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Case Report on Lobular Capillary Hemangioma: Clinical Insights and Observations

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ABSTRACT:
This case report delves into the intricate clinical manifestations and observations surrounding lobular capillary hemangioma located in the posterior region of the mandible in an individual within their third decade of life. The study examines the diagnostic and management approach while presenting insightful observations drawn from the clinical scenario. Detailed descriptions of the lesion's characteristics, diagnostic procedures, and therapeutic interventions are highlighted, offering valuable clinical insights into this unique presentation of lobular capillary hemangioma in the mandibular region. "Laser therapy revolutionizes oral mucosal growth treatment, offering quick, painless procedures that enhance patient acceptance due to improved aesthetics and functionality. Unlike traditional surgical excision requiring local anesthesia and longer clinic stays, laser treatments enable outdoor care, minimizing patient phobia and ensuring swift clinic visits. Limited literature covers this innovative approach to managing mucosal growth using soft tissue lasers. To date, this is the inaugural documented case presenting pyogenic granuloma in the mandibular posterior region of a male patient in their third decade, managed successfully with laser therapy and showcasing favorable clinical results."

KEYWORDS: Gingiva; lobular capillary hemangioma; pyogenic granuloma; recurrent.

I. INTRODUCTION

Oral mucosal lobular capillary haemangioma (LCH) is characterized by inflamed fibrovascular tissues and has garnered various names, such as fibrous inflammatory hyperplasia, palatal papillary hyperplasia, giant cell granuloma, pregnancy epulis, and notably, pyogenic granuloma (PG).[1]

Pyogenic granuloma (PG) is a noncancerous, reactive mucosal lesion. Despite its name, PG lacks visible pus within the lesion. Hartzell initially described this growth in 1904. It stands as the most frequently encountered oral cavity growth, often triggered by factors like trauma or local irritation.[2] Angelopoulos proposed the term "hemangiomatous granuloma" for the same condition, accurately depicting its histopathological characteristics encompassing both inflammatory elements and hemangioma. Ver Berne et al. suggested an alternative term, "granuloma telangiectacticum," highlighting the abundance of blood vessels in pyogenic granuloma, offering a descriptive alternative name for the condition.[3] Toida et al. (2003) differentiated the lesion into two variants: lobular capillary hemangioma (LCH), known as epulis gravidarum, and the non-LCH [4].

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However, the WHO classification of head and neck tumors in 2017 consolidated these as synonyms, categorizing them under hemangiomas. In 2018, the International Society for the Study of Vascular Anomalies (ISSVA) labeled both variants as benign tumors. The origin of this condition remains a mystery. It's believed to stem from local factors like repeated trauma, calculus, and hormonal shifts during pregnancy and reproductive years, potentially predisposing individuals to this lesion.

Pyogenic granuloma typically appears as a painless, soft swelling, displaying a deep red to reddish-purple hue. This lesion usually manifests as a single nodule, either sessile or pedunculated, featuring a smooth or lobulated surface and varying in size from a few millimeters to several centimeters. It's commonly found on the gingiva, occasionally with or without ulceration on the covering mucosa. Its occurrence leans towards females, affecting around 5% of pregnant women.[5]

Hemangiomas are collections of expanding blood vessels that don't turn cancerous. They typically peak in frequency during the second and fifth decades of life, often appearing as single growths in about 80% of cases.

Pyogenic granulomas tend to be more frequently observed in the maxilla than the mandible, with a higher prevalence in the anterior rather than the posterior regions.They can appear in various forms: on the skin, lips, deeper tissues, oral mucosa, within muscles like the masseter and perioral muscles, and even within jaw bones such as the maxilla and mandible.[6] Treating hemangiomas hinges on factors like patient age, lesion size, extent, and clinical features. During early ages, many regress naturally, with only 10 to 20% needing intervention due to size, location, or progression. Surgical removal is recommended for small, surface-level lesions. As a non-cancerous growth, excision remains the primary treatment. However, alternative methods like cryosurgery, Nd:YAG laser excision, pulsed dye laser therapy, corticosteroid or ethanol injections, and sodium tetradecyl sulfate sclerotherapy have shown effectiveness as well. [7] .Currently, successful treatment of mucosal pyogenic granulomas using diode lasers is mainly supported by anecdotal reports.

This case report illuminates the clinical intricacies of lobular capillary hemangioma in a 31-year-old male patient presenting with a minor swelling in the lower left posterior region of the jaw. Initially, the swelling was diminutive and accompanied by bleeding. This marks the inaugural case treated through surgical excision using a laser.

