

A Modified Fossa Implant in TMJ Ankylosis (A Technical Report)

SUMMARY

The purpose of this paper was to present a TMJ prosthesis in treatment of ankylosis. An alternative technique for TMJ arthroplasty was described. After creating a gap an acrylic fossa implant, which was affixed by curing on a titanium mesh plate was placed. A specifically designed spacer may be useful addition in treatment of TMJ ankylosis.

Key Words: Temporomandibular Joint; TMJ Prosthesis; Ankylosis; Spacer

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Introduction

Replacement of the temporomandibular joint (TMJ) may be required as a result of chronic arthritis, traumatic resorption or ankylosis. TMJ ankylosis is an affliction that occasions much misery for the unfortunate victim, interfering with the mastication and digestion of food denying the body the benefits of a balanced diet and preventing participation in the pleasures traditionally associated with the culinary arts¹.

Many techniques have been proposed for the treatment of TMJ ankylosis but no single method has produced successful results.

According to Verneuil² the first attempts at surgical freeing of the mandible in a case with ankylosis were made by Percy and Barton in 1826. The first condylectomy was performed by Humprey³, and Verneuil² made the first interposition arthroplasty in 1860. Numerous authors have proposed the use of various autogenous grafts in TMJ arthroplasty. Autogenous grafts may be cartilage⁴, bone⁵, muscle and dermis⁶, metatarsal and sternoclavicular joints⁷.

Experience with alloplastic materials as interpositional material for reconstruction of TMJ began in 1934 by using gold foil⁸. Various alloplastic materials and prostheses were developed and used in treatment of TMJ ankylosis⁹⁻¹⁸.

The **aim** of the study is to focus attention on a previously unreported TMJ prosthesis, which is innovative in shape.

Technique

Patients were operated under general anaesthesia using nasal-endotracheal intubation. To approach the TMJ area auricular incision was made. The incision deepened, avoiding injury to the superficial temporal vessels and facial nerve.

Dissection proceeded in this plane to zygomatic arch and extended anteriorly and posteriorly to expose the limits of the ankylosis. After exposure of the bony block, a gap was created. The irregular edges of the segment shaved. An acrylic fossa implant, which was affixed by curing on a titanium mesh plate (Fig. 1) fixed to the upper and stable segment with self-tapping screws. Figure 2 reveals a case with bilateral ankylosis. Figure 3 shows the prosthesis between the 2 segments, and ortopantomograph shows the prosthesis at the both sides (Fig. 4). Figure 5 shows postoperative mouth opening after a year. Patient encouraged for the early, aggressive and insitive postoperative physiotherapy.

