Case Report

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PERIPHERAL OSSIFYING FIBROMA: TREATMENT WITH DIODE LASER A CASE REPORT

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ABSTRACT:

Peripheral ossifying fibroma is a common solitary gingival overgrowth believed to arise from the gingival corium, periosteum, and periodontal ligament. This article presents a case of peripheral ossifying fibroma in a 19 year old female along with clinical, histopathologic, radiographic features and treatment using diode laser.

Key words: peripheral ossifying fibroma ,diode lasers.

INTRODUCTION:

Peripheral ossifying fibroma (POF) is a non-neoplastic enlargement of gingiva classified as a reactive hyperplastic inflammatory lesion.[1] A common gingival growth, typically seen on the interdental papilla and is believed to comprise about 9% of all gingival growths.POF is more prevalent in the anterior maxilla and has more female predilection than males.[2] The majority of lesions occur during a person's second decade, with a declining incidence in later years.[3] Although they are reported to reach more than 6 cm, POFs are usually less than 1.5 cm in diameter, and the diagnosis can be made by clinical inspection and biopsy.[4]

Histologically, this malady is a noncapsulated mass of cellular fibrous connective tissue with randomly distributed calcifications and/or mature bone.[3] The etiology of POF is unclear. Trauma or local irritants such as plaque, calculus, microorganisms, masticatory forces, ill-fitting dentures, and poor-quality restorations are all known to precipitate the development of the condition.[5] After the elimination of local etiological factors, surgical excision is the preferred treatment.[6]

Diode lasers have a solid active medium; it is a solid- state semiconductor laser that uses some combination of aluminium, gallium, and arsenide to change electric

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energy into light energy. The machine delivers laser energy fiberoptically in continuous wave and gated pulse modes, ordinarily used in contact with the tissue. The wavelength range puts this laser into the invisible non ionizing infrared radiation portion of the electromagnetic spectrum. These lasers are relatively poorly absorbed by the tooth structure, so that soft tissue surgery can be performed safely in close proximity to enamel, dentin, and cementum. The diode is an excellent soft tissue surgical laser indicated for cutting and coagulating gingiva and mucosa. It also acts as an adjunct in reducing gingival inflammation.[7] The chief advantage is the smaller size of the instrument. The units are portable and compact and are cheapest among the lasers currently available.

CASE DETAIL:

A 19-year-old female patient reported to the Department of Periodontics at Dr.Syamala Reddy Dental College and Hospital in Bangalore, India with a chief complaint of a painless gingival growth in relation to her upper right front teeth. The swelling started as a small nodule that progressed gradually to the present size within a span of 15 days. The patient did not give any positive history of trauma, injury, or food impaction and there was no significant contributing medical history.

An intraoral examination revealed generalized pink gingiva with a well-demarcated, non-tender, firm, focal, sessile nodular growth arising from the interdental papilla of the maxillary left central and lateral incisors and covering the crown of the maxillary lateral incisor and partially maxillary left centrals. The irregularly-shaped mass was 2.5 cm x 3 cm in size, with a reddish pink color, smooth surface, and distinct edges. Bleeding on probing was noted. An intraoral periapical radiograph of the maxillary left central and lateral incisors showed no underlying bone involvement. Clinically, differential diagnoses for the growth were pyogenic granuloma, peripheral odontogenic fibroma, fibroma, and peripheral giant cell granuloma. A provisional diagnosis of pyogenic granuloma was made for the gingival growth.The patient was referred for routine blood investigations. All findings were within normal limits. Considering the type and extent of the lesion, the patient was posted for laser surgery using diode laser.

An informed consent was taken from the patient after explaining the treatment procedure. Oral hygiene instructions were given to the patient and oral prophylaxis was done.

After 2 weeks, the growth was excised conservatively using a diode laser to prevent the development of an unsightly gingival defect in the anterior maxilla. The clinician's safety was ensured by using protective clear eye glasses. The area surrounding the lesion was covered with wet gauze. After sufficient local anesthesia was administered, the outline of the lesion was made around 0.5 to 1.0 mm beyond its clinical extent (to compensate for the zone of thermal

coagulation) in a slow and controlled fashion, using radiant energy of wavelength 980 nm at 5 W with the laser beam channeled into a 400-µm optical fiber to deliver laser energy to tissues. Then excision was carried out with a desired depth of 2 to 3 mm below the epithelial surface (Fig 3). The procedure was painless and well tolerated by the patient. The whole procedure was completed within a time period of twenty five minutes.

The patient was discharged after ensuring complete hemostasis. A periodontal dressing (Coe-pak Periodontal Dressing, GC America; Alsip, IL, USA) was applied on the exposed bone surface. Post operative instructions were well explained to the patient and analgesics were given as and when required to control postoperative pain.

The excised tissue was sent for histopathological examination, the patient was recalled after 1 week for post operative checkup. Histologically, the specimen showed parakeratinized stratified squamous epithelium and underlying connective tissue, which was composed of densely packed collagen fibers and fibroblasts. Deeper areas showed the presence of multiple irregular calcified areas and osteoblastic rimming with patchy distribution of chronic inflammatory cells was seen. Histologically, the specimen was suggestive of peripheral ossifying fibroma/peripheral calcifying fibroma. Based on clinical and histological findings, the lesion was diagnosed as POF.

