

Successful Treatment of an Odontogenic Peripheral Myxofibroma Using Diode Laser

Kenan Nazarov^a, Sertan Ergun^b, Ali Çekici^a, Hakki Tanyeri^c, Gülden Işık^d

^a Research Assistant, Department of Periodontology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey.

^b Research Assistant, Department of Oral Medicine and Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey.

^c Professor, Department of Oral Medicine and Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey.

^d Professor, Department of Periodontology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey.

Summary: Odontogenic peripheral myxofibroma or intraoral soft tissue myxofibroma is a rare, slowly growing, benign tumor. Only a few details are available in the literature related to this lesion, as opposed to its counterparts, odontogenic myxomas and odontogenic fibromas. To the best of our knowledge, we present the first case of odontogenic peripheral myxofibroma successfully treated with diode laser (810 nm).

Keywords: odontogenic peripheral myxofibroma, treatment, diode laser.

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Odontogenic myxofibroma is a benign, locally destructive and expansile tumor with an abundance of fibrous components, which contains a whole or part of a myxoid stroma containing loosely arranged fusiform, stellate, and spindle-shaped cells.¹⁻⁴ They grow slowly and show less aggressive behavior.¹ Two types of odontogenic myxofibroma have been described: (a) central odontogenic myxofibroma generally occurs centrally, and (b) the peripheral type, frequently observed in the alveolar process of the maxilla.^{5,6} Only a few details are available in the literature related to odontogenic peripheral myxofibroma or intraoral soft tissue myxofibroma, compared to their counterparts, odontogenic myxomas and odontogenic fibromas.

Diode laser was reported to be more effective than conventional surgery, electro-surgery, and cryosurgery in the reduction of intra-operative bleeding and post-operative pain.⁷ It is a very effective and useful alterna-

tive in soft-tissue surgery of the oral cavity, because of its excellent cutting and coagulation ability, with a tolerable damage zone.⁸

In this report, we present a peripheral odontogenic myxofibroma in a 16-year-old female patient treated with diode laser (810 nm).

CASE REPORT

A 16-year-old female was referred to the Department of Periodontology, Istanbul University, Faculty of Dentistry, complaining of a mass which had first appeared a year ago. This mass was located on the left maxillary marginal attached gingiva at the lateral incisor area. The lesion was asymptomatic. Clinical examination revealed a nonulcerative, reddish, soft tissue mass, measuring approximately 1 cm in diameter, with a tense elastic consistency on palpation (Figs 1 and 2). There was no history of trauma and no pertinent medical or dental history. The regional lymph nodes were not palpable. Radiologically, neither erosion of the underlying

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Fig 1 The non-ulcerative, reddish, soft tissue mass, with a tense elastic consistency on palpation.



Fig 2 The non-ulcerative, reddish, soft tissue mass, with a tense elastic consistency on palpation.