II. CASE REPORT

A 31-year-old male presented at the Department of Periodontology complaining of a swelling in the lower left posterior region of his jaw persisting for three months. Initially small in size, the swelling was accompanied by bleeding and remained painless without any discharge of pus. Despite attempting to rupture it with sharp objects, the swelling increased in size (fig 1)

FIGURE 1: PRE-OPERATIVE

FIGURE 2: MESIODISTAL WIDTH= 15MM

FIGURE 3: APICOCORONAL WIDTH= 15MM

FIGURE 4: INTRAORAL PERIAPICAL RADIOGRAPH

The patient, otherwise healthy, admitted to a four-year habit of tobacco chewing. Upon examination, a single, bluish-red, soft, pedunculated swelling with smooth surfaces and ulceration was observed. The swelling, approximately 16 to 18mm in apico-coronal and mesio-distal extent (fig 2,3), was localized to the labial surface, spanning from the distal surface of tooth 35 to the distal surface of tooth 36, extending to the mucogingival junction

apically and coronally covering the tooth surface up to the middle third of the crown.

Radiographic analysis revealed the loss of the buccal cortical plate up to the middle third of the root of tooth 36 (fig 4). Following Phase I therapy, surgical excision using laser was planned after blood investigations. Under local anaesthesia, surgical excision of the growth was carried out. The lesion was treated by Soft-tissue Diode Laser with following specifications: wavelength 808 nm (± 10), output energy 0.1–7.0 W, and input power 300 VA. We used 810-nm wavelength and 7 W power, keeping it in continuous/interrupted pulse mode. The tip was kept at a distance of about 1 mm from the soft tissue throughout the procedure (fig 5), and it took 4–5 min to completely excise the mass (fig 7). The diode laser provided an optimum combination of clean cutting of the tissue and haemostasis. The excised tissue (fig 6) was sent for histopathological analysis to confirm the diagnosis, and subsequent follow-ups were scheduled.

FIGURE 5: LASER APPLICATION

FIGURE 6: COMPLETE REMOVAL OF GROWTH

FIGURE 7: IMMEDIATE POST-OP

FIGURE 8: 6 MONTHS POST-OP

FIGURE 9: 1 YEAR FOLLOW UP

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MICROSCOPIC FEATURE OF LOBULAR CAPILLARY HEMANGIOMA:

The histopathological section of the specimen displays stratified squamous epithelium, para-keratinized, exhibiting both proliferation and atrophy. The underlying connective tissue reveals numerous blood vessels of different sizes (fig 10), characterized by engorged endothelial cells. Some areas show evidence of leaked blood components. Additionally, there is a presence of moderate to severe chronic inflammatory cells. The pathology report from the hospital's pathologist surprisingly indicated that the "histopathological characteristics hinted at a capillary hemangioma with an inflammatory element, likely due to ulceration."

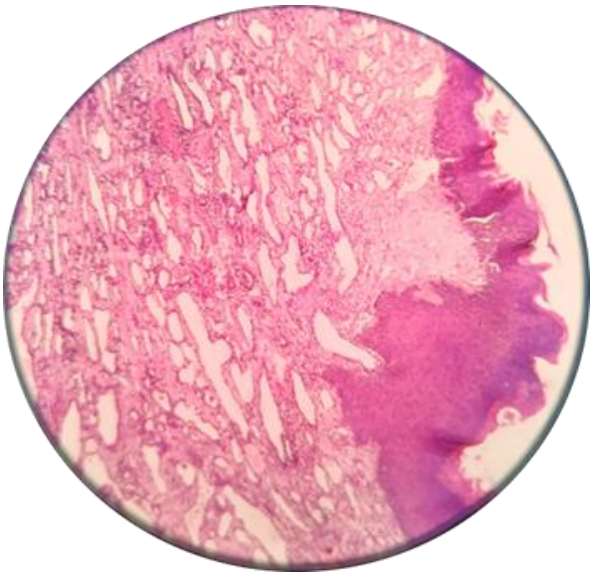

FIGURE 10: LOBULAR CAPILLARY HEMANGIOMA

Over the last 15 years, the table illustrates cases aimed at distinguishing various treatment approaches and age/gender preferences, contributing to the differentiation and understanding of our unique condition and its clinical nuances