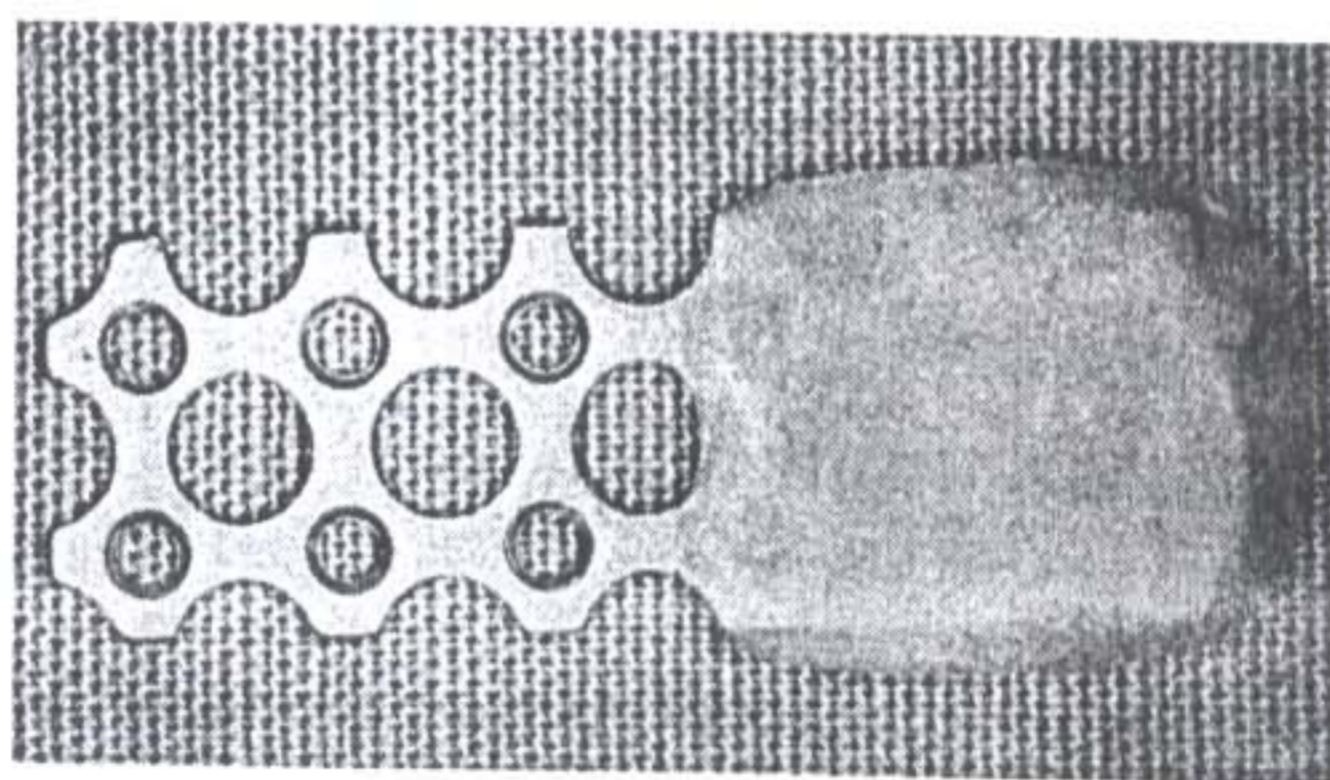


Figure 1. Acrylic fossa implant that is affixed by curing on a titanium mesh plate

