LASER ASSISTED EXCISION OF A GINGIVAL POLYP IN A PEDIATRIC PATIENT: REPORT OF A CASE

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ABSTRACT
Evolution of technology has taken dentistry leaps and bounds, and the introduction of lasers has indeed been a boon to pediatric dentists. Lasers have made pediatric patient’s dental treatment more comfortable and less time consuming and have proven to take the relationship between the parents, kids and the dentist a notch higher. This report illustrates the use of a diode laser (940nm) for the excision of a gingival polyp in an 11-year-old patient. The advantages of the laser were evident with the omission of any infiltration as the procedure was performed with a simple topical anesthesia providing a bloodless field with less post operative discomfort. The patient did not report of any pain and there was no necessity of any antibiotics or analgesics post the procedure. Absence of bleeding makes it easy to restore the teeth in the same appointment. Minimal anesthesia and better patient compliance present a strong statement for lasers to be incorporated into modern dental practice as a viable substitute to the traditional scalpel surgery.

KEY WORDS: Gingival Polyp, Gingival Epulis, Scalpel, Electrocautery, Lasers, Diode.
INTRODUCTION
Localized reactive soft tissue lesions are quite common in children with varied presentations.[1] These reactive lesions are described under four categories, focal fibrous hyperplasia, pyogenic granuloma, peripheral ossifying fibroma and peripheral giant cell granuloma. Focal fibrous hyperplastic lesions are more common and these have varied presentations either as those pedunculated swellings, called as ‘polyp’ or lesions with specific occurrence in the gingiva, termed as ‘epulides’. [2, 3]

Gingival Polyps, which are focal fibrous hyperplastic lesion, are also known as, localized gingival enlargement or epulis. The primary reason for the occurrence of gingival polyp or epulis is attributed to local factors such as caries, calculus and tooth malposition. The gold standard for its treatment is surgical excision performed with a scalpel, electrocautery or lasers.[4, 5]

Lasers have made their impression in the medical field. The word “laser” is an acronym for “Light Amplification by Stimulated Emission of Radiation.” Introduction of lasers into dentistry in 1990’s gave the much needed impetus and has increased the acceptance rate of most of the dental treatments.

Various advantages of lasers such as minimal use of anesthesia, provision of hemostasis and enabling a bloodless field with a laser bandage of the wound convinced numerous clinicians to incorporate lasers as an integral part of the dental practice with promising results. Soon, every specialty of dentistry right from endodontics to prosthodontics has embraced lasers. The benefits of lasers were enumerated by numerous authors in pediatric dentistry explaining how this cutting edge technology proved to be a boon for apprehensive patient, providing the intended treatment with ease, comfort and helped in establishing the necessary ‘trust’ between the patient and the specialist, the cornerstone of pediatric dental treatment. [6,7]

The characteristics of any laser are determined by its wavelength. Different lasers used in dentistry for various applications are defined by their wavelengths. Lasers such as the CO$_2$ (10,600nm), Nd: YAG (1064nm), Er: YAG (2940nm), Er, Cr: YSGG (2780nm) and diodes (810-980nm) are available at the disposal of the pediatric dentist to perform both soft tissue and hard tissue procedures. [8-13]
Gingival remodeling or excision of a gingival polyp can be performed by both hard and soft tissue lasers. But owing to the cost of hard tissue lasers, soft tissue lasers such as diode have provided the best alternative as they are compact, table top models and less expensive. Our present case report highlights the use of a diode laser for the excision of a gingival polyp.

**CLINICAL PRESENTATION**

An 11-year-old patient reported to our hospital with a chief complaint of painless growth of the gum in relation to the upper back tooth region since 5 months. On further elucidation of the history, he complained of bleeding from the gingiva associated with the growth on brushing. Her medical history was non contributory. Though the patient noticed the lesion as a small pea sized one, she was reluctant to report as it was not troubling her much. But with associated food lodgment and increase in the size, the patient reported to our hospital.

Intraoral examination revealed a reddish-pink soft gingival overgrowth of 5x3 mm in size, localized to interproximal area and presenting with a pedunculated base with relation to 16 and 17 (Fig. 1). The oral hygiene status was poor. Patient’s blood examination results were within normal limits. Intra oral periapical radiograph revealed dental caries on the distal aspect of 16. Summating the clinical presenting features, a provisional clinical diagnosis of gingival polyp was made.

