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Editorial

Patient Specific Implants: Scope for the Future

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Recently, India witnessed the second wave of COVID-19's highest peak of any nation, placing an unprecedented strain on the health system. Emerging evidence globally suggests varied collateral damage, including post–COVID-19 sequelae such as lung impairment, mental health issues, and thromboembolic events leading to excess illness and death. Reports of outbreaks of mucormycosis of the sino-orbital with subsequent invasion to the orbital and cerebral region among patients successfully treated for COVID-19 have been described in news media in India and in a few case reports.

For the patient, oral and maxillofacial deformities are debilitating from a functional and aesthetic standpoint. Similarly, various benign and malignant pathologies add to the etiology of such defects. Reconstruction of these hard and soft tissue defects is challenging for the surgeon. Different autogenous and alloplastic options are used by the surgeons but replicating the details of the lost tissues precisely is seldom difficult to achieve. Patient-specific implants with titanium alloy have revolutionized the reconstructive surgeries and their outcome. Recently, 3D customised patient specific implants (PSIs) for the restoration of different upper and midface bone abnormalities have been created using medical grade titanium alloy.

Figure 1

The surgeon's skill still has a significant influence on the design of a patient-specific implant. Higher accuracy, improved stability, better outcome predictability, and improved facial contour refinement are all benefits of computer-designed PSI. Before bringing the patient into the operating room, virtual surgery can assist the surgeon foresee intraoperative issues and decide how to best re-establish anatomical alignment. However, the true benefit of this technology resides in its intraoperative use.

Figure 2

Although some applications, like the total joint replacement for the TMJ, have been using this technology for a long time, it is still quite new in applications like reconstruction and orthognathic surgery. This industry will be able to continue to develop because to improvements in CAD/CAM technology and falling costs, which will enhance accuracy, efficiency, and overall results. The biggest disadvantage of using PSI for maxillofacial reconstruction is the high expense. PSI touts exceptional patient satisfaction, consistent results, and prevents typical issues associated with non-custom-made implants.