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EKSPOZIMI I DHËMBËVE TË PËRHERSHËM TË IMPAKTUAR DUKE PËRDORUR LAZER DIODË 980 NM.

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Përmbledhje

Ky studim synon të demonstrojë se si teknika lazer mund të ndihmojë pozitivisht në ekspozimin e dhëmbëve të impaktuar për arsye ortodontike.

Materiali dhe metodat: Ky studim përfshiu 30 pacientë, të trajtuar për ekspozim të dhëmbëve të impaktuar, me një lazer diodë 980 nm, për arsye ortodontike. Periudha e trajtimit ishte nga maji 2013 deri në maj 2016 në Klinikën Stomatologjike Universitare në Tiranë. Periudha e ndjekjes ishte nga një javë, dy javë, deri në gjashtë muaj vlerësime të rezultateve. Kllapat janë vendosur menjëherë pas operacionit, për shkak të kushteve të mira të koagulimit.

Rezultatet: Koha e reduktuar e trajtimit kirurgjik në krahasim me metodën konvencionale. Asnjë nga pacientët nuk raportoi efekte anësore pas operacionit, pa gjakderdhje, pa dhimbje, asnjë vështirësi në ënjtje dhe asnjë shqetësim gjatë periudhës së vlerësimit pas trajtimit.

Përfundim: Lazeri me diodë 980 nm është një modalitet i mirë për ekspozimin e dhëmbëve të impaktuar për arsye ortodontike. Kjo metodë siguron rezultate të mira operative dhe postoperative pa asnjë efekt anësor. Lazeri me diodë është efektiv dhe i sigurt për indet e buta.

Fjalë çelës: *Lazer diodë 980 nm, ekspozimi i dhëmbëve, shërimi i plagëve*

EXPOSURE OF IMPACTED PERMANENT TEETH USING 980 NM DIODE LASER.

Abstract

This study aims to demonstrate how laser technique could positively assist in the exposure of impacted teeth for orthodontic reasons.

Material and methods This study included 30 patients, treated for impacted teeth exposure, with a 980 nm diode laser, for orthodontic reasons. Treatment period was from May 2013 to May 2016 in the University Dental Clinic in Tirana. The follow-up period was from one week, two weeks, to six months evaluations of the results. The brackets were placed immediately after surgery, due to the good conditions of coagulation.

Results Reduced time of surgical treatment compared to the conventional method. None of the patients reported post-surgical side effects, no bleeding, no pain, no swelling difficulties, and no discomfort during the evaluation period after the treatment.

Conclusion 980 nm diode laser is a good modality for the exposure of impacted teeth for orthodontic reasons. This method provides good operative and postoperative results without any side effects. Diode laser is effective and safe for soft tissue.

Keywords: *Diode laser 980nm, tooth exposure, wound healing*

Introduction

An impacted tooth, complete developed, will not come out in its normal position after the normal period of eruption, for various reasons. (1), (2). The most common and important reasons attributed to delayed eruption are usually insufficient space, early loss of primary teeth, some cases of hormonal and metabolic disorders etc. (3-10). The diagnosis may be obtained after a thorough clinical and radiological examination. Impacted teeth have become the field of study and action of many specialties of Dentistry. Various treatment modalities for the treatment of impacted teeth are surgical extraction, transplantation, prosthetic replacement, surgical exposure, and expectation of spontaneous eruption or surgical exposure, accompanied by orthodontic treatment (11, 12). Many studies demonstrated that the multidisciplinary approaches, orthodontic and surgical treatment has better results. Various treatment modalities have been proposed to avoid the complications associated with impacted canines such as the use of a scalpel, caustic agents, electrocautery, and diode laser. However, Diode laser therapy is an effective and non-invasive treatment option for exposure of impacted teeth without bone coverage. But in most cases, it first requires orthodontic preparation of the maxillary and mandibular arches to create adequate space before surgical exposure. Laser offers different wavelengths like 450nm/810nm or 980nm. Out of which 450nm can be used in non-contact/contact mode whereas 810nm and 980nm are used in contact mode.

Diode laser therapy is an effective and non-invasive treatment option for the exposure of impacted teeth (13, 14, 15, 16).

