Role of induced pluripotent stem cells (IPSCs) in bone tissue regeneration in dentistry: a narrative review

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Several conditions as trauma, cancer surgical resection, fractures, congenital malformations and periodontitis could bring alveolar bone defects. To avoid more invasive and less predictable regenerative procedures, Stem cells of different origins as pluripotent Embryonic Stem Cells (ESCs), undifferentiated multipotent Mesenchymal Stem Cells (MSCs) and Induced Pluripotent Stem Cells (iPSCs) were proposed as possible alternative. iPSCs have potential for proliferation and differentiate into all derivatives of the three primary germ layers: ectoderm, endoderm and mesoderm. According with their ability to involve in several cells type, Induced Pluripotent Stem Cells (iPSCs) could be proposed as alternative in regeneration either of mineralized tooth components or supporting tissue. The aim of this brief review is to describe clinical applications of Induced Pluripotent Stem Cells (iPSCs) in oral bone regeneration to employ their use in tissue regeneration in dentistry.
Oral microbiome and mucosal trauma as risk factors for oral cancer: beyond alcohol and tobacco. A literature review

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Oral and oropharyngeal cancer represents the sixth more common type of cancer affecting the worldwide population. It has been estimated the number of 650,000 new cases per year globally and a greater prevalence has been registered among men. The main risk factors for oral cancer such as tobacco smoking and alcohol are uncontroversial and have been deeply investigated and evidenced in the scientific literature. Recently, viral infections related to Human Papilloma Virus (HPV), with the genotype 16 and 32, have shown a correlation mainly with oropharyngeal cancer (OPC) especially in the non-smoking and non-drinkers young adults. Its transmission is mainly related to sexually transmitted diseases (STDs) although its involvement in oral squamous cell carcinoma (OSCC) is still unclear. This review aims to explore the hypotheses of the OSCC etiology and other possible risk factors, such as chronic traumatisms, chronic periodontitis, and poor oral hygiene that affect directly the oral mucosa and might trigger the carcinogenesis process that should not be underestimated. Furthermore, in the last 10 years, the role of oral microbiome gained attention as a predicting biomarker, for a possible bacterial, viral, and fungal involvement in tumorigenesis.
Immediate versus delayed loading of post-extraction implants in the aesthetic zone: a prospective longitudinal study with 4-year follow-up

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The aim of this randomized clinical trial was to compare the outcome of immediate versus delayed-loading protocol using a new internal hexagon/conical connection implant in ungrafted post-extraction intact sockets. Patients requiring single-tooth extraction for root fractures or periodontal disease in the maxillary or mandibular anterior or premolar areas were selected for the present study. Hopeless teeth were extracted and dental implants were immediately placed in fresh sockets. After randomization process, immediate loading was performed in group A, while in group B a delayed loading protocol was followed. In both groups of patients mean marginal bone loss was measured through intraoral digital radiographs at 3, 6, 12, 24, 36 and 48 months from loading. At 48-month follow-up period, a success and survival rate of 96.55% was found in both groups. For group A patients, a mean marginal bone loss of 0.14 ± 0.15 mm was found, while for group B a value of 0.12 ± 0.12 mm was measured. No statistically significant differences between groups were found at each time point (P>0.05). Within the limitations of the present study, when used in post-extraction single implant-prosthetic rehabilitations, the new connection implant showed a predictable outcome at 48-month follow-up both in the immediate and in the delayed loading protocols.
The smokeless tobacco: a survey in a cohort of young Italians through a social-media questionnaire

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This observational survey aimed to demonstrate the use of the Snus kind of smokeless tobacco, among young Italian adults from alpine areas. A customized anonymous questionnaire was purposely created using the Google Forms platform and made it available for 4 weeks through social media supports to a cohort of young adults living in a mountain area in Italy. Out of four hundred recipients, 332 interviewees returned the survey. Participants had a mean age of 22.8, range 17-40 years. One hundred fifty regular consumers used Snus for more than 5 years. Gingival changes were reported in 92 subjects, associated with gingival bleeding in 14 subjects. 79 subjects reported discoloration of the mucosa. The 50% of the habitual users developed an addiction to Snus and 90% didn’t smoke conventional cigarettes. In Italian young adults the use of Snus tobacco could be an adjunctive risk factor for the oral mucosa. It is essential to extend and spread the awareness about this addictive habit among dental professionals, to give to the patients a reliable and effective oral and systemic education.
The aim of the study was to evaluate implant treatment for partial edentulism in a population of controlled type I diabetic patients. The research hypothesis was that implant survival rate, prevalence of peri-implant tissue infection and marginal bone loss at 2 years follow-up would not differ from a non diabetic population. A total of 106 patients (47=women, 59=men, mean age 38.36 years) presented with partially edentulous jaws. All patients underwent a two stage implant surgery (105 maxillary, 100 mandibular). Diabetic type I patients (53) were scheduled in Group A, while 53 healthy patients formed the Control Group. Clinical and radiological controls were performed from baseline up to 24 months and implants survival rate, presence of peri-implant tissue infections and marginal bone loss were assessed in all patients. Group A and Control Group were compared by analyzing data at implant level, through either an independent sample t-test, with respect to bone loss, or Fisher Exact tests, with respect to (a) peri-implant mucositis, (b) peri-implantitis, and (c) post-operative wound infection. At the 24-month follow-up, 5 and 3 implants failed in diabetic and non-diabetic patients, respectively. No statistically significant difference was found in implant survival rate between the two groups (Group A: 95.19%; Control Group: 97.03%). Moreover, no statistical significant differences were found in infections occurrence, nor in marginal bone loss. The preliminary results of this prospective study showed how implant treatment for partial edentulism may be a safe and predictable procedure for diabetic type I patients, provided controlled glycemic levels and regular professional oral hygiene sessions.
Experimental analysis of the influence of cortical bone layers and bone quantity on implant primary stability

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The systematic analysis of parameters impacting implant primary stability is difficult to achieve with human cadavers or animal models, particularly for complex trans-sinus procedures to determine the effects of cortical layers and bone engagement on implant stability before and after a simulated load in vitro. Solid rigid polyurethane blocks, partially intersected by an 8-mm-thick space, were created to imitate tri-cortical situations, the presence of the sinus cavity, and the posterior maxilla with different degrees of bone atrophy. Implants were inserted through the cavity at an angle of 30° (scenarios 1 and 2) to imitate the clinical protocol. Controls simulating uni-cortical anchorage and no sinus cavity were also included (controls 1 and 2). Four parameters were measured: peak insertion torque, insertion work, resistance to lateral bending loads and extraction torque. Scenarios 1 and 2 displayed similar peak insertion torque to control 2, where all three groups anchored equal amounts of bone surrogate. The distribution of surrogate bone in contact with trans-cavity implants influenced both extraction torque and the degree of lateral bending. Sufficient peak insertion torque can be attained with a trans-sinus tri-cortical implant anchorage providing sufficient apical and coronal bone is engaged.
Cocaine is one of the most popular illicit drugs in Europe and cocaine-induced midline destructive lesions (CIMDL) represent a rare but destructive consequence of its intranasal use. The extent of lesions can vary remarkably and may include palate perforations with consequent oronasal reflux and hypernasal speech. The therapeutic options encompass surgery, with local and distant flaps, and prosthetic rehabilitation with palatal obturators. We retrospectively reviewed a case series of 6 patients affected by palatal perforation as part of CIMDL, who were treated with a dental or implant-retained palatal obturator at San Raffaele Dentistry Department between 2015 and 2020. In addition, we reviewed the available literature on CIMDL and the prosthetic rehabilitation of palatal perforations in this context. The most frequent symptoms reported were hypernasal speech, oro-nasal reflux, halitosis, and difficulty in interpersonal relationships. Palatal obturators were always successful in the relief of the majority of symptoms, but the duration of the benefit was strongly related to progression of the lesion, and in some cases a close follow-up and continuous modifications of the prosthesis were necessary. In conclusion prosthetic approach is a valid option for the symptomatic relief in CIMDL-related palate perforation. Nevertheless, the short-lasting efficacy for patients with active disease can be the reason for unsatisfactory results.
Management of the delicate phase of the temporary crown: an in vitro study

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The fundamental moment of prosthetic rehabilitation is the “temporary”. Although the meaning of the term diminishes its importance, the provisional has fundamental biological, aesthetic and functional functions. The oral cavity must maintain an adequate level of oral hygiene to carry out this delicate phase in the best possible way; a result achieved only with the collaboration of the prosthetic dentist with the hygienist and the patient, as if they were a biological system in motion. The different methods of hygiene are effective in maintaining a good level of oral health; but they could, if too aggressive, affect the prosthetic restoration. Our objective in vitro is to understand, after applying a known bacterial load, which hygiene method is the most effective in removing bacterial biofilm but at the same time is less aggressive towards resinous material.
A clinical report of a maxillary All-on-4 rehabilitation with a proposed EMG protocol

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Osseointegrated dental implants supporting fixed prostheses in patients affected by Sjögren’s Syndrome: A narrative review

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