	8	0	1
	37-48 y.o	0	0	0	1	0	0
	>48 y.o	2	0	0	1	0	0
	Tongue	2	0	0	5	0	2
Region	Palate	0	0	0	0	0	0
	Gingiva	0	0	0	0	0	1
	Buccal Mucous	0	0	0	7	0	1
	Lip	6	1	2	12	0	2
	Tongue + Buccal Mucous	0	1	0	0	0	0
	Lip + Buccal Mucous	1	1	0	3	0	0

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	Lip + Mentale	0	0	1	0	0	0	0
	Lip + Tongue	0	0	1	0	0	0	0
	Lip + Tongue + Buccal Mucous	0	0	0	1	0	0	0
	Palate + Sublingual	0	0	0	1	0	0	0
	Buccal + Sublingual + Submandible + Submental	0	0	0	1	0	0	0
Bleeding	Yes	0	1	1	4	0	0	0
	No.	9	2	3	26	0	6	0
Pain	Yes	0	0	1	4	0	4	0
	No.	9	3	3	26	0	2	0
Gender	Man	1	1	2	11	0	4	0
	Woman	8	2	2	19	0	2	0
Therapy	Excision	1	0	0	1	0	1	0
	Ligation	0	0	0	0	0	0	0
	Sclerosing Agent	7	3	4	23	0	4	0
	Sclerosing Agent + Excision	1	0	0	2	0	1	0
	Endovascular	0	0	0	0	0	0	0
	Sclerosing Agent + Phlebectomy	0	0	0	3	0	0	0
	Ligation + Biopsy Extirpation +	0	0	0	1	0	0	0

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tasy

From the results of research using medical records based on the criteria of type, age, region, gender, therapy, complaints of bleeding and pain, it was found that nine patients were diagnosed as infantile hemangioma or 17% with most ages at arrival for treatment 13-24 years occurred in the lip area, tongue followed by lips and buccal mucosa without complaints of bleeding and pain, mainly occurs in women and was treated by sclerosing agent in the form of bleomycin injection. Congenital hemangioma in 3 people, or 6% with most ages at arrival for treatment 0-12 years, occurred in the area of the lips, tongue, and buccal mucosa followed by the lips and buccal mucosa without complaints of bleeding and pain mainly occurs in women and was treated by a sclerosing agent in the form of injection bleomycin.

Arteriovenous malformations in 4 people or 8%, most ages at arrival for treatment 13-24 years, occurred in the lip area without complaints of bleeding and pain; the incidence of women was the same as men and was treated by a sclerosing agent in the form of bleomycin injection. Venous malformations in 30 people (or 58%), most ages at arrival for treatment (13-24 years old), occur in the area of the lips and tongue, followed by the buccal mucosa, without complaints of bleeding. Some were accompanied by pain, mainly occurring in women and were treated by a sclerosing agent in the form of bleomycin injection. Lymphatic malformations in 6 people or 11%, most ages at arrival for treatment 0-12 years old, occurred in the tongue area without complaints of bleeding, and some were accompanied by pain, mostly occurred in men and were treated with a sclerosing agent in the form of bleomycin injection.

Table 2. Characteristic Based on History of Reference

Characteristic	Frequency	Proportion (%)
History of Reference		
Public Health Center, Public Hospital	50	96%
Own desire	2	4%

From the results of research using medical records based on the criteria of history of reference, it was found that 50 patients were referred from public health centres and public hospitals (96%), and those who came with their own desire were two people (4%).

Table 3. Characteristics Based on Main Complaints

Characteristic	Frequency	Proportion (%)
Main complaints		
Lump	23	44%
Bleeding	9	17%
Aesthetic	18	35%
Lump + Pain	1	2%
Bleeding + Pain	1	2%

From the results of research using medical records based on the main complaint, it was found that patients came for treatment at KSM Oral and Maxillofacial Surgery RSHS Bandung due to lumps in 23 people (44%), bleeding in 9 people (17%), aesthetic complaints in 18 people (35%), lumps. Accompanied by pain in 1 person (2%) and bleeding accompanied by pain in 1 person (2%).

