

## Selective Laser Sintering: Application of a Rapid Prototyping Method in Craniomaxillofacial Reconstructive Surgery

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### Abstract

*Advances in technology have benefited the medical world in many ways and a new generation of computed tomography (CT) scanners and three-dimensional (3-D) model making rapid prototyping systems (RPS) have taken craniofacial surgical planning and management to new heights.*

*With the development of new rapid prototyping systems and the improvements in CT scan technology, such as the helical scanner, biomedical modelling has improved considerably and accurate 3-D models can now be fabricated to allow surgeons to visualise and physically handle a 3-D model on which simulation surgery can be performed. The principle behind this technology is to first acquire digital data (CT scan data) which is then imported to the RPS to fabricate fine layers or cuts of the model which are gradually built up to form the 3-D models. Either liquid resin or nylon powder or special paper may be used to make these models using the various RPS available today. Selective laser sintering (SLS), which employs a CO<sub>2</sub> laser beam to solidify special nylon powder and build up the model in layers is described in this case report, where a 23-year old Chinese female with panfacial fracture and a skull defect benefited from SLS biomodelling in the preoperative workup.*

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