**CASE MANAGEMENT**

The procedure was explained and an informed consent taken from the parent. Thorough scaling was performed to remove the extensive supragingival calculus (Fig. 2) which had contributed to the progression of the overgrowth and all necessary homecare instructions were given for the maintenance of a good oral hygiene. A topical anesthetic comprising 2% lidocaine hydrochloride gel was applied with a waiting period of 3 min. All the necessary precautions including wearing of protective glasses by clinician, attendant and the patient were done prior to the laser treatment.
A diode laser (Biolase, ezlase™) with an 940nm wavelength was used. The gingival overgrowth was removed using a 300µm fiber tip with a laser power setting at 0.8 Watts in a Continuous Mode using an initiated tip with small strokes in contact mode progressing from the palatal aspect towards the interproximal area. (Fig. 3) The entire gingival polyp was excised as per the outline marked by the laser prior to the procedure. The fiber tip was cleaned of the debris with wet gauze. The entire procedure was accomplished within 3 minutes without any pain, much to the astonishment of the child and the parent. There was completely bloodless field uncovering the decay with respect to 16. (Fig. 4) The patient was referred for further restorative procedure at the same appointment. No antibiotics or analgesics were prescribed. A telephonic conversation with the patient’s parent post operatively revealed that the patient was at ease with neither pain nor discomfort.

**DISCUSSION**

Various modalities of treatment have been attempted for the excision of a gingival polyp ranging from scalpel to electrocautery with varying degrees of success.[4,5] Though electrocautery provides better visibility and is more conservative than the scalpel wound,
poor healing and presence of a flesh burning smell associated with an excessive heat buildup, compromising the osseous architecture have dented it’s benefits over time.\textsuperscript{[14,15]}

Lasers on the other hand have a vast array of benefits such as providing a bloodless field, improving the visibility with minimal use of anesthesia and absence of any sutures and reduced operative time with very minimal post operative pain.\textsuperscript{[16, 17]}

Lasers with varying wavelengths, right from CO\textsubscript{2} (10,600nm), Er:YAG (2940nm) , Nd:YAG (1064nm) to Er,Cr:YSGG (2780nm) have been used by pediatric dentists worldwide for an array of soft tissue and hard tissue procedures. Caries removal, cavity preparation, pit and fissure sealants, laser analgesia etc are some of the applications performed by the hard tissue lasers. Soft tissue lasers such as the Nd: YAG and the diode lasers are useful in applications such as exposure of the tooth to aid in proper eruption, ankyloglossia, frenectomy and gingival remodeling or gingivectomy to name a few attributed to their excellent hemostatic abilities.\textsuperscript{[8-13]}

The primary purpose of utilizing a laser in our present case report was to create an atmosphere devoid of fear and anxiety while enhancing the treatment acceptability, and to serve this purpose a diode laser was the ideal choice with its excellent hemostatic abilities and portable size. Diode laser is a semiconductor laser that uses solid state elements, such as Gallium, Arsenide, Aluminum, and Indium. These are available in wavelength’s of 810 to 980nm.\textsuperscript{[16, 18]}

In our present case report, we have used the diode laser with a wavelength of 810nm for the excision of the gingiva polyp. Unlike the other lasers which have affinity towards water and hydroxyapatite, a diode laser has an affinity for pigmented and vascular lesions comprised of chromophores like melanin and hemoglobin, making it an efficient tool for coagulation.\textsuperscript{[18]}

Hence with the use of diode laser we were able to attain immediate hemostasis with enhanced visibility and were able to mark the boundaries of the carious tooth. Diode laser cuts and coagulates as well as sterilizes the area, leading to minimal inflammatory response eventually resulting in less post operative discomfort. Numerous studies have given credible evidence that lasers have attained hemostasis enhancing post operative wound healing with reduced discomfort without the need for any analgesics.\textsuperscript{[19-22]}
Diode lasers have been reported to be effective compared to other lasers especially for the excision of intraoral soft tissue lesions.\textsuperscript{[23]} Literature is replete with numerous case reports wherein diode lasers were highly successful in the excision of localized reactive lesions of the gingiva.\textsuperscript{[24, 25]}

Our case report emphasizes the fact that a diode laser enhances the treatment acceptance by the patient by reducing the surgical time, with absence of any post operative pain and the need for any medication making it a viable alternative for the scalpel.

\textbf{CONCLUSION}

Diode lasers have emerged as a ‘Magic Wand’ in modern minimally invasive pediatric dentistry and have proved successful for the treatment of reactive lesions of the gingiva such as the gingival polyp. However, well documented case series with long term follow up is required to evaluate the clinical effectiveness for incorporating lasers as a regular tool in pediatric dental practice.

\textbf{REFERENCES}