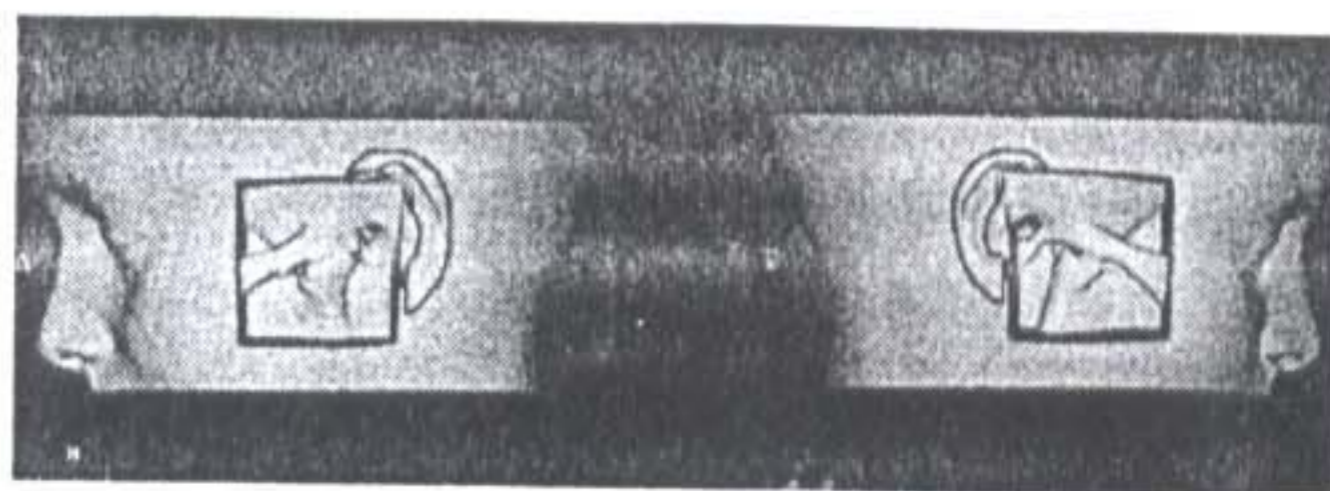


Figure 2. 3-dimensional CT demonstrating bilateral ankylosis

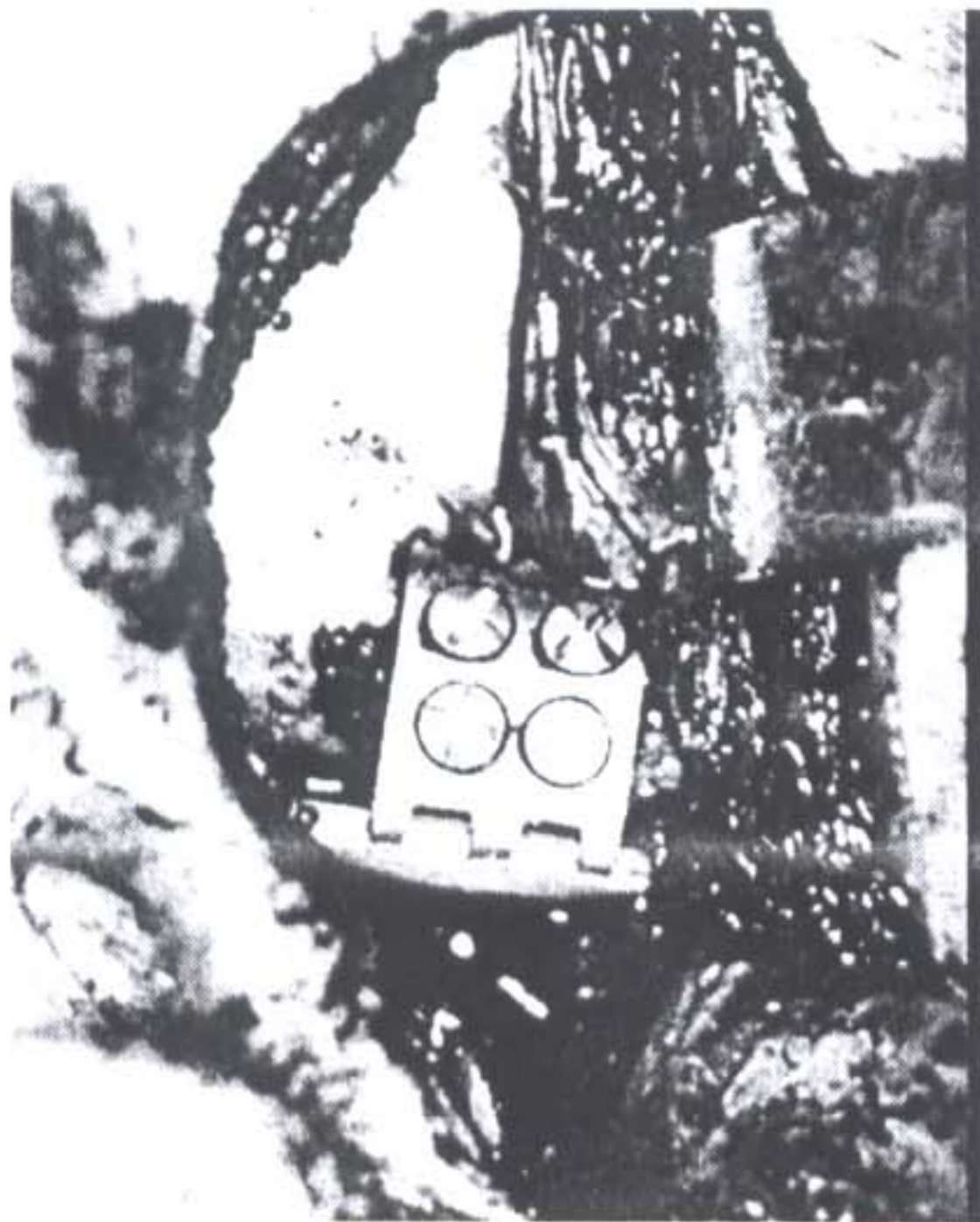


