

Laser-Assisted Gingivectomy To Aid The Eruption Of Permanent Maxillary Central Incisors- A Case Report

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Abstract

Local factors can lead to the failure of eruption of permanent maxillary central incisors such as early loss of deciduous incisors due to trauma, supernumerary teeth or odontomes, and dilacerated roots. This may lead to loss of space and the presence of thick mucosa covering the permanent incisors that may impede their path of eruption. Delayed permanent teeth can result in irregular dentition, malocclusion, and cystic changes of surrounding bone leading to major adverse effects. This can affect the functional, esthetic, and psychological well-being of children. Therefore, it becomes necessary to create an opening window to facilitate eruption as soon as possible. In the present case laser-assisted gingivectomy has been used to aid

INTRODUCTION:

Failure of eruption of maxillary permanent incisor teeth is usually seen in the mixed dentition period between the ages of 7- 9 years. The delayed eruption may occur due to certain local factors such as space loss, obstruction, or trauma to the primary incisors.^[1]

Early deciduous tooth loss is an important cause of late anterior teeth eruption. It may be caused by supernumerary teeth or odontomes which are commonly found in the anterior maxilla. These may arise from tooth germs or teeth still in the growth process induced by local trauma, infection, inheritance, and genetic mutations. Trauma to the developing permanent maxillary incisors may also lead to root dilacerations which can impede their eruption.^[2]

The presence of a thick mucosal barrier over the developing maxillary central incisors is the most common clinical presentation, in relation to their delayed eruption. Commonly used methods to remove this mucosal tissue are electrosurgery, routine surgery, and laser surgery. This may or may not be followed by orthodontic extrusion, depending on the degree of submersion or impaction.^[3]

The presented case discusses the uses and implications of laser-assisted gingivectomy in a child with a delayed eruption of maxillary central incisors.

CASE REPORT:

A 9 year old female patient was referred to the Department of Pediatric Dentistry, Santosh dental college Ghaziabad, India. The patient's chief complaint was the presence of multiple mucosal swellings over the upper front tooth region. Past dental history revealed an early loss of the patient's primary central incisor due to a fall during playing. No treatment was done at that time. There was no significant medical history.

On examination bulbous mucosal thickening could be seen in the maxillary central incisor region. (Fig. 1) There was no pain on palpation. An IOPA was advised for the patient. The patients' examination along with her age and relevant history suggested a failure in the eruption of permanent maxillary central incisors. The thick mucosal tissue was impeding the eruption.

Laser surgery was planned for the removal of the tissues for the patient. Application of topical anesthetic gel (KODEN, USA) was done at the site of gingivectomy to minimize discomfort if any was present. The patient was advised to wear protective eyewear. Laser ablation of the hypertrophied gingiva was done using a DIODE laser (Fig.2) with 650 nm wavelength and high-volume suction. The procedure was uneventful. (Fig3,4,5)

Recall visits were scheduled on the 3rd and 7th days postoperatively. The patient did not complain of any postoperative discomfort and healing was normal.



Figure 1- Pre Operative Intra Oral Frontal View, Mucosal Covering Over Region Of 11, 21



Figure 2: Diode Soft Tissue Laser Unit



Figure 3: Laser Application At The Incisal Region Of 11,21 For Cauterization Of Mucosal Tissue



Figure 4: Partial Exposure Of Incisal Region 21



Figure 5: Exposure Of Incisal Edge Of 11, 21

DISCUSSION:

Routine surgery is the easiest and cheapest method available for gingivectomy. A surgical blade is used to cut tissue directly, but it often causes more bleeding and discomfort. Electrosurgery uses small size surgical needles and electrodes which are easy to use in a confined space in the mouth.^[4] It causes heat cauterization of the oral tissues, which clots the blood, often producing a pungent odor that may not be liked by children.

Dental lasers are either exclusively used on soft tissue (such as Nd:YAG, diode, and 10.6- μ m CO₂ units) or hard-tissue lasers (Er:YAG and Er,Cr:YSGG). They have a good hemostatic effect, and a shorter healing period, and are increasingly accepted by children.^[5,6] Hence we used the DIODE laser for the present case.

The wavelength is an important parameter to evaluate laser effectiveness. A study conducted by El-Baky et al concluded that a low-level diode laser therapy (650 nm) is an effective method for accelerating wound healing after gingivectomy surgery. This is due to higher collagen production leading to a better remodeling of the connective tissue.^[7] We also used a wavelength of 650 nm in our patient and the results were promising.

In conclusion, laser-assisted gingivectomy is a simple and successful technique that can be safely used in children without producing any pain and/ pungent odor.

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