

Can Mesenchymal Stem Cell be used as an Additive Therapeutic Procedure for Fracture Healing in Facial Injuries??

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With increasing industrialization and urbanization there is heavy reliance on road transportation leading to rise in global incidence of facial fractures especially in polytrauma patients [1,2]. Disability after maxillofacial injuries leads to Functional impairment (masticatory, vision and eye ball movement, smell, speech, hearing, taste and tactile sensations) and Esthetic loss (because of hard tissue {fractures of facial bones, loss of teeth}, soft tissue {avulsed flaps, scars, laceration, etc}). Functional impairment because of maxillofacial injuries is a complex phenomenon which may be permanent or temporary and total or partial in nature. Functional and esthetic loss because of maxillofacial injuries affects the productivity, confidence, overall health of the person. It increases the financial burden to compensate for functional and esthetic loss due to maxillofacial injuries. Rehabilitation by prosthetic replacement may not provide total compensation for functional loss [3-5].

In the past two decades, management of facial fractures has undergone significant changes. Majority of facial fractures management is done by Open reduction & internal fixation [1,3,5]. Despite this, it is not rare to find patients with suboptimal outcome especially with regard to facial aesthetics in our follow-up clinics. Stem cells, biomimetic materials, and growth factors are essential to form these three-dimensional structures. Regeneration of oral and maxillofacial structures can be carried out using stem cell therapy that has gained momentum in the recent days [6].

Advances in tissue engineering open the possibility of utilizing new therapeutic protocols for the treatment of large osseous defects in the craniofacial area including the cranium, jaws and localized periodontal deformities [7]. Bioengineering strategies using stem cells may allow predictable therapeutic approaches with the potential of reducing the limitations of current state-of-the-art clinical protocols. To date, the use of cell therapies for oral craniofacial regeneration is quite limited and reserved to orphan product status for most indications [8].

Bone marrow mesenchymal stem cells are still a viable option in bone regeneration but in bone marrow aspiration the cell yield is usually low as compared from adipose tissue. Taking this into consideration adipose tissue is an attractive alternative source for regenerating maxillofacial defects [6]. Further studies are needed to pave way for clinical application of effective methods for reconstruction of maxillofacial defects. Previous studies show the bone forming capacity of ASC's in combination with various scaffold materials including TCP [6,7].

The author wants to bring about less invasive, more reliable and effective method with better outcome which can be integrated clinically to provide maximum benefit to majority patients.

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