Table 4. Characteristics Based on Onset

Characteristic	Frequency	Proportion (%)
Onset		
From birth	12	23%
Adulthood	40	77%

From the results of research using medical records based on the onset of events, it was found that 12 patients (23%) complained of hemangiomas and vascular malformations since birth, and 40 people (77%) complained in adulthood.

Table 5. Characteristics Based on Support Examination

Characteristic	Frequency	Proportion (%)
Support Examination		
USG + CT Angiography	3	6%
CT Angiography	3	6%
USG	12	23%
No support examination	34	65%

From the results of research using medical records based on supporting examinations, it was found that three patients (6%) underwent ultrasound and CT angiography, three patients (6%) of CT angiography, 12 patients (23%) underwent ultrasound, and 34 patients (65%) did not undergo support examination.

Discussion

From 99 patients, 34 patients experiencing hemangiomas and 65 other patients experiencing vascular malformations, this research found that the number of sufferers of hemangiomas and vascular malformations in the oral cavity at KSM Oral and Maxillofacial Surgery at Dr Hasan Sadikin General Hospital is 52 patients with 12 patients experiencing hemangiomas and 40 patients experiencing vascular malformations from January 2019 to February 2023. This study follows the ISSVA classification, which divides vascular anomalies into the proliferation of vascular tumours and non-proliferation of vascular malformations, which can be subclassified based on their potential to develop, leading to malignancy (tumour) or involvement of vascular vessels (malformation).

Standard therapies for vascular anomalies at Hasan Sadikin General Hospital are sclerosing agent injection and lesion excision. It differed from the study by Leonard et al., which stated that therapy for hemangioma was by intralesional injection of corticosteroids (triamcinolone, dexamethasone, or methylprednisolone). This difference can occur because most hemangioma patients who come for treatment have already passed the proliferation phase and vascular malformation ((Steiner & Drolet, 2017); (Mukhopadhyay, Galui, Biswas, Saha, & Sarkar, 2020)).

Managing small vascular anomalies in the maxillofacial area remains controversial and must be reviewed, especially for long-term aesthetic results and

sequelae. The main purpose of administering intralesional injections and sclerotic agents for vascular anomalies include (1) preventing or avoiding complications that threaten life or body function, (2) wound care, (3) preventing permanent disability, (4) reducing the psychosocial burden for patients and their families, and (5) prevent lesions from developing aggressively, potentially resulting in scars that have a strong possibility of involution without significant residual (Smith et al., 2022).

Infantile hemangiomas and venous malformations were the most common types of vascular anomalies found in this study. Infantile hemangioma was found in 9 patients, with the main complaint being a lump; based on anamnesis, it was found at birth and was slowly undergoing an involution phase. This is suitable for an epidemiological study conducted by Lauren et al., which found that infantile hemangiomas develop during the first two months of life and show rapid proliferation between 6 and 12 months of age, followed by a prolonged involution period. Most infantile hemangiomas will shrink spontaneously at the age of 6 and 9 years. However, in some cases, they do not regress completely, so lump defects are still found and are the main complaint of patients when they go to Hasan Sadikin General Hospital (Zhang, Zhou, & Shen, 2020).

An observational retrospective study in Spain showed that 82% of hemangioma samples had a predilection in the lips. However, other epidemiological studies showed a predilection in the ventral tongue in the first place, followed by the lips and buccal mucosa. It was the same with research at Hasan Sadikin General Hospital that the lips are the most predilection location, as it is known that hemangiomas in the lower lip region show a lower level of involution compared to lesions located elsewhere (Zhang et al., 2020).

The results of the comparison between genders regarding the incidence of oral hemangioma cases in this study show that the incidence rate in women is higher than in men, with a ratio of 2:1 and a percentage of 63% in women and 37% in men. The results of this study are suitable with epidemiological research conducted by Correa et al. regarding the prevalence of oral hemangiomas and vascular malformations in the Brazilian population which states that hemangioma cases occur more frequently in women than men with a ratio of 4:1. Hemangiomas are more common in women due to estrogen in the female hormone being the target of vascular lesions and also the levels of the estrogen receptor (ER), progesterone receptor (PR), and androgen receptor (AR) ((Chinyama, 2020);(Frongia, Byeon, Mehrabi, & Günther, 2021)). Differences in the ratio of women to men between the results of our research and Correa et al.'s research may be caused by differences in sample size and ethnicity.

