

Poster Session

tongue frenulum and sublingual caruncle. No suspicion of malignancy was raised based on the clinical appearance and history. The patient was also diagnosed with ankyloglossia. The proposed treatment was to operate the tongue frenulum and excise the lesion at the same opportunity. The procedure was performed using a high-power diode laser (DMC, São Carlos-SP, Brazil) in contact mode, with a wavelength of 980 nm, a 400-micrometer optical fiber, and a power setting of 1.3 W in continuous mode. This was followed by the irradiation of three points of a 660 nm low-power diode laser (DMC), delivering 1J per point, with a spot size of 0.09 cm² and a power density of 11.11 J/cm². The parents reported the need of analgesics in the 3 days that followed the procedure. After this period the patient exhibited no further signs of pain or discomfort. The histopathological findings confirmed the clinical hypothesis of an epidermal cyst.

Discussion: Even though the use of high power lasers is not recommended in the excision of lesions aiming a precise biopsy because of its thermal damage, this protocol was chosen considering the patient's young age and the absence of malign characteristics. The correct parameters allowed a faster procedure and healing and lower discomfort, while also allowing a precise diagnosis during the pathological analysis.

Conclusion: The use of high-power diode laser for the excision of an epidermal cyst in a young patient demonstrated both efficacy and safety, resulting in successful removal of the cyst with minimal complications.

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Giulianna Malotti, Thayna Vianna da Rocha, Pedro Soares, Edgar Michel Crosato, Patricia Moreira de Freitas Costa e Silva, Luciane H Azevedo (Brazil)

Category: Clinical human studies

Title: EVALUATION OF PARAMETERS OF USE OF HIGH POWER LASERS AND POSTOPERATIVE OUTCOMES IN FIBROMA: A RETROSPECTIVE STUDY OF 22 YEARS

Aim: To assess the prevalence of Fibroma (FIB) diagnoses, along with related clinical variables, types of high-power lasers used, and the specific parameters applied.

Material and methods: A review and analysis of medical records were conducted for patients diagnosed with fibroma (FIB) who underwent high-power laser surgery at the Special Laser Laboratory in Dentistry (LELO-FOUSP) between 2000 and 2022. Inclusion criteria included histopathological diagnosis and a signed informed consent form. Data extracted from records included age, sex, race, lesion duration, size, location, need for postoperative prescription, and the laser used in the surgical procedure. The collected data were tabulated and analyzed through descriptive analysis.

Results: FIB lesions showed a predominance among white women over the age of 40 (73.9%). Disregarding the category "Indeterminate", the average lesion duration was over one year (53.3%), with most cases presenting a size of ≤1 cm (86.5%), and the oral mucosa (labial and buccal) was the most common location (67.4%), as shown in Chart 1, Chart 2, and Chart 3, respectively. The diode laser—including Opus 10 (830 nm), Lasering (808nm), ZAP (830 nm), DMC (808-980 nm), Solase (940 nm), CW, 1.5-2.5 W, 300 and 400-micron spot size—was the most frequently used in treatment (46.2%), as shown in Chart 4. Postoperative medication was generally unnecessary (91.5%).

Conclusion: FIB demonstrated a higher prevalence in white female patients over the age of 40. Most lesions developed on labial and buccal mucosa, with a size of ≤1cm and a duration exceeding one year. The diode laser was the most commonly used due to its superior intraoperative hemostasis.

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Isabela Vieira Soares, Carolina G Garcia, Pedro C Soares, Denise Maria Zezell, Patricia M F Costa e Silva, Luciane H Azevedo (Brazil)

Category: Case report

Title: LINGUAL FRENECTOMY USING HIGH POWER DIODE LASER - CASE REPORT

Aim: To evaluate the repair and postoperative recovery of babies with ankyloglossia and the effects of surgery on breastfeeding.

Case description: A 2-month-old female baby, referred by a speech therapist for evaluation. The patient had low weight gain, also coughing during breastfeeding and hiccups afterwards. The mother also reported discomfort during feeding.

