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Fracture of costochondral graft in temporomandibular joint
an unexpected complication

M. A. W. Merckx, H. P. M. Freihofer

Abstract
The case of a 35-year-old woman, with a history of several temporomandibular joint (TMJ) operations, including condylectomy, is reported. She presented with myofascial pain and an unexplained ankylosis of her right TMJ. The ankylosis was released and an autologous costochondral graft was used to restore the vertical dimension of the ramus. About 3 months after surgery, a fracture of the graft occurred during physical therapy. The cause of this complication is discussed with reference to the literature.

Case report
A 32-year-old woman consulted an oral and maxillofacial surgeon because of pain in the right TMJ. The patient underwent several TMJ operations, including condylectomy. Her complaints had originally started with clicking sounds in her TMJ, which had gradually progressed over time. Arthroscopy revealed a 25-mm disk that was repaired without any restriction of mouth opening. Physical therapy was initiated but was abandoned prematurely due to pain. The patient was referred for manipulation, and the joint was manipulated several times. Physical therapy was continued, but the pain persisted.

Key words: costochondral grafts; reconstructions; temporomandibular joint; ankylosis; reconstruction; complication.

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Fig. 1. Close-up view of the right TMJ. No remnants of the condylar head are visible.
whether the landmarks that occurred during the examination were observed. The failure of the bone and muscle to regenerate led to the development of new bone and muscle, which eventually replaced the original bone and muscle. The process of bone and muscle regeneration was compromised by the loss of essential nutrients and the presence of inflammatory cells.

The fracture occurred