Congenital hemangioma in this study was found in 3 patients and was reported in the age range 0-12 years, with the main complaint being a lump, and based on the anamnesis, it was found at birth. This result is suitable for epidemiological research, which shows that congenital hemangioma is seen at birth, passes through a proliferation phase, and involutes quickly or not at all (El Zein et al., 2020).

In his epidemiological study, Mulliken stated that the most significant predilection for congenital hemangioma was on the lips, followed by the combination of the tongue and buccal mucosa and the lips and buccal mucosa. This is suitable with research conducted at Hasan Sadikin Hospital that 100% of congenital hemangioma

patients have a predilection on the lip area (Jorge, Nascimento, Fernandes, & Soares, 2022).

Based on research, hemangiomas that occur in Caucasian babies have a prevalence of 3-5 times higher in women. This condition is suitable with what was found in babies who had congenital hemangioma at Hasan Sadikin General Hospital, which was more dominated by women than men, with a prevalence of women two times higher. This difference in ratio could be caused by a smaller number of samples and differences in ethnicity/race at Hasan Sadikin General Hospital (CAGLIARI, 2021).

Research conducted by England et al. shows that most hemangiomas do not cause pain, show no symptoms, and tend to bleed if the lesion is traumatised; this is suitable with the results of our study where all hemangioma patients, both congenital and infantile, did not complain of bleeding or pain (Aziz, Brown, Baghdadi, Kamel, & Pawlik, 2022).

The treatment that can be given to patients with hemangiomas with a diameter of less than two cm is intralesional injection of triamcinolone 3-5 mg/kg (10-15mg/ml) using a 25 gauge needle. Each injection is carried out at intervals of 6-8 weeks to evaluate the peak phase of involution. Corticosteroid drugs can be given for lesions that are large, destructive, and endanger vital organs. Prednisolone can be given at a dose of 2-3 mg/kg/day once every two weeks, and the dose is reduced every 10-11 months. Excision is indicated for tumours that have ulcerated, bleeding, causing airway obstruction, and disrupting vision.

This is different from the treatment carried out at Hasan Sadikin General Hospital in that hemangiomas are often treated with sclerotic agent injections, and this happens because patients who experience hemangiomas at Hasan Sadikin General Hospital are over 12 months old when the proliferation phase has ended. Herdata et al. stated that hemangiomas in patients less than 12 months old are treated with intralesional injection of corticosteroids (triamcinolone) to inhibit the proliferation phase (2 to 12 months), and over 12 months, therapy is recommended with bleomycin injection which plays a role in the angiogenesis process. Although corticosteroid therapy is easy and effective, some cases do not show a response and improvement in lesions after a maximum of 3 doses. Long-term use of corticosteroids is avoided to prevent adverse side effects such as growth disorders, Cushingoid effects, and infections. Another effect of corticosteroids that have been reported is suppressing the immune system by reducing the migration of neutrophils to sites of inflammation.

Intralesional corticosteroids are only given to small hemangiomas (2-3 cm in diameter) for six weeks at a dose of no more than 3 mg per kilogram of body weight. The mechanism of corticosteroids against hemangiomas is not yet known with certainty, but it is known that steroids can inhibit the proliferation of immature pericytes, stimulate the vasoconstrictive effects of epinephrine and norepinephrine on smooth muscle, inhibit estradiol receptors and angiogenesis. The use of systemic corticosteroids at the proliferation stage can inhibit growth and cause hemangioma regression by around 30% -90%. It can also prevent ulceration and thus speed up healing. However, in some cases, the use of corticosteroids is found to be resistant, so other types of alternative therapy need to be used, such as bleomycin or vincristine injections ((Sebaratnam, Wong, & Wargon, 2021) (Yajun, Shan, & Qihong, n.d.))