This study aims to demonstrate how laser technique could positively assist in the exposure of impacted teeth for orthodontic reasons.

Material and method

This study included 30 patients (12 males and 18 females) aged 10 to 24 years with an average of 17,03 years old treated for exposure of impacted teeth for orthodontic reasons with diode laser 980 nm. Treatment was conducted from May 2016 to May 2019 at the University Dental Clinic, Tirana, Albania.

The diagnosis of teeth impaction was based on both clinical and radiological examinations. It was considered the amount of space in the dental arch, morphology, and position of the adjacent teeth, contours of the bone. The radiographic examinations included panoramic radiographs, CT and CBCT.

Informed consent was obtained from all subjects involved in the study. The treatments were performed on an outpatient basis under local anesthesia. The mucosa covering the teeth was excised with diode laser 980 nm, CW, 3 w.

The follow-up visits were scheduled after one week, two weeks, six months after the treatment for evaluation of early and long-term results.

All teeth exposure was photographically documented at all stages of treatment and healing.

Results

This study included 30 patients treated for impacted tooth exposure for orthodontic reasons.

Impacted teeth were: 20 maxillary canines, 4 maxillary incisors, 3 mandibular canines, 3 mandibular premolars. (Table nr.1) According to the protocol treatment, the exposure of the teeth was performed with diode laser 980 nm, CW, 3 w under local anesthesia (Fig 1.b). Immediately after the excision, the surgical fields were bloodless (Fig 1.c, Fig,2, b).

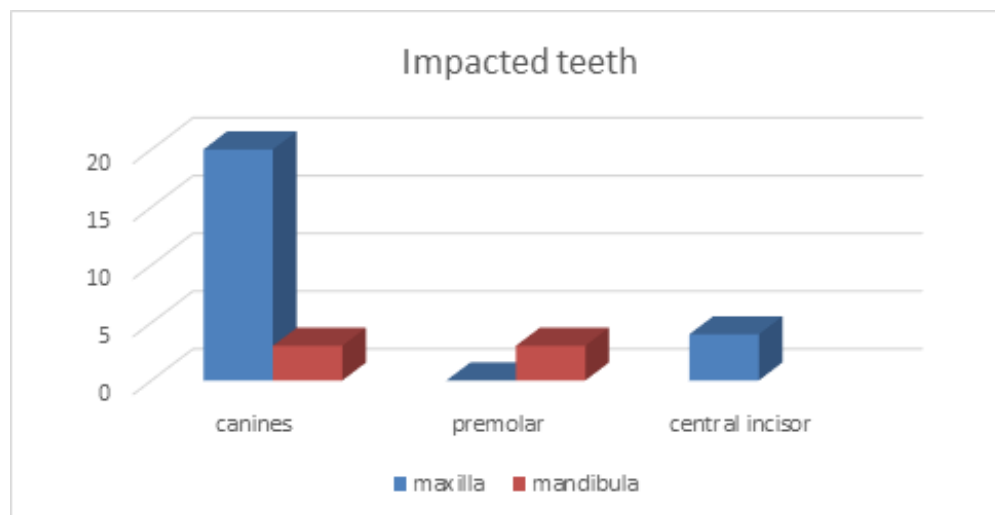


Table nr.1 Impacted teeth in mandibula and maxilla

The intraoperative advantage of using a 980 nm diode laser was less chair-side time reducing the fear and anxiety during surgical procedures. The impacted teeth were prepared to permit bonding of the orthodontic brackets; they were bonded to a favorable position immediately in the same session after the surgical procedure. The complete absence of bleeding gave the possibility to immediately bond the bracket in dry enamel, so preventing the possibility to detach and reducing the risk of further re-intervention. None of the patients reported post-surgical side effects, no bleeding, no pain, no swelling troubles, and no discomfort after one to two weeks after the treatment (Fig. 1.d) It was evident a fast and good healing process (Fig 1. e, Fig 2.c). Diode laser is effective and safe for soft tissue.



Fig. 1 a Panoramic view of two impacted maxillary canines



Fig. 1.b During the surgical procedure. Exposure of the right and left impacted canines in the same session with diode laser 980 nm, CW, 3 w under local anesthesia.

