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Laser Operculectomy: Minimal Invasive Management of Pericoronitis in Children - A Case Report

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Abstract: ***Pericoronitis is an inflammatory condition affecting the soft tissues surrounding a partially erupted tooth and may occasionally occur in paediatric patients. Laser-assisted operculectomy has emerged as a minimally invasive alternative with improved patient acceptance and reduced postoperative discomfort. This case report describes the management of pericoronitis in a 6-year-old girl using a diode laser. The child presented with pain and difficulty during mastication in the lower left posterior region. Clinical examination revealed an inflamed operculum covering the partially erupted mandibular first permanent molar. Operculectomy was performed using a diode laser under topical anaesthesia. The procedure was completed with minimal bleeding and good patient cooperation. Postoperative healing was satisfactory, with complete resolution of symptoms after two weeks.***

Keywords: Pericoronitis, Operculectomy, Diode laser, Pediatric Dentistry, Soft Tissue Surgery, Minimally Invasive Dentistry, Dental Anxiety, Eruption Disturbances, Operculum, Child Behaviour Management.

1. Introduction

Pericoronitis is a localized inflammatory condition involving the soft tissues surrounding a partially erupted tooth[1]. It commonly develops when gingival tissue overlies the erupting crown, creating an area favourable for food lodgement and bacterial accumulation.[2]

Patients usually present with pain, swelling, tenderness, and difficulty during mastication.

In children, eruptive changes and inadequate oral hygiene often predispose partially erupted teeth to recurrent inflammation[3] Initial management includes irrigation, oral hygiene maintenance, saline rinses, and analgesics.[4] However, recurrent or persistent inflammation may require surgical removal of the operculum [5].

Laser-assisted soft tissue surgery has improved patient comfort and minimally invasive tissue management.[6] Diode lasers provide precise incision with minimal tissue trauma and improved visibility during surgery.[7] Laser procedures also promote reduced postoperative swelling and bacterial reduction.[8] In addition, laser-assisted procedures often require less anaesthesia and provide better haemostasis because of simultaneous cutting and coagulation.[9] Studies comparing laser and conventional methods have reported favourable healing and improved patient acceptance with laser-assisted operculectomy.[10]

2. Case Report

A 6 year old girl reported with complaint of pain in left lower back tooth region. The pain was dull aching along with food lodgement which aggravates on chewing. This has led to less intake of food. No relevant medical or dental history was present. Intraoral examination relieved presence of operculum covering the occlusal surface of lower left first permanent molar.

Operculum was pinkish red in colour, firm, resilient and tightly adherent to the gingival tissue distal to lower left first molar tooth(figure.1). An IOPA radiograph was taken which confirmed presence of operculum in relation to first permanent molar(figure.2).

Figure 1: Pinkish red in colour, firm, resilient operculum and tightly adherent to the gingival tissue distal to lower left first molar tooth

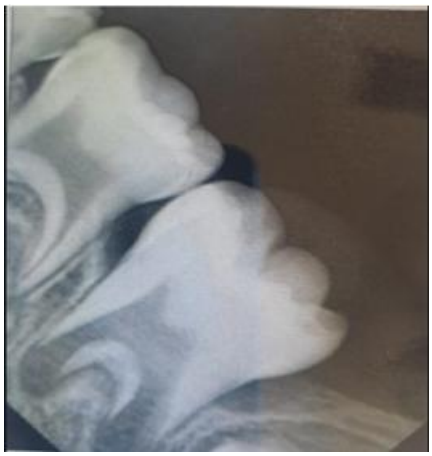

Figure 2: IOPA radiograph which confirmed presence of operculum in relation to first permanent molar

The removal of the operculum was done under topical anaesthesia and surgically excised using diode laser and crown structure of tooth was exposed (Figure 3 and 4). Post operative instruction and analgesia were prescribed.

Figure 3: Removal of operculum using diode laser and exposed crown structure

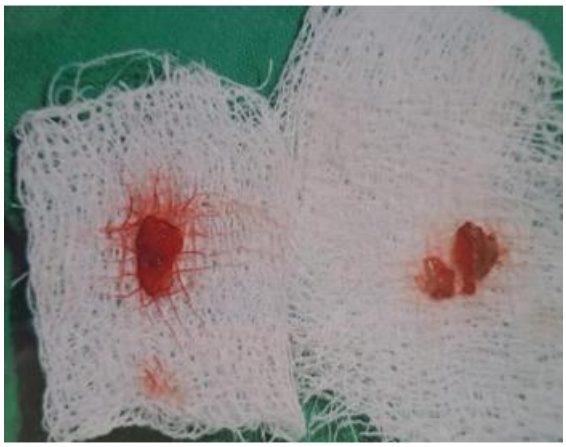

Figure. 4: Surgically excised operculum tissue

After 2 week patient was recalled and no post operative complication observed (Figure.5 and 6).

Figure 5 and 6: After 2 weeks patient was recalled with no complication and proper healing

3. Discussion

Operculum formation is commonly observed during eruption of permanent molars in children, particularly between 6 and 12 years of age. Pericoronitis has been reported in approximately 4.9% of young individuals with erupting teeth.[11] The management of pericoronitis initially focuses on reducing pain and controlling local infection through irrigation, oral hygiene maintenance, saline rinses, and analgesics. However, these measures often provide only temporary relief when the overlying operculum persists.[12]

During eruption, partially erupted molars are more susceptible to plaque accumulation and recurrent inflammation because of difficulty in maintaining oral hygiene. [13] Food debris and microorganisms trapped

beneath the operculum create a stagnant area that favours bacterial growth and recurrent irritation of the surrounding tissues. This may result in pain, swelling, discomfort during mastication, and difficulty in maintaining oral hygiene. In children, these symptoms may further affect dietary intake and overall comfort. Therefore, removal of the operculum becomes necessary in persistent or recurrent cases to eliminate the source of infection and facilitate proper eruption of the tooth. Evidence-based recommendations support operculectomy when conservative management fails to provide long-term relief. [14] Conventional operculectomy is a commonly practiced procedure because of its simplicity and accessibility. However, intraoperative bleeding can obscure the surgical field and increase treatment time and anxiety associated with surgical procedures is an important concern in children and may affect their future attitude towards dental treatment.

Laser-assisted procedures have gained popularity in paediatric dentistry because of their minimally invasive nature and improved patient acceptance. Diode lasers provide precise incision with simultaneous cutting and coagulation, resulting in excellent haemostasis and improved visibility during surgery. Reduced tissue trauma and bacterial reduction associated with laser procedures contribute to improved postoperative comfort and healing. Laser-assisted surgeries often require minimal anaesthesia and are usually completed in a shorter duration, which further improves child cooperation during treatment.

In the present case, diode laser operculectomy was completed successfully with minimal bleeding and satisfactory cooperation from the child. The patient reported complete resolution of symptoms during follow-up, highlighting the clinical and behavioural advantages of laser-assisted operculectomy in paediatric dentistry.[15]

4. Conclusion

Laser-assisted operculectomy is an effective and minimally invasive treatment option for the management of pericoronitis in children. Diode lasers provide improved haemostasis, reduced discomfort, and better child cooperation.

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