Vascular malformations in this study were found in 40 patients, with the main complaints being lumps, aesthetics, pain, ulcers, and, in some cases, bleeding. Based on the anamnesis, the vascular malformation was discovered after birth and grew with age. This is suitable with epidemiological research conducted by Munden and Behraves that vascular malformations grow along with the child's development and, without spontaneous regression, can cause morbidity, pain, and discomfort and can cause local and systemic complications ((Behraves et al., 2016);(Munden et al., 2014)).

Venous malformations consist of ectatic venous channels, which are usually found in the head, neck, legs, and other parts of the body and are considered sporadic and influenced by genetic patterns. In this study, venous malformations were found in 30 patients, with the main complaints being lumps in 30% (9 cases), aesthetic 50% (15 cases), bleeding in 16% (5 cases), and some phleboliths appeared in 3% (1 case) in several areas. This is suitable with the epidemiological study conducted by Dubois et al. that the main complaints of venous malformations are lumps with a percentage of 44% (23 cases), aesthetics with a percentage of 35% (18 cases), and bleeding with a percentage of 17% (9 cases) ((Soman et al., 2020);(Hussein & Malguria, 2020)).

Venous malformations involve areas with lots of blood vessels, so they generally rarely occur in areas with few blood vessels, for example, in the palate area. (17) Based on epidemiological studies conducted by Correa et al., the predilection for venous malformations occurs mostly on the lips (45%), followed by the tongue (32%) and buccal mucosa (18%). This is suitable with research at Hasan Sadikin Hospital, which found that lips are the main predilection (40%) for venous malformations, ns followed by the buccal mucosa (23%) (Habibie, 2021).

Research in Mexico shows that the prevalence ratio of men to women in venous malformations is 1:1.2 (Rendón Elías, Hernández Sánchez, Albores Figueroa, Montes Tapia, & Gómez Danés, 2014), and this value is suitable with the results of research at Hasan Sadikin General Hospital, which states that women dominate cases of venous malformations with a ratio of 1:1.7.

The next most common type of malformation is arteriovenous malformation. This is suitable for research in Mexico by Felipe et al., who found that arteriovenous malformations rank second after venous malformations, followed by lymphatic malformations. Arteriovenous malformations in this study were found in 4 patients, with the main complaints being lumps and aesthetics. Based on anamnesis, it is found after adulthood and develops with increasing age.

The predilection area in cases of arteriovenous malformations in this study was mostly in the lip area; most did not complain of bleeding, although some of them complained of bleeding accompanied by pain if the lesion was traumatised. This is suitable with studies conducted by Leonard, which found that the lips and cheeks are the prominent predilection for arteriovenous malformations in the maxillofacial area ((Zhou & Chen, 2020);(Tantray, Iram Shafi, Chauhan, & Muzaffar, 2020))

The gender prevalence of arteriovenous malformations, according to studies, is dominated by women; this is different from research at Hasan Sadikin General Hospital, which states the ratio is the same between men and women. This sex ratio, which is not significantly different, is probably because arteriovenous malformations are sporadic but can be inherited in families as an autosomal dominant trait, and the number of

samples and time in this study was smaller compared to other studies. Men and women are equally affected, and gene expression has great variability. Arteriovenous malformations are one manifestation of many different genetic syndromes that have varying inheritance patterns, and the chance of recurrence depends on the specific syndrome present. ((Lazaris, 2019);(Thiele & Nemergut, 2020)).

The next most common type of vascular malformation is lymphatic malformation. This study found lymphatic malformations in 6 patients, with main complaints in the form of lumps, bleeding, pain, and aesthetics. This is suitable for a study conducted by Leonard, which found that complaints of lymphatic malformations can include swelling, pain, and even fever. Based on anamnesis is found after birth and develops with increasing age (Kilich, Perelygina, & Sullivan, 2023).

Studies state that lymphatic malformations can occur in all parts of the body, and from 4 patients studied at Hasan Sadikin General Hospital, 3 of them had a predilection that spread to the tongue, buccal mucosa, and lips, while one patient experienced malformation in the tongue area. This is suitable for a study conducted by Leonard, which found that lymphatic malformations occur spread in the area of the tongue, floor of the mouth, mandible, submandibular, and neck (Jiang et al., 2023).