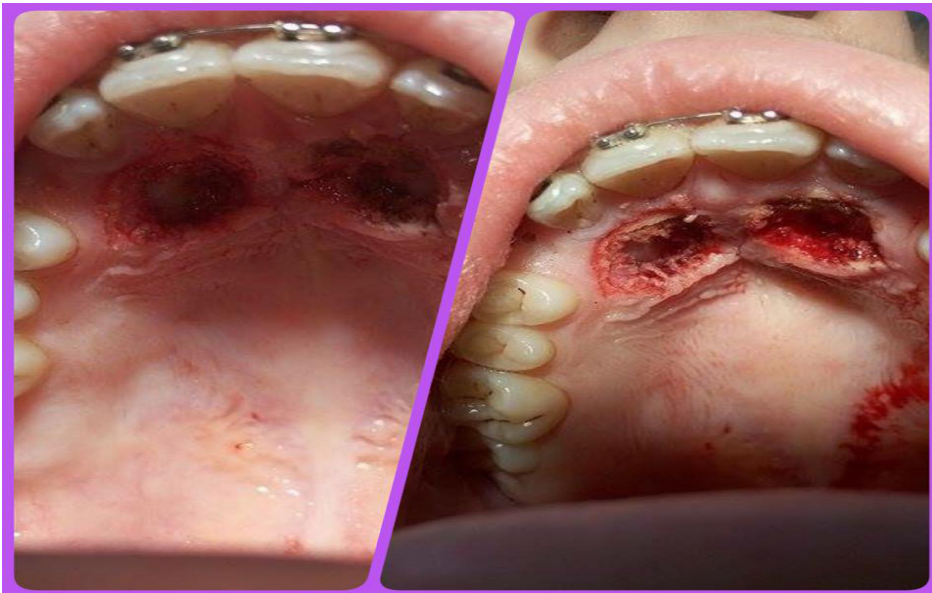


Fig. 1.c Immediately after the treatment.



Fig.1.d Two days after the treatment.



Fig.1.e 2 weeks after the treatment.



Fig.2.a Impacted maxillary incisor



Fig.2. b. Immediately after the surgery



Fig 2.c. 6 months after the surgical exposure

Discussion

A total of 30 patients (12 male and 18 female) were treated with the diagnosis of tooth impaction. The treatment is based on both clinical and radiological examinations. The prevalence of impacted teeth were maxillary canines with 66 %. A clinical and radiological examination was performed prior to the surgical intervention. The radiological examinations included panoramic radiographs, and the CBCT. The clinician must consider the amount of space in the dental arch, morphology of the impacted teeth, and position of the adjacent teeth, contours of the bone.

In the literature there are 3 main options in the management of impacted teeth: extraction of an impacted tooth, extraction of an adjacent tooth, or non-extraction treatment involving orthodontic space opening and surgical exposure (15, 16). When non-extraction treatment is performed, the orthodontic treatment is often initiated before the surgical exposure, as to our cases, to align the teeth, to open the space for the impacted tooth, and to enhance the natural eruption process (16, 17, 18,19). A good modality for the surgical exposure of impacted teeth is the use of a diode laser. Diode laser offers advantages like patient compliance, reduced pain, and discomfort, a faster healing process, absence of bleeding, and less chair side time (20). The greatest advantage is the complete absence of bleeding, which gives the possibility to immediately bond the bracket in dry enamel.

Our postoperative results of no pain and no swelling troubles coincide with the observation of other authors (21, 22,). The surgical exposure of impacted teeth with diode laser facilitated the placement of the brackets immediately after surgery due to good coagulation. These findings correspond with the author's reports (23, 24,25).

Conclusion

Laser surgery for exposure of impacted teeth is a modality with beneficial effects and advantages.

The intraoperative advantage is the perfect coagulation, the surgeon has a good visualization of the operative field, operative time is very short which made possible the minimization of fear and anxiety in the

patient during the procedure. The postoperative period is without complication and any discomfort.

The use of lasers in orthodontics, and particular diode lasers, has made it possible for orthodontic clinicians to more easily address the challenges faced daily in an orthodontic practice.

Conflicts of Interest: There are no potential conflicts of interest or any financial or personal relationships with other people or organizations that could inappropriately bias conduct and findings.

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