Multidisciplinary approach for reconstruction of a large segmental mandibular defect following trauma with vascularized scapular flap, distraction osteogenesis and dental implants: Report of a case and review of the literature

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Background and Aim

Segmental mandibular defects as a result of trauma or tumor resection can lead to significant oral dysfunction and facial deformities. The reconstruction of large defects of the mandible can be achieved by the use of vascularized free flaps and/or distraction osteogenesis (DO).

Aim:

The objective of this poster is to present the reconstruction of a large segmental mandibular defect after major maxillofacial trauma with vascularized scapular flap followed by DO of the mandible in both horizontal and vertical planes and dental implant restoration.

Case Presentation

A 40 years old male patient was referred to our clinic on February 2017 after severe maxillofacial trauma caused by fall from height. After clinical and radiographic evaluation, he was diagnosed with comminuted fracture of the mandible in the region #44-35, bilateral condylar head fractures and alveolar ridge fracture of the anterior maxilla (fig.1). At the same time, mobility of #14 and a large submental laceration was diagnosed. Firstly, necrotic tissues and multiple small bony fragments that were not amenable for fixation were carefully removed (fig.2). The anterior maxillary alveolar ridge fracture was fixed with titanium trauma splint and #14 was removed. A reconstructive plate was placed to bridge the anterior mandibular continuity defect (fig. 3) and fixation of condylar heads was achieved by preauricular approaches with one and two screws on the right and left site respectively (fig. 4). Postoperatively, the patient suffered from oral dysfunction and facial deformity due to the large continuity defect of the anterior mandible (fig.5-6). Five months later the mandible was reconstructed with vascularized scapular flap (fig.7). Due to anterior open bite malocclusion, the patient underwent orthodontic treatment and a segmental osteotomy of the anterior maxilla (fig.8) as well as bilateral DO of the mandibular bodies for augmentation in horizontal planes (fig.9-10). Few months later, due to inadequate height of the neomandible, vertical DO of the scapular free flap was performed (fig.11-14). A satisfactory amount of mandibular bone was achieved for the insertion of 8 dental implants (fig.15-17) followed by definitive prosthodontic restoration resulting in significant improvement of patient's facial appearance (fig. 18).

Discussion- Conclusions

Only a limited number of studies with DO in vascularized free flaps have been published in the literature. Most studies have assessed DO of fibula flaps, while DO of iliac crest flaps or scapula flaps has also been reported. Complex mandibular defects can have substantial functional and aesthetic consequences for patients. Microvascular free flap surgery can be used to reconstruct large segmental mandibular defects and DO to augment the mandible in both vertical and horizontal planes in order to improve maxillomandibular relationships and facilitate restoration with dental implants.

References

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