

Total temporomandibular joint replacement in patients with rheumatoid arthritis



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Introduction

Destruction of the temporomandibular joint (TMJ) is observed in many rheumatoid arthritis (RA) patients (Chalmers and Blair, 1973). Morphological changes may cause obstructive sleep apnea (OSAS), which can lead to sudden death during sleep (Redlund-Johnell, 1988). We performed total TMJ replacement in six patients with RA who had TMJ destruction to improve respiratory status and occlusion (Sugahara et al, 1994; Mishima et al, 2003).

Materials and Methods

All six patients had retrognathia and anterior open bite and could not masticate solid food.

The artificial TMJ consisted of an artificial glenoid fossa, custom-made of high-density polyethylene, and an artificial mandibular condyle, ready-made of Vitallium[®] alloy (Figure 1). The TMJ was approached through a preauricular incision. The posterior mandibular ramus was exposed up to the mandibular condyle through a submandibular incision. After

intermaxillary fixation, the artificial TMJ was placed. The artificial fossa was adjusted and attached to the glenoid fossa with three titanium screws. The artificial condyle was then attached to the mandibular ramus. The posterior airway space (PAS), ramal height and respiratory status were measured preoperatively, 1 month postoperatively, and more than 1 year postoperatively. As for respiration, oxygen saturation and apnea and/or hypopnea index were measured.

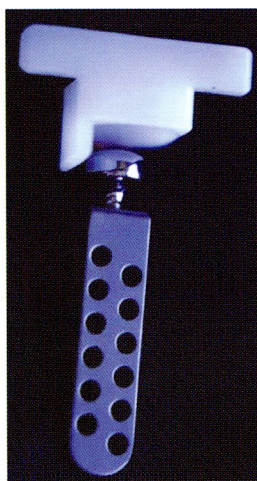


Figure 1. Artificial TMJ.

The artificial TMJ consisted of an artificial glenoid fossa made of high-density polyethylene and an artificial mandibular condyle made of Vitallium[®] alloy.

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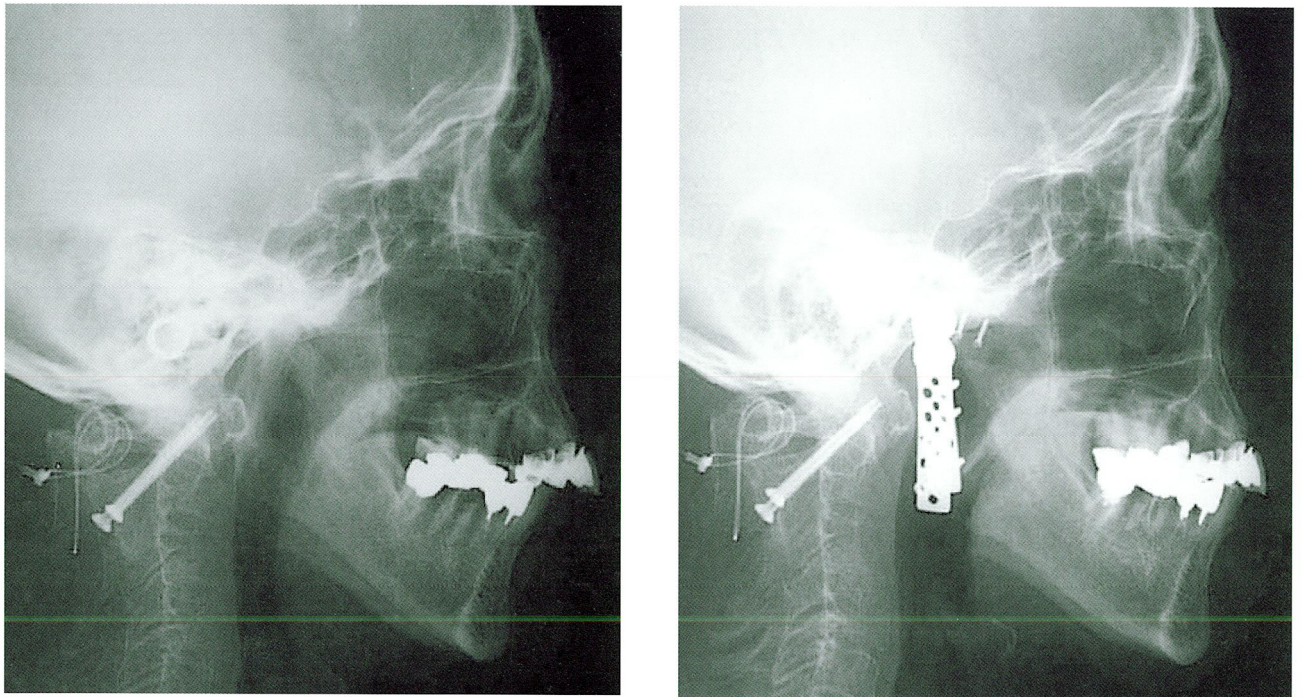


Figure 2. Lateral cephalograms obtained preoperatively and 1 month postoperatively. Preoperative lateral cephalograms showing morphological changes, including retrognathia, an anterior open bite, low ramal height, and a narrow PAS. After total TMJ replacement, the occlusion and ramal height improved, and the posterior airway space increased.

Results

In all patients, symptoms such as snoring and daytime sleepiness improved after total TMJ replacement. In one patient, the tracheal tube was subsequently removed, and the tracheostomy stoma closed. After removal of intermaxillary fixation, all patients were able to masticate solid food.

Lateral cephalographic measurements revealed that both PAS and ramal height significantly improved postoperatively (Figure 2). The PAS of two patients decreased during the year after surgery; ramal height was unchanged. The PAS did not decrease after surgery in the other two patients.

Mean oxygen saturation 1 month postoperatively had significantly improved as compared with the value before surgery. However, oxygen saturation 1 year postoperatively did not differ significantly from the preoperative value.

Discussion

In patients with RA, upper airway obstruction can be caused by atlantoaxial subluxation and TMJ destruction (Redlund-Johnell, 1988). Postoperative cephalograms obtained more than 1 year after surgery demonstrated that the PAS had decreased in two patients.

Apnea indices in the two patients who had not undergone posterior spinal fusion improved immediately after total TMJ replacement, but worsened subsequently. In the other two patients, who had undergone posterior spinal fusion before total TMJ replacement, indices improved. Future studies should investigate the optimal timing of treatment for TMJ destruction and atlantoaxial subluxation.

References

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