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The presence of ankyloglossia was verified using the Tongue-tie and Breastfed Babies Assessment Tool (TABBY Test), score: 4; and by the Tongue Frenulum Assessment Protocol in Babies (Tongue Test), total score between clinical and anatomofunctional history: 14.

Infiltrative anesthesia was administered. The frenectomy was performed with a high-power diode laser (Thera Lase Surgery DMC, São Carlos, Brazil - 1.5W, continuous mode, in contact) and immediate irradiation was performed with a low-power laser (Therapy EC, São Carlos, Brazil - 1J red - 660nm) at 3 points, totaling 3 J of energy, for inflammation modulation, acceleration of repair and analgesia. The corresponding energy density per point was 11.1 J/cm² and the power density per point was 1.1W/cm².

Discussion: Although there are no randomized clinical studies in the literature on the benefits of immediate low-power laser irradiation after frenectomy, the baby's painful symptoms assessed after 1 week using the NIP Scale (Neonatal Infant Pain Scale) indicated the analgesic benefits of this protocol, in which obtained a score of 1 on the first day and 0 on the rest.

Regarding frenectomy using a high-power diode laser, one month after surgery, the evaluation tests were redone, with scores: 7 in the TABBY Test; and total score: 6 in the Tongue Test. During this period, the mother reported that the baby was gaining weight, stopped cracking during breastfeeding, and no longer had a cough or hiccups. Attesting the effectiveness of the procedure.

Conclusion: Based on the results obtained, we can conclude that performing lingual frenectomy with a high-power laser and immediate application of a low-power laser favored breastfeeding by releasing lingual movements and reduced post-surgical inflammatory symptoms, in this case. However, randomized clinical studies still need to be published to confirm the effectiveness of the protocol.

P-088

Keita Toyoshima, Peiya Lin, Yujin Ohsugi, Hiromi Niimi, Sayaka Katagiri, Takanori Iwata, Akira Aoki (Japan)

Category: Original research: Preclinical

Title: EFFECTS OF Er:YAG LASER IRRADIATION ON CELL PROLIFERATION AND GENE EXPRESSION IN OSTEOCYTE-LIKE CELLS

Aim: Laser has been shown to enhance biological functions in some species of cells without photothermal effects. Previous our study has reported that following low-level Er:YAG laser irradiation, osteogenic cells isolated from rat calvaria significantly decreased Sost expression, compared to non-irradiated cells. However, the effects of Er:YAG laser irradiation on osteocytes have not yet been clarified. This study aimed to explore the effects of Er:YAG laser on osteocyte-like cells in cell proliferation and gene expression.

Material and methods: Mouse-derived osteocyte-like cells were used (Murine Long bone Osteocyte-Y4). Er:YAG laser (Delight, HOYA ConBio, Fremont, CA) was irradiated at a distance of 25 cm from the bottom of 35mm culture dish for 60 seconds (pulse rate: 20 Hz, energy level: 50, 100, and 150 mJ/pulse, total energy density: 3.1, 6.0, and 8.9 J/cm²). The mean temperature of cell surface was measured using thermography before, during and after irradiation at room temperature. Cell proliferation and cytotoxicity assays were performed at 3 days after irradiation. RNA sequencing for comprehensive gene expression analysis was performed at 6 hours for 6.0 J/cm² irradiated cells, compared to non-irradiated cells.

Results: The mean cell surface temperature irradiated at 3.1, 6.0, and 8.9 J/cm² after 60 second was 31.3, 35.4, and 40.3 °C, respectively. Irradiation at 6.0 J/cm² significantly enhanced cell proliferation, compared to that of non-irradiated cells. Lactate dehydrogenase levels showed significant increases at 6.0 and 8.9 J/cm². RNA sequencing identified 337 differentially expressed genes (DEGs) between 6.0 J/cm² irradiated and non-irradiated cells, and genes related to cell proliferation were included in up-regulated DEGs. Kyoto Encyclopedia of Genes and Genomes (KEGG) analysis showed enrichment of PI3K-Akt signaling and MAPK signaling pathways in upregulated DEGs. Gene set enrichment analysis showed enrichment in