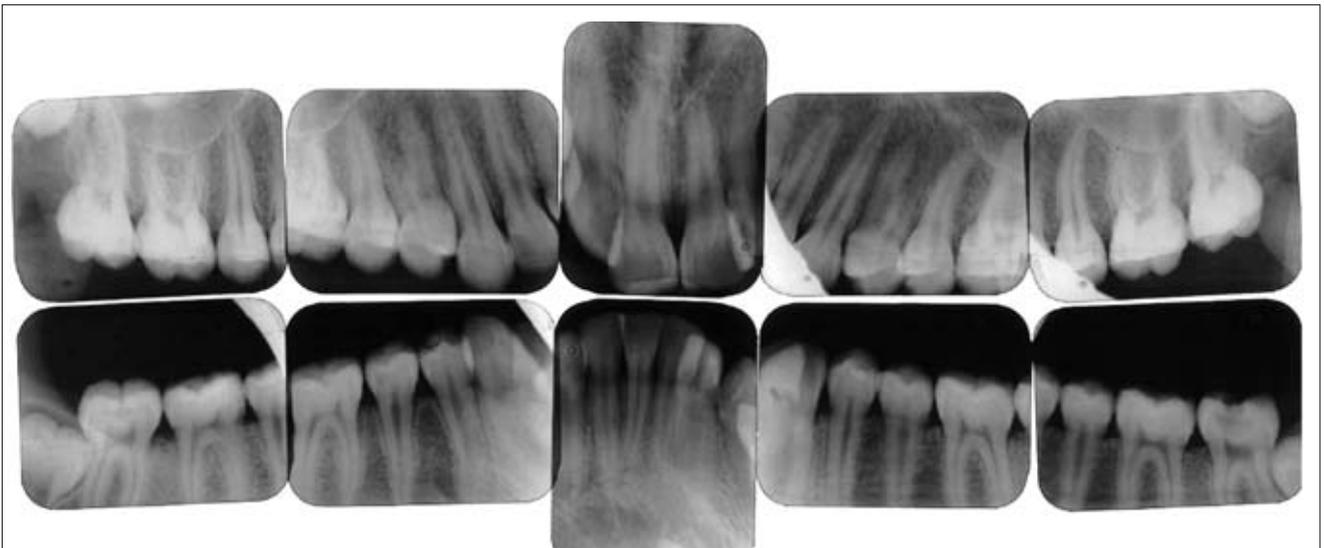


Fig 3 No erosion of the underlying bone and no other signs of radiolucency.

bone nor other signs of radiolucency were present (Fig 3). The overlying mucosa was normal and healthy. Periodontal examination of the patient revealed gingivitis due to poor oral hygiene, but no loss of attachment (periodontal probing depth score [PD] = 2.77, approximal plaque index [API] = 95.24%, and bleeding on probing index [BOP] = 83.33%).

The lesion was clinically diagnosed as reparative granuloma, and an incisional biopsy was taken from the region by conventional surgical techniques to confirm the clinical diagnosis. Macroscopic examination showed that the cut surfaces of the tissue were myxoid in ap-

pearance and grayish white. Microscopic examination showed a surface lining of oral mucosa. Beneath the gingival mucosa, the myxomatous tumor was seen. It was composed of loosely arranged spindle and small hyperchromatic stellate cells surrounded and separated by an abundant myxomatous ground substance (Fig 4). There were cytokeratin-positive odontogenic epithelium islands in the tumor (Fig 5). These histopathological findings revealed that the lesion is an odontogenic peripheral myxofibroma.

An oral hygiene regimen was done to remove any irritating factors (eg, remaining root, decayed tooth, or

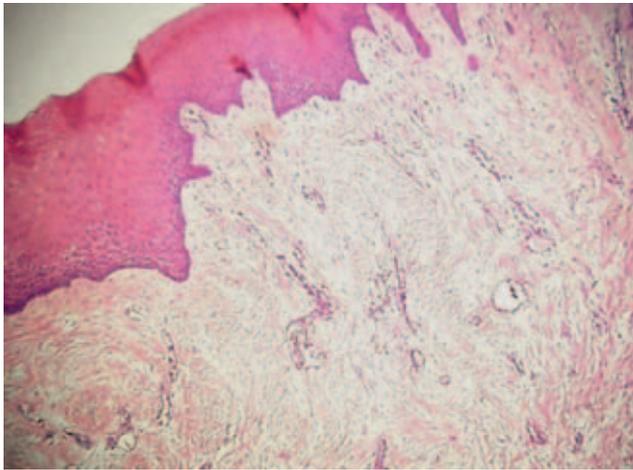


Fig 4 Loosely arranged spindle and small hyperchromatic stellate cells (H&E; 20X original magnification).

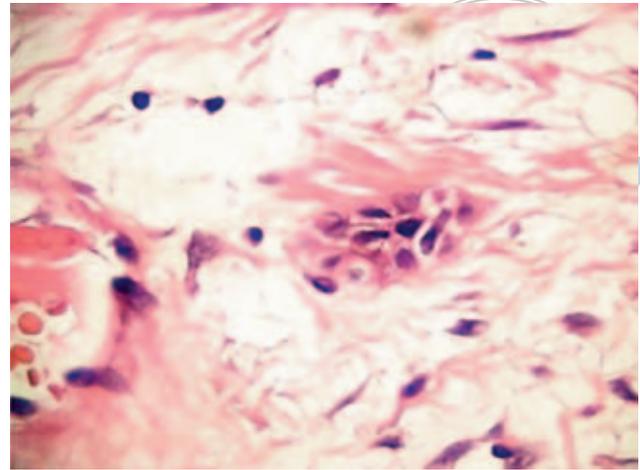


Fig 5 Cytokeratin positive odontogenic epithelium islands (H&E; 40X original magnification).

