IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

LAP-D: Extending the armamentarium for painless dentistry

Author Information-
Dr Nidhi Agarwal[1]
DrAshish Anand[2]

Dr Smita Kumari[3]
Dr Aakansha Sharma[4]

Dr Nidhi Agarwal- Professor and Head, Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar, Uttarpradesh, INDIA

1. Dr. Ashish Anand- Professor, Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar, Uttarpradesh, INDIA

2. Dr Smita Kumari- Post Graduate student, Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar, Uttarpradesh, INDIA

3. Dr Aakansha Sharma- Senior Lecturer, Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar, Uttarpradesh, INDIA

4. Dr Nandita waikhom- Senior Lecturer, Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar, Uttarpradesh, INDIA

Author Names- Agarwal N, Anand A, Kumari S, Sharma A, Waikhom N

Corresponding Author details-

Dr Nidhi Agarwal- Professor and Head

Department of Pediatric Dentistry

Institute of Dental Studies and Technologies

Address- Institute of Dental Studies and Technologies Modinagar, U.P.

KEY WORDS

Laser, child, pediatric dentistry, low level laser therapy

Introduction

Laser dentistry and soft-tissue laser surgery, in particular, have become widely adopted in recent years. The use of lasers has dominated dentistry as a more accessible and well-liked treatment option than the previously used blade and scalpel techniques. The diode laser contact (810nm – 980nm), CO2 non- contact lasers (carbon dioxide, 10600nm), and the YAG family (2100nm – 2940nm), i.e. ErYAG (erbium yttrium aluminium garnet), ErCrYSGG (erbium chromium yttrium selenium gallium garnet), and HolYAG (holmium yttrium aluminium garnet) are the primary lasers used in dentistry[1].

The main objective of Laser Assisted Pediatric Dentistry (LAP-D) is to give young children the essential dental care in a friendly and comfortable environment which is less painful, less invasive, quicker and enables faster recovery. The diode-laser technology enables enhanced control of side effects that result from tissue overheating and improves soft-tissue surgical outcomes[2].

A contact mode is used for diode lasers to biostimulate the tissues and reduce the latent heat dissipation in surrounding tissues due to formation of zone of carbonization in contact method of lasers usage[2].

Case report 1

A twelve year old girl reported to the Department of Pediatric and Preventive with the chief complaint of pain in maxillary left posterior tooth region since two months.

Intraoral examination revealed grade IV gingival overgrowth over occlusal surface of first premolar. The deciduous second molar was attached to the overgrown gingival surface and was grade III mobile. An IOPAR was advised for the affected tooth and in radiographic examination, the first premolar exhibited three roots the incidence of which is very rare (0 to 6%_____)[3]. The gingival growth was non-bleeding but tender in nature, possibly due to occluding masticatory forces. Decision was taken to excise the overgrowth using a soft tissue diode laser. A diode laser of 840 nm wavelength set at a power output of 4.5 watt was used in a contact mode to excise the tissue.