DISCUSSION:

Ossifying fibroma occurs mostly in craniofacial bones and is generally categorized into two types: central and peripheral.[8] The central type of ossifying fibroma arises from the endosteum or the periodontal ligament (PDL) adjacent to the root apex and expands from the medullary cavity of the bone. On the other hand, the peripheral type shows a contiguous relationship with the PDL, occurring solely on the soft tissues overlying the alveolar process.

The reasons for considering a PDL origin for POF include: exclusive occurrence of POF in the gingiva (interdental papilla); the proximity of the gingival lesion to the periodontal ligament; the presence of oxytalan fibers within the mineralized matrix of some lesions; age distribution, which is inversely related to the number of lost permanent teeth; and the fibrocellular response in POF, which is similar to the other reactive gingival lesions of PDL origin.[9]

POF is a fairly common lesion, comprising nearly 1% to 3% of oral lesions biopsied in various reports.[2,4,10] Clinically, the POF presents as an exophytic, smooth surfaced, pink or red nodular mass that is sessile; it is also less frequently seen on a pedicle.[11] Approximately 60% of POFs occur in females with predilection for maxilla,[10] and more than 50% of all cases occur in the incisor-cuspid region.[12] Migration of teeth with interdental bone destruction has been reported in some cases.[13]

Roentgenographically, in a vast majority of cases there is no apparent underlying bone involvement visible. On rare occasions, there appears to be superficial erosion of bone.[14] In the present case, underlying bone involvement was not observed.

While the etiology of POF is unclear, inflammatory hyperplasia originating in the superficial PDL is considered to be a factor in POF's causation.[4] Orkin and Amaidas [15] suggested that excessive proliferation of mature fibrous connective tissue is a response to gingival injury or gingival irritations, subgingival calculus or a foreign body in the gingival sulcus, and dental appliances and restorations. In addition, factors such as a high female predilection and a peak occurrence in the second decade of life suggest hormonal influences.[10]The pathogenesis of POF remains controversial. Chronic irritation of the periosteal and periodontal membrane causes metaplasia of the connective tissue, which initiates formation of bone or dystrophic calcification.[15] Prasad et al [16] observed that POF in some cases may initially develop as a pyogenic granuloma that undergoes subsequent fibrous maturation and calcification. In the present case, plaque and calculus along with hormonal influences due to the patient's age and sex might have been the cause for the gingival growth.

Clinical differential diagnosis for gingival growths includes fibroma, peripheral giant cell granuloma, pyogenic granuloma, peripheral odontogenic fibroma, and peripheral ossifying fibroma. The definitive diagnosis of POF is made by histologic evaluation of biopsy specimen.[6] Histologically, the key feature of this lesion is exceedingly cellular mass of connective tissue comprising large numbers of plump, proliferating fibroblasts intermingled throughout with delicate fibrillar stroma. [14]

Buchner et al[3] observed that the mineralized tissues observed in POF can be of three basic types: 1) bone that may be woven or lamellar bone sometimes surrounded by osteoid, or that may be in trabecular form; 2) cementum-like material that appears as spherical bodies resembling cementum or large acellular round-to-oval eosinophilic bodies, which seemed to have coalesced to form islands in various sizes and shapes; 3) dystrophic calcifications, which can range from small clusters of minute basophilic granules or tiny globules to large, solid irregular masses. The surface of POF exhibits either an intact or, more frequently, an ulcerated layer of stratified squamous epithelium. On occasion, areas will be found to contain multinucleated giant cells that, with the surrounding tissue, bear considerable resemblance to some areas of peripheral giant cell granuloma.[13]

The diode laser has been approved by the Food and Drug Administration (FDA) for virtually all of the soft tissue procedures performed by the Nd:YAG and CO_2 lasers. These procedures include soft tissue curettage incisions, pocket debridement and ablative excisions. Herbert I. Bader said that the diode laser seems to be as

versatile and predictable clinically as CO and Nd:YAG lasers. The soft laser effect of the low-powered diode laser may be a useful adjunct in reducing gingival inflammation In this case diode laser was used, as it induces excellent hemostasis while ensuring superior cutting capabilities, reduced pain, and edema. It also provides fast recovery, and the pattern of healing is predictive.

CONCLUSION:

In conclusion, a slowly growing soft-tissue mass with speckled calcifications in the anterior oral cavity of young adults or children should raise a suspicion of a reactive gingival lesion such as POF. Histopathological examination is essential for accurate diagnosis. Once diagnosed, POF should be treated by total excision to prevent recurrence. A long-term follow-up is also required, which may be helpful in the future to recognize the late complications of diode laser surgery of benign oral soft tissue masses.

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FIGURES:

Figure 1 Pre operative

Figure 2 Excised with laser

Figure 3 Histo pathological report

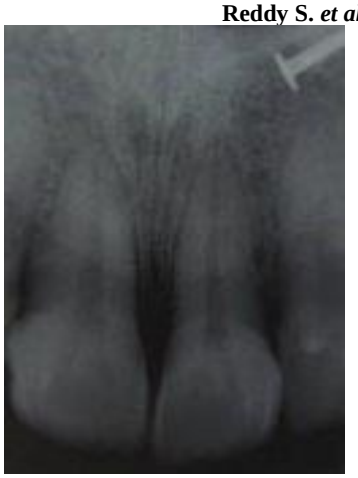

Figure 4 Radiograph showing no bone loss

Figure 5: 1 month post operative