Figure 3. Operative view shows the placement of the prosthesis

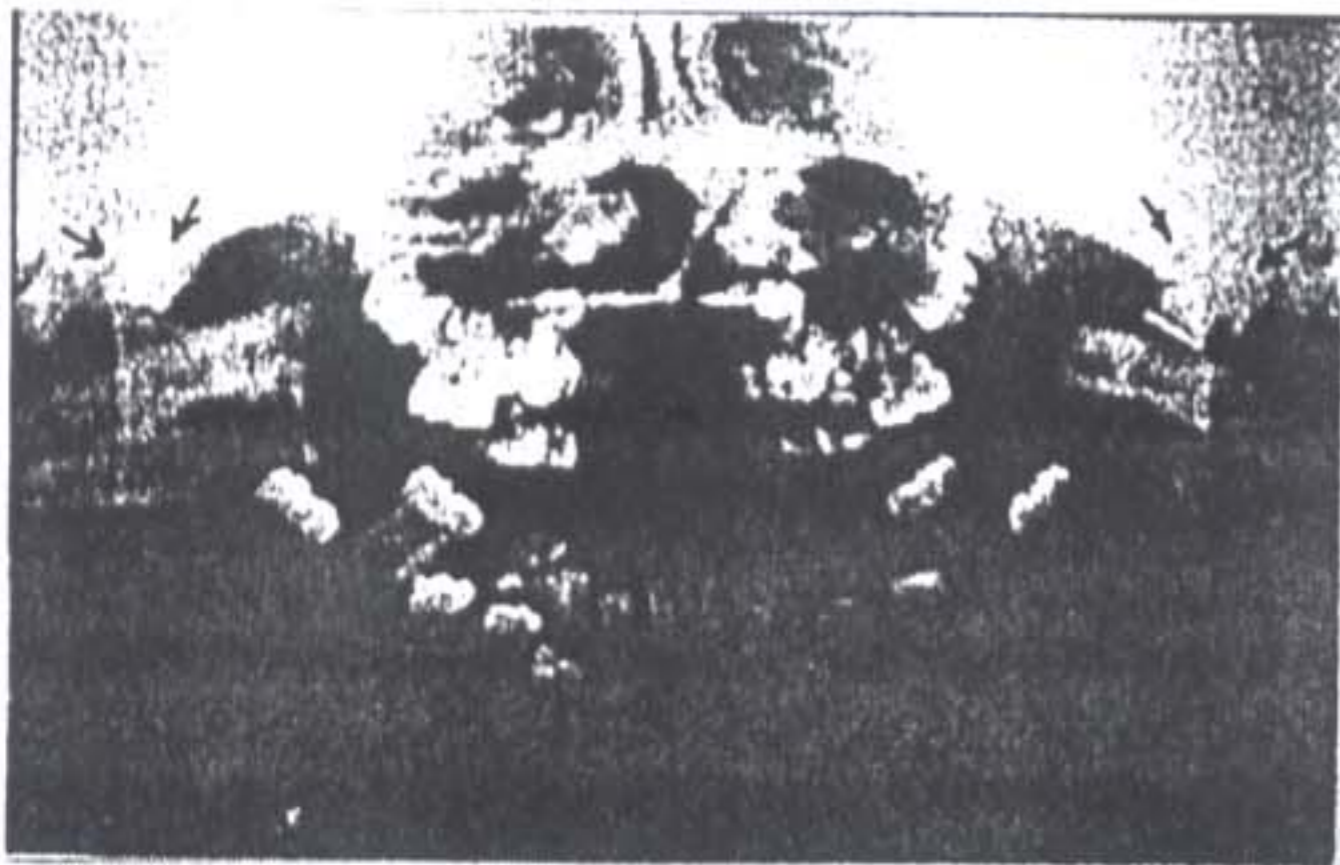


Figure 4. Ortopantomogram showing the prosthesis in a case of bilateral ankylosis