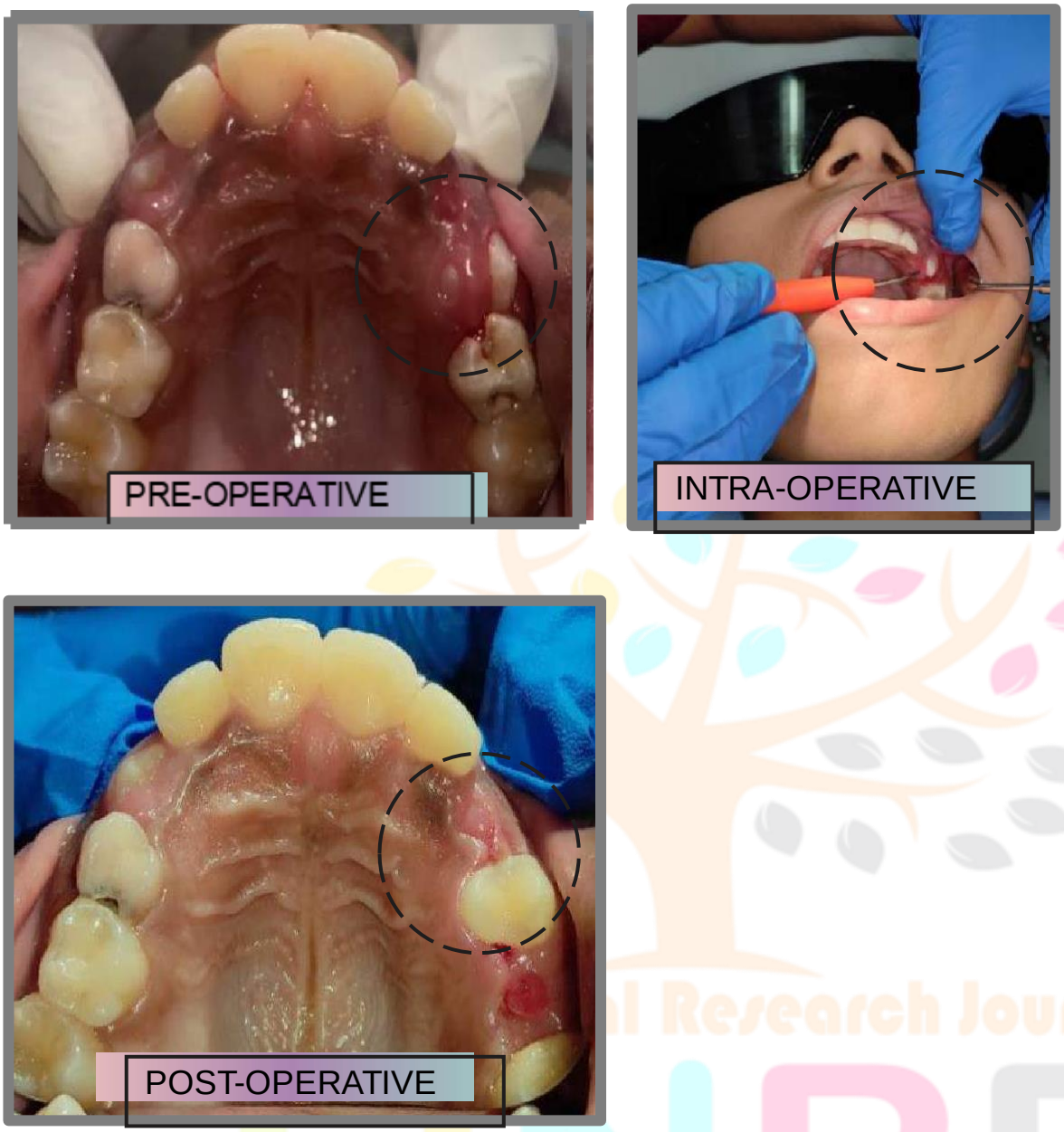

Fig:1

Case report 2

A 6-year-old male patient reported to the Department with the chief complaint of pain and food lodgement in his lower left back teeth region since last 3 months.

While examining the child displayed negative (-) behavior. Intraoral examination revealed the presence of an operculum covering the occlusal surface of the lower left partially erupted first permanent molar. The operculum

was pinkish-brown in colour, firm, resilient and non- tender in nature. It was firmly attached to the gingival tissue distal of the first molar. No radiographic abnormalities were noted.

A surgical removal of the operculum using a 840 nm diode laser was planned to minimize patient discomfort and apprehension. All necessary precautions were taken. After infiltration of LA, a diode LASER of wavelength 840 nm at 4 watt power output was used for complete excision of operculum in a continuous contact mode. The necrosed tissue was constantly removed with the help of a curette and throughout the treatment, the laser's tip was routinely cleaned to get rid of the adherent, burnt tissues. Postoperatively, satisfactory hemostasis was achieved. The treatment took less than fifteen minutes to complete in all, and the patient tolerated it well. Patient was recalled after 3 days and after 1 week of follow up and the area healed completely.

