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Editorial

Advances in maxillofacial trauma management

Over the last few decades there have been major advances in the management of patients with maxillofacial injuries. Management of patients with severe cranio-maxillofacial trauma has resulted in improved outcomes with improvements in primary care, prompt recognition, treatment of life-threatening injuries and a multi-disciplinary approach. Major advancements in diagnostic imaging, earlier surgical intervention, better instrumen-

tation, latest technological advances in equipment, a change from closed to open reduction, internal fixation of facial fractures and improvements in secondary correction of deformities have also resulted in superior esthetic and functional results. Recently, endoscopic minimally invasive surgery, with technological advancements in optics and associated instrumentation has further improved the results.

The orbito-zygomatic complex is a “cornerstone” bone, contributing to midfacial width, anteroposterior malar eminence, and ocular projections, plays an important role in both facial esthetic and ocular function. Orbito-zygomatic fractures are amongst the most common fractures in craniofacial traumatology, and their treatment depends on the degree of bone stability and displacement. During the past 20 years, open reduction–rigid internal fixation by titanium miniplates has become the most popular surgical management of these fractures and has contributed strongly to the decline of late secondary midface deformities. Classical sequelae associated with these deformities include a flattening of the malar eminence, increased facial width, enophthalmos, and diplopia. Also, the naso-orbital ethmoid (NOE) fracture repair represents one of the most difficult procedure in facial traumatology, primarily because of the difficulty to visualize the entire injured site accurately. Inadequate treatment of such fractures often results in

anesthetic telecanthus, and this correction is difficult and challenging.

Currently, continued efforts to obtain correction of craniofacial deformities, are being directed toward developing highly sophisticated computed tomography, computer graphics hardware and image processing software capable of reproducing anatomic templates to facilitate the intra-operative 3-dimensional bone positioning, as accurate as possible. Recent introduction of new softwares allows automatic preoperative “mirroring” of the contralateral uninjured orbito-zygomatic complex to the affected side. This has logically replaced the previous software that required manual virtual reduction of the bone. Moreover, introduction of mobile cone beam computed tomography (CBCT) has proved to be of great value in intraoperative 3-dimensional imaging, and can also be used with intraoperative surgical navigation systems, thereby improving intraoperative quality control by image fusion. Application of mirroring computational planning, a navigation guidance system, and an intraoperative mobile C-arm CBCT scanner with a flat-panel detector in primary or secondary repair of orbito-zygomatic and NOE fractures promises good results. These encouraging results indicate that the approach could potentially be used for achieving predictable corrections of other acquired (tumors or radiation) or congenital midfacial deformities.

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