

Computer-assisted surgery with custom prostheses and human amniotic membrane in a patient with bilateral class IV TMJ reankylosis: a case report

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Abstract

A gold-standard technique has yet to be found for the treatment of temporomandibular joint ankylosis (TMJa), particularly in patients with recurring ankylosis. A 58-year-old male patient, with a history of multiple TMJ surgeries and severe limitation of mouth opening (maximum interincisal distance [MID] was 10 mm). Computerised tomography (CT) imaging highlighted a bilateral type IV ankylosis. The surgical guides were manufactured using a 3D printing method after obtaining a proper design of the osteotomy lines. The positioning of the fossa and condyle components of the custom TMJ prosthesis was digitally performed. Osteotomies were carried out using surgical guides and TMJ prostheses were placed as per the virtual planning. A human amniotic membrane is inserted between the two prosthetic components to avoid reankylosis. The post-operative CT showed the correct positioning of the condylar prosthesis. MID after 10 days was 37 mm. Total joint reconstruction surgery using 3D virtual surgical planning may be an effective surgical option for achieving a precise surgical outcome and making use of a single-stage approach in cases of TMJa and the use of the amniotic membrane, thanks to its healing properties and reduction of pain perception, seems to improve the quality of the immediate post-operative period.

Keywords: 3D printing; Case report; Computer-assisted surgery; Custom prostheses; TMJ ankylosis; Temporomandibular joint disorder.

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