Bridging the gap: Reconstruction of soft and hard tissues in oral & maxillofacial surgery and implantology

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Bone regeneration is a complex, well-orchestrated physiological process of bone formation, which can be seen during normal fracture healing and is involved in continuous remodeling throughout adult life. However, there are complex clinical conditions in which bone regeneration is required in small or large quantity such as for loss of cortical bone at the time of implant placement, loss of bone due to peri-implantitis, skeletal reconstruction of large bone defects created by trauma, infection, tumor resection and skeletal abnormalities or cases in which the regenerative process is compromised including a vascular necrosis, atrophic non-unions and osteoporosis. Currently, there is a plethora of different strategies to augment the impaired or insufficient bone-regeneration process including the ‘Gold Standard’ autologous bone graft, free fibula vascularized graft, allograft implantation and use of growth factors, osteo conductive scaffolds, osteo progenitor cells and distraction osteogenesis. Improved local strategies in terms of tissue engineering and gene therapy or even systemic enhancement of bone repair are under intense investigation, in an effort to overcome the limitations of the current methods to produce bone-graft substitutes with biomechanical properties that are as identical to normal bone as possible to accelerate the overall regeneration process or even to address systemic conditions such as skeletal disorders and osteoporosis. Over the past year we have seen new products approved and released to the market. And the pipeline of therapies on the horizon continues to expand. This paper demonstrates the various approaches, material, implants produced by various commercial companies to reconstruct soft and hard tissue defects and its application in implant dentistry and oral surgery.

Hearing loss in minor head injury

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Background: Hearing loss following head injury is a major medical problem in both adults and children, which may go unnoticed when it does not affect speech frequencies.

Study: In the study done at the ENT Department of Christian Medical College, India, 60 patients with history suggestive of mild head injury were evaluated over a period of six months.

Results: A vast majority (75%) of the RTAs (Road traffic accidents) was two wheeler accidents. Majority (83%) was males and 66% were between the ages of 20-50 years. The incidence of road traffic accidents was high in the age group of 20-50 years. Pure tone audiometry assessment of hearing immediately post trauma with respect to frequencies affected revealed that hearing loss was mainly in the high frequency region with greatest loss noticed at 4000 Hz and 8000 Hz. In case of mild hearing loss on PTA, there was absence of emissions in 70% at 1000 Hz, 69% at 2000 Hz, 83% at 4000 Hz. This would suggest that damage to outer hair cells becomes more pronounced when there is manifest hearing loss on PTA. In few cases with normal hearing, DPOAEs were absent throughout the evaluation time period suggesting irreversible damage to outer hair cells.

Conclusion: Higher the frequencies affected and severe the hearing loss, poorer was the prognosis. Distortion product oto-acoustic emissions assessment at 3000 and 4000 Hz were found to be significant and has a higher predictive value in assessing outer hair cell damage.