Effects of low level laser therapy on the healing of post-extractive socket in rats treated with zoledronic acid and dexamethasone: a pilot study

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Objectives. Bisphosphonate-Related Osteonecrosis of the Jaws (BRONJ) is a severe complication of bisphosphonate therapy, often triggered by traumatic events such as extractions. Low Level Laser Therapy (LLLT) might turn out be useful for the prevention of post-extractive BRONJ.
Our aim was to perform a clinical, histological and immunological study, evaluating the effects of LLLT on the post-extractive socket healing in rats treated with zoledronic acid and dexamethasone.
Methods. Ten Wistar rats in the experimental group received zoledronic acid (intraperitoneal) and dexamethasone (intramuscular). Two controls were infused with vehicle. After 8 weeks the first maxillary molars where extracted bilaterally. Half rats of each group had the post extractive sockets irradiated with Nd:YAG laser every other day for 8 days (1064 nm; 1,25 W; 15 Hz; VSP; 5 min; fluence: 117,94 J/cm2; power density: 1769,29 W/cm^2). Macroscopic and microscopic evaluation of post-extractive sockets at 8 days was performed, altogether with Western Blot analysis of the expression of markers of bone metabolism (alkaline phosphatase, osteopontin, osteocalcin).
Results. Rats in experimental group showed macroscopic and microscopic delayed healing compared to controls, with modifications of bone density and tissue remodelling. Osteopontin expression was higher in irradiated rats of experimental group.
Conclusions. Our results confirmed that rat is a suitable animal model for BRONJ studies and that an extended therapy with bisphosphonates and dexamethasone is associated with a worsening of the healing process of the post-extractive socket. Further researches with larger populations are needed to test the preventive effect of laser biostimulation on post-extractive BRONJ development.

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Real-time cell analysis by xCELLigence®: a new method for dynamic, quantitative measurement of adhesion and proliferation of cell lines

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Objectives. In this study, we report the use of a real-time cell analysis (RTCA) test system, the xCELLigence® RTCA, as efficient tool for a fast growth kinetics analysis of cell lines. This new dynamic real-time monitoring and impedance- based assay allows for a combined measurement of cell adhesion, spreading and proliferation (1).
Methods. We used four representative human OSCC derived cell lines, PE49, HSC2, HSC3 and PE15 cells. The measured impedance values could be correlated to characteristic cell culture behaviours. In parallel, were evaluated proliferation and cell viability of the cell lines by the 3-[4,5-dimethylthizol-2-yl]-2,5-diphenyltetrazolium bromide (MTT) assay.
Results. Through the analysis we were able to quantitatively characterize the growth kinetics of the cell lines. The results are in agreement with the analysis MTT and for us will be the basis for future studies with respect to these lines.

Conclusions. The advantage of impedance-based measurements is mainly based on these continuous monitoring of cell responses for a broad range of different cells and with different parameters of culture. Therefore, the xCELLigence system can be used as a rapid monitoring tool for cellular viability and used for multiple applications, such as toxicity testing of xenobiotics, biocompatibility of dental materials, tests of invasion and migration using *in vitro* cell cultures (2, 3).

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Reconstructive oral surgery using Integra® skin substitute: preliminary results

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Introduction. The main types of reconstructions after tumor resection in head and neck surgery are based on the use of grafts, traditional flaps and microvascular flaps.

However, all the above-mentioned flaps need of donor site, with potential and variable minor and major complications both at the recipient and donor site. We describe two cases of extensive intraoral defects subsequent to surgical resection and an alternative strategy of reconstructive surgery using the Integra® Dermal Regeneration Template (IDRT).

Methods. In 2012, a 49-year-old male, and a 72-year-old woman with hyperkeratosis of the left buccal region and the right ventral side of the tongue respectively, received histological diagnosis of oral leukoplakia. Both patients have been underwent to surgical exeresis and considering the relative superficiality and amplitude of excision, 3 x 2 cm and 4 x 3 cm resp., the surgical defects were covered with a double layer IDRT (Integra LifeSciences Corp., Plainsboro, NJ). Antibiotics drugs were administered and no sign of infection were visible in the post-operative. After 4 weeks the silicone layer of the dermal substitute was removed. An appreciable re-epithelialization was observed.

By 18 months of follow-up the scar appears to be of a normal mucosa colour and there is no evident retraction of the tissues.

Discussion. Reconstructive surgery to achieve functional restoration of resected head and neck areas, represents a challenge, because of them nodal role within the aesthetic and functional contest. Wide local excision may leave patients with defects requiring complex reconstructive surgery. The choice of reconstruction influenced by patient factors such as age, co-existing medical conditions, length of procedure and fitness for general anaesthesia.

Conclusions. In the cases here reported we have found the use of Integra® to be a safe and viable alternative to traditional methods of wound closure.

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Peri-operative advantages and healing evaluation for Er,Cr: YSGG laser excision of intraoral focal fibrous overgrowth: case series

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