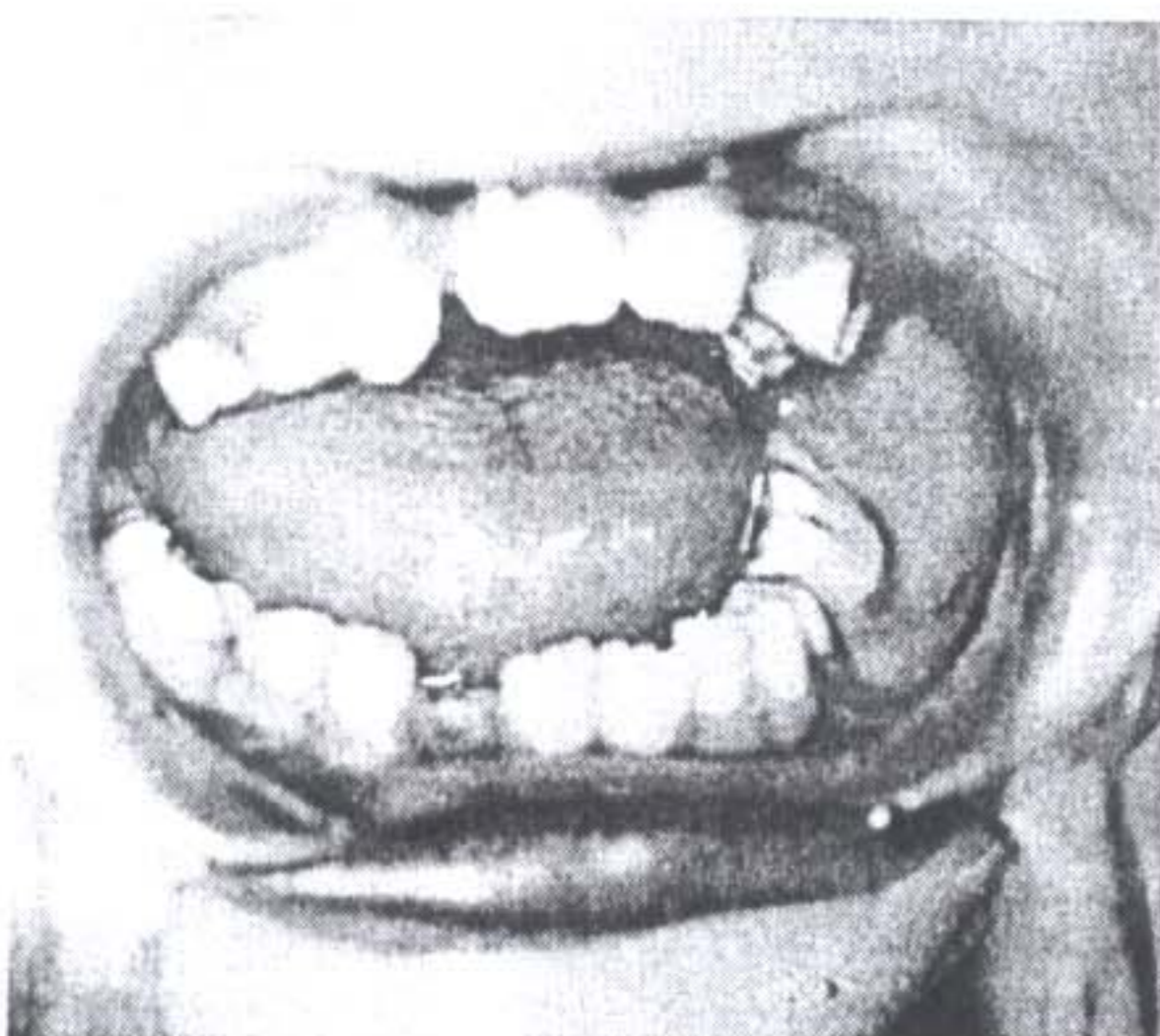


Figure 5. Postoperative mouth opening of the patient treated by acrylic fossa implant

Discussion

The treatment of the ankylosis should be surgery. Many surgical techniques have been suggested for this disorder. The use of alloplastic materials was first described by Risdon⁸ in 1934. In this study, gold foil was used to prevent re-ankylosis. In the following years, the other alloplastic materials including tantalum foil⁹, stainless steel¹⁰ and vitalium¹⁹ were used as interpositional material in treatment of TMJ ankylosis.

During the late 1980s and early 1990s, it became apparent that certain materials being implanted into the TMJ were not biocompatible. Some of the problems were associated with teflon fluorinated ethylene propylene (FEP), which had been used in the proplast TMJ implant and the VKI teflon FEP prosthesis. Failure of implants became such a problem that the manufacturer (Vitek) filed for voluntary bankruptcy in 1990²⁰.

The most important consideration for any type of TMJ prosthesis is failure, while we did not see any immediate or late rejection problem with acrylic fossa implant. Acrylic have been used in TMJ ankylosis for many years and no foreign body reaction was reported^{11,15,17}. The use of titanium by maxillofacial and orthopaedic surgeons is very common and none of them reported foreign body reaction. The other advantages of the reported implant are that it allows all jaw movements, including anterior, posterior and lateral movements, and after all, it costs very low.

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