calculus deposits). The patient was informed about the procedure. We performed the excision of the lesion with a diode laser (Laser Smile, Biolase Technology; Irvine, CA, USA) (810 nm) in a single session under local anesthesia using 1% lidocaine. The excision was performed by using continuous mode with a 4-W power setting in contact mode. Soft, cold food and drink was recommended on the day of surgery to protect the area from edema. No analgesic was prescribed. The second histopathological examination also confirmed the diagnosis. Follow-up examinations were performed on the 2nd, 5th, and 9th days after the operation. The patient declared that she felt no pain in the early postoperative period. Healing occurred by secondary intention with no residual ulceration. No recurrence was observed over a follow-up period of 12 months (Fig 6).

DISCUSSION

Odontogenic peripheral myxofibroma is an extremely rare benign tumor which has a locally aggressive characteristic and a high recurrence rate.⁹ Until today, there have been only a few case reports of odontogenic myxofibromas in the literature, in contrast to a number of publications on odontogenic myxomas.^{5,9-12}

The recommended therapy is local conservative enucleation with adequate margins, the extent of which depends on the size and location of the tumor.¹³ Complete removal of the tumor, leaving no remnants attached to the soft tissue or bone, prevents a recurrence.¹⁴ Köseoglu and Olgac reported recurrence of an odontogenic peripheral myxofibroma two



Fig 6 No recurrence was observed over a follow-up period of 12 months.

months after its conservative surgical removal, whereas other authors declared no recurrence.^{5,9-12} Likewise, we observed no recurrence over a follow-up period of 12 months.

Reparative granulomas, neurofibromas, traumatic fibromas, extra-osseous odontogenic fibromas, nerve sheath tumors, oral focal mucinosis, and non-neoplastic or neoplastic connective tissue should be considered in differential diagnosis.¹⁵ As mentioned previously, our clinical pre-diagnosis was reparative granuloma. Histopathologically, diagnosis to differentiate between peripheral myxomas and oral focal mucinosis is relatively difficult. Oral focal mucinosis has a normal color and normal hardness without inflammatory symptoms, but

the peripheral myxoma is a dark red, soft elastic tumor.¹⁶ The color of the tumor of the present case was dark red.

Previously reported odontogenic myxofibromas were removed using conventional surgical techniques. We performed the total excision of the lesion with diode laser (810 nm). Use of lasers in oral surgery has been reported to be more effective than conventional surgery, electrosurgery, and cryosurgery in the reduction of intra-operative bleeding and post-operative pain.⁷ Diode laser has a greater absorption by hemoglobin, oxyhemoglobin, and melanin than the Nd:YAG laser, and its penetration depth is smaller than the Nd:YAG laser in blood-rich tissues. Because of this characteristic property, it is accepted to be safer to use diode laser near bone or large vessels.^{8,17} When compared with CO₂ laser, diode laser has a greater but still predictable penetration depth.¹⁸ Stubinger et al¹⁹ pointed out the extremely small zone of thermal necrosis in surrounding tissues. Saleh and Saafan reported that diode laser provides the surgeon a useful tool, combining the benefits of both the Nd:YAG laser and the CO₂ laser, meanwhile eliminating their disadvantages.¹⁷

We think that the infiltration of the myxomatous tissue of the odontogenic peripheral myxofibroma into the surrounding bone without immediate destruction complicates conventional surgical techniques. We agree with the opinions stated by Goharkhay et al⁸ and Saleh and Saafan¹⁷ that the diode laser (810 nm) is a useful alternative to conventional techniques in soft-tissue surgery of the oral cavity. In our opinion, all myxofibromatous lesions of the oral cavity should be observed over the long term, because of their well-known recurrence potential.

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Contact address: Kenan Nazarov, Istanbul University, Faculty of Dentistry, Department of Periodontology, 34390 Capa Istanbul, Turkey. Tel: +90-212-414-2020, Fax: +90-212-531-2230. e-mail: azeri_dentist@yahoo.com