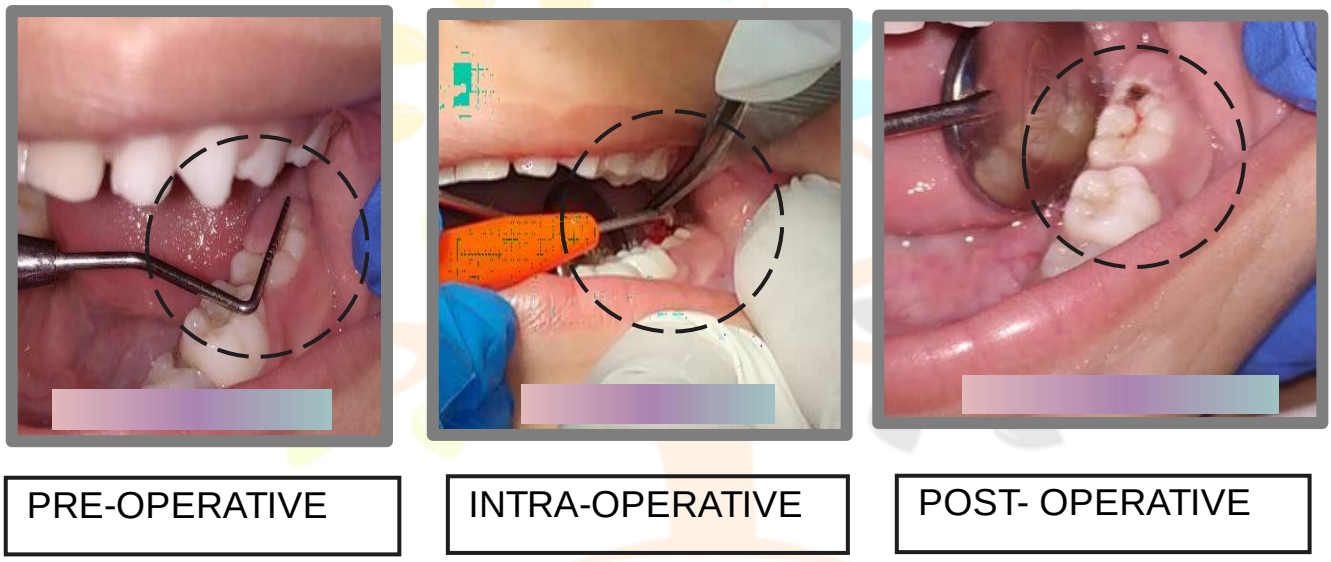

Fig:2

DISCUSSION

Operculectomy is a surgical procedure involving the removal of the operculum, the gingival flap that typically partially covers the occlusal surface of a tooth. The primary goal of operculectomy is to decrease the occurrence of pericoronitis, a condition characterized by pain and inflammation associated with the operculum[4]. Pericoronitis commonly affects young adults, particularly in the molar teeth that are in the early stages of eruption. The selected treatment plan involved operculectomy with a diode laser, as it offered several advantages compared to the traditional scalpel surgical procedure.

The adoption of lasers as a non-surgical medical intervention to support natural healing processes has risen in recent years. Laser therapy, an advanced method, has demonstrated various effects such as pain alleviation, accelerated wound healing, bone formation, and nerve regeneration. Lasers represent an innovative technology that offers pediatric patients superior care, alleviating many of the apprehensions associated with traditional dental

treatments. Paschoal M et al. stated that the presence of laser device reduces the perception of fear in the patients, thus, encourage a positive attitude toward the dental treatment[5]. Romanos GE et al. suggested that the laser treatment results in minimum or no postoperative swelling and pain[6].

In the case reports presented, the use of low-level laser therapy following surgical procedures resulted in outstanding outcomes. Patients experienced no need for pain relief medication, and the wound healing process exhibited optimal quality within a short timeframe. M S Saravanakumar advocates use of LAP- D CARE to make children more interestedand willing to use dental services, in order to prevent and treat oral diseases[7]. Gorur I et al. in a study stated that the recovery period after surgical procedures using laser is fast, infection free with reduced presence of inflammation[8].

CONCLUSION

In addition to fundamental concepts, Pediatric dentistry practitioners need to learn innovative technologies like lasers.Lap-d should be included for all pediatric patients as a treatment of choice for reducing patients' anxiety and apprehension during dental operations. And at the same time it allows for a more conservative & non-invasive techniques with minimal patient discomfort and faster healing of the concerned area.

REFERENCES

1. Walsh LJ. The current status of low level laser therapy in dentistry. Part 1. Soft tissue applications. Aust Dent J 1997;42(4):247-254.

2. Sun G, Tuner J. Low-level laser therapy in dentistry. Dent Clin North Am 2004;48(4):1061-1076.

3. Ahmad IA, Alenezi MA. Root and root canal morphology of maxillary first premolars: a literature review and clinical considerations. Journal of endodontics. 2016 Jun 1;42(6):861-72.

4. Gontyia G, Bhatnagar S, Mohandas U, Galgali SR. Laser-assisted gingivectomy in pediatric patients: a novel alternative treatment. J Ind Soc Ped Prev Dent 2001;29(3):264-269.

5. Paschoal M, Souza J, Santos-Pinto L, Pansani C. Alternative approach to the management of postoperative pain after pediatric surgical procedures. International Journal of Clinical Pediatric Dentistry. 2014 May;7(2):125.

6. Romanos GE, Estrin NE, Lesniewski A, McClain S, Hou W. Penetration Depth of Initiated and Non-Initiated Diode Lasers in Bovine Gingiva. Applied Sciences. 2022 Dec 13;12(24):12771.

7. Saravanakumar MS, Suganthan P, Silas AJ. Guiding unerupted teeth using lasers: review and case series. International Journal of Laser Dentistry. 2013 Sep 1;3(3):89.

8. Görür I, Orhan K, Can-Karabulut DC, Orhan AI, Öztürk A. Low-level laser therapy effects in traumatized permanent teeth with extrusive luxation in an orthodontic patient. The Angle Orthodontist. 2010 Sep 1;80(5):968-74.