AUTHOR	REGION OF THE LESION	SITE	AGE	GENDER	MANAGEMENT
M. M. Rachappa et al (2010)[8]	MAXILLA	POSTEROLATERAL PART OF HARD PALATE	7 year	MALE	SURGICAL EXCISION
Shalu Rai et al (2011)[9]	MAXILLA	BUCCAL ASPECT OF GINGIVA	50-year	FEMALE	SOFT TISSUE DIODE LASER
Mahavir B et al (2012)[10]	MAXILLA	POSTERIOR PALATAL REGION	30-year	FEMALE	SURGICAL EXCISION BY RAISING WIDMANS PERIODONTAL FLAP
Dr. Chandulal D. Dhalkari et al (2018)	MANDIBLE	RELATION TO 31,41,42,43	32-year	FEMALE	ORAL PROPHYLAXIS AND EXCISIONAL BIOPSY DONE
C V Srinivedha et al (2023)[11]	MANDIBLE	ANTERIOR REGION BETWEEN 32 AND 33	28-year	FEMALE	**EXCISED -IN- TITO FOLLOWED BY CURRETAGE AND REMOVAL OF LOCAL IRRITANT**

III. DISCUSSION:

Pyogenic granuloma stands as the predominant gingival tumor, representing approximately 75% of all cases.[12] In their study of 244 instances of nonneoplastic gingival lesions among the South Indian population, Shamim et al. identified pyogenic granuloma as the most prevalent, making up 75.5% of cases, or 52.71% of the total. Vilmann et al. reported that the majority of these lesions appeared on the marginal gingiva, with 15% occurring on the alveolar portion.[13] Roughly 5% of pregnant women experience this condition. Regrettably, recurrence rates fluctuate, reaching up to 16%.[14] Pyogenic granuloma, also known as pregnancy tumor or granuloma gravidarum, often occurs in pregnant women due to hormonal imbalances and stimuli. Yung, Richardson, and Krotochvil suggested this relationship, supported by Hosseini et al., who noted gingival enlargement during pregnancy and atrophy during menopause. This highlights the impact of estrogen and progesterone directly on gingival tissue, considering the gingiva as an affected area during pregnancy.[15] The occurrence of this condition peaks in the second and fifth decades of life, slightly favoring females. Some studies suggest a higher incidence among males under 18 years old, a prevalence among females between 18 and 39 years old, and an equal distribution among sexes in older patients. Pyogenic granuloma has two histological variations based on the arrangement of blood vessels: LCH and NLCH. LCH exhibits organized lobules of blood vessels, while NLCH shows a less organized structure resembling highly proliferative granulation tissue. Studies, including Epivatianos et al., suggest that NLCH contains more fibrous tissue compared to LCH, hinting at different evolutionary paths. LCH's central area features smaller blood vessel luminal diameters compared to NLCH.[16] Pyogenic granuloma's differential diagnosis encompasses conditions like hemangioma, peripheral giant cell granuloma, peripheral ossifying fibroma, metastatic carcinoma, and amelanotic melanoma.[17]

While surgical excision remains the conventional treatment for pyogenic granuloma, reports indicate a 16% recurrence rate. Alternative approaches such as electric scalpel, cryosurgery, cauterization with silver nitrate, sclerotherapy with sodium tetradecyl sulfate, and various laser treatments (Nd:YAG, CO2) have been utilized. Laser therapies like continuous and pulsed CO2 and Nd:YAG systems offer advantages of minimal invasiveness, sutureless procedures, reduced postoperative pain, rapid healing, improved hemostasis, nerve depolarization for reduced pain, and elimination of bacteria and viruses, resulting in reduced discomfort, edema, scarring, and shrinkage post-surgery.In our study, the lesion on the lower gingiva was entirely resolved using a diode laser without any resulting complications. There were no instances of scarring or recurrence. Therefore, diode laser treatment appears to be a promising therapeutic choice for intraoral pyogenic granulomas.

IV. CONCLUSION:

In conclusion, pyogenic granuloma, a common non-neoplastic growth, particularly in the oral cavity, poses challenges due to its recurrence post conventional surgical excision. The use of laser therapy presents a promising alternative, as seen in this case where successful resolution without complications or recurrence was achieved in a 31-year-old male patient. Further exploration and research into laser therapies for pyogenic granuloma could pave the way for safer and more effective treatment options in the future. To date, this is the inaugural documented case presenting pyogenic granuloma in the mandibular posterior region of a male patient in their third decade, managed successfully with laser therapy and showcasing favorable clinical results.

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