The lymphatic malformations in this study were not accompanied by bleeding. However, the patient complained of pain; this is suitable with what Elise et al. stated, that lymphatic malformations tend to swell when infection or trauma occurs. Prodromal symptoms may accompany complaints of infection. Tertiary lymphoid organs in lymphatic malformations can trigger inflammation of the airway mucosa and interfere with masticatory function (Bonilla-Velez et al., 2021).

The standard therapy carried out at RSHS for all vascular anomalous lesions is by using sclerotic agent injection with a total of 40 cases, with the injection of choice being bleomycin. According to Kaban et al., hemangioma lesions can be observed first until they reach the involution phase. Subsequently, if the lip lesion ulcerates, regular cleaning is required, and topical antibiotic use is recommended. However, if bleeding occurs, pressure can be used to control bleeding. Pharmacological therapy is given when local therapy is inadequate to heal ulceration. Lesions that cause necrosis, damage to vital structures, and airway obstruction can be treated with pharmacological therapy in the form of intralesional injections to speed up the involution phase. Surgical management, such as excision, is indicated for ulcerated lesions that bleed, causing respiratory and visual impairment. In small venous malformations, injection of 1% sodium tetradecyl sulfate is indicated. If symptoms are accompanied by phleboliths, then anticoagulant therapy with aspirin is recommended (Cooke-Barber, Kreimer, Patel, Dasgupta, & Jeng, 2020).

In a study by Berenger et al., in 40 patients treated with large doses of ethanol, 30 patients (75%) showed marked improvement or complete recovery. In comparison, ten patients (25%) experienced slight improvement or did not respond to treatment. The main complications reported include acute blistering (50%), hemoglobinuria (28%), deep ulceration (13%), and nerve injury (7.5%). Temporary facial paresis was reported in two patients, and permanent unilateral vocal cord paralysis in one patient. (30) We have received several reports from the use of ethanol on venous malformation lesions outside the oral cavity, causing tissue necrosis; this is our basis for using bleomycin

injection as therapy for malformations of oral cavity veins at Hasan Sadikin General Hospital.

Lee et al. looked at 87 patients who had undergone sclerotherapy with large doses of ethanol (total 305 sessions; mean 3.5). The results obtained were excellent in 23 patients (32.4%), good in 37 patients (52.1%) and poor in 11 patients (15.5%). Patients who experience swelling and pain at the injury site are treated with intravenous or intramuscular analgesic drugs. Other complications reported (four patients; 4.6%) were respiratory distress (two cases), tongue hypoesthesia (one case), and temporary facial nerve paralysis (one case). In a study by Liu et al., 23 patients were treated with low-dose ethanol and followed up for an average of 20 months. All patients experienced remission or reduction of symptoms. Improved clinical outcomes were obtained in 9 and 14 patients, respectively. Patients who exhibit mild to moderate swelling and pain are treated conservatively and recover within a few days. Skin necrosis or nerve damage was not reported (Lim et al., 2021).

In the current study, injection sclerotherapy was considered an effective treatment for vascular malformations. However, based on other research sources, therapy with different types of sclerotic agents, such as ethanol, can be carried out at low doses to prevent tissue necrosis and fibrosis. Besides that, even though the hemangioma lesion will involute and undergo a regression process, treatment with intralesional injection into the oral cavity is needed as early as possible to prevent bleeding during the process of eating and chewing and prevent interference with other vital organs.

CONCLUSION

Based on the results of research conducted at KSM Oral and Maxillofacial Surgery, Dr. Hasan Sadikin General Hospital, in the period January 2019 – February 2023, it can be concluded that the highest number of hemangioma cases found were infantile hemangiomas with an age of presentation of 13-24 years occurring in the lip area, without complaints of bleeding and pain, mostly occurring in women and managed with a sclerosing agent in the form of bleomycin injection. The most common vascular malformations are venous malformations with ages presentation of 13-24 years occurring in the lip area, without complaints of bleeding, and some are accompanied by pain; most of them occur in women and are treated with a sclerosing agent in the form of bleomycin injection.

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