Periodontal disease and systemic diseases: an overview on recent progresses.

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Periodontal diseases (PDs) affect about half of the adult population all over the world. PDs are caused by bacterial infection which induces an inflammatory response with progressive destruction of the periodontal tissues and finally the loss of teeth. Tobacco smoking (TS), alcohol consumption, and systemic diseases (SDs), are considered additional risk factors. This short review examines the potential causal association between PDs, TS and SDs. There is strong evidence that PDs are associated with an increased risk of SDs. In addition, many patients with SDs are also affected by PD, which can be mild or severe, and tobacco smokers manifest a greater risk of developing PDs. This paper includes many randomized controlled trials and reviews to test the effects of different periodontal therapies for patients with SDs.
Implant dentistry has emerged as a first line of treatment to replace missing teeth for both the edentulous and partially dentate patients. Implant dentistry is accompanied by the onset of peri-implantitis (PIM). PIM is characterized by the inflammatory destruction of the implant-supporting tissues, because of biofilm formation on the implant surface. A history of periodontitis, poor oral hygiene, and smoking are considered as risk factors for PIM. Occasionally PIM is associated with iatrogenic factors, that, only recently, have been acknowledged as direct cause of PIM, i.e.: non-parallel adjacent implants or the presence of a gap, between fixture and prosthetic components. The use both of traditional protocols of nonsurgical periodontal therapy and the laser seems to be an effective alternative treatment modality for PIM. By the application of laser-assisted non-surgical peri-implant therapy the periodontal pocket depth was reduced. The present article illustrates the nonsurgical management of one case, where failure to remove residual cement, from an implant-supported dental prosthesis, seemed to cause PIM.
An overview on periodontal disease and genetic polymorphism.

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Osteoblasts and insulin: an overview

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Stem cells of dental pulp (SCDPs) have the ability to self-expand and differentiate in pre-osteoblasts. The aim of our study is to investigate whether insulin can influence differentiation of SCDPs in osteoblast and bone tissue. SCDPs were treated with insulin at the concentration of 100 ng/μl for 24 and 48 h. Gene expression in treated SCDPs was compared with untreated cells (control) in order to check the effect of insulin on stem cell differentiation. After 24 h, significant up-regulated genes (Fold change > 2) in SCDPs were the Bone Morphogenetic Proteins and their receptors. BMP results over-expressed after 48 h of treatment. Insulin was demonstrated to influence proliferation of SCDPs, differentiation and expansion in osteoblasts.
Bone regeneration in dentistry: an overview

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Reconstructive surgery (RS) is necessary before implant placement to regenerate bone defects. Success rate of implants is related to RS and to the correct position of implants in residual crest. The most popular surgical procedures of RS are bone grafts, guided bone regeneration. Bone graft is the gold standard technique to achieve RS of edentulous crests. RS is a surgical technique that uses barrier membranes to promote osteoblast cells proliferation. RS is often combined with bone grafting procedures. Sinus floor elevation procedures are elective treatments when there is insufficient bone height for implant insertion in maxilla. Bone osteogenesis distraction is the process of RS between two bone segments in response to tensile stress. The aim of this short review is to analyze the different methods of RS: bone grafts, guided bone regeneration, maxillary sinus floor elevation, and bone osteogenesis distraction.
Protozoa and oral health: a systematic review

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Gingivitis and periodontitis (GP) are the main diseases of the oral cavity. The ethiology of GP have never been completely understood, however, loss of balance between the host immune system and the microbial virulence of GP pathogens may be considered the trigger of GP. In fact, the immune system, activated by microbiological agents, attacks the host and not the biofilm bacteria, causing the destruction of periodontal tissue, alveolar bone, and loss of teeth. Parasites may play an important role in the pathology of GP. The first studied and the most common parasite in the oral cavity is Entamoeba gingivalis. A possible link between E. gingivalis and GP has never been demonstrated completely, however E. gingivalis is infrequently found in people without GP. In addition, there is evidence that E. gingivalis could favour the onset and progression of GP. In conclusion, we can assert that E. gingivalis and GP may be correlated. This relationship can open new therapeutical approaches for treating GP, particularly in cases refractory to therapy.
Oral and general health: an inseparable pair

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*Helicobacter pylori bacteria* (HPB) is one of the most common gastric infections in the world. It seems that HPB infects the subject early in life and is transmitted from person to person. The oral cavity could be a reservoir of HPB participating in infection transmission. HPB and recurrent aphthous stomatitis (RAS) show similar clinical and histological findings, and the discovery of HPB in RAS ulcers support the idea of a correlation between the two diseases. Another important relationship between RAS and HPB is the high incidence of anemia in patients with RAS that may be caused by HPB. In fact, antibiotic therapy and treatment of anemia can reduce the frequency of RAS ulcer recurrence. HPB is considered a carcinogenic agent type 1 of the stomach. In conclusion, the oral cavity is an extra-gastric reservoir of HPB and periodontal therapy associated with systemic therapy can better eradicate HPB from the mucosa of all gastro-enteric tract. Prospective cohort studies are needed to demonstrate the bacterial action in the oral cavity.
Titanium and implantology: a review in dentistry

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Implant dentistry has become a popular restorative option in clinical practice. Titanium and titanium alloys (TTA) are the gold standard for endo-osseus dental implants production, thanks to their biocompatibility, resistance to corrosion and mechanical properties. The characteristics of the TTA implant surface seem to be particularly relevant in the early phase of osseointegration. Furthermore, the microstructure of implant surface can largely influence the bone remodelling at the level of the bone-implant surface. Recently, research has stated on the long-term of both survival and success rates of osseointegrated implants and mainly on biomechanical aspects, such as load distribution and biochemical and histological processes at the bone-implant interface. This short review reports recent knowledge on chemical and mechanical properties, biological aspects, innovations in preventing peri-implantitis, describing clinical applications and recent improvements of TTA dental implants. In addition, it highlights current knowledge about a new implant coating that has been demonstrated to reduce the number of initially adhering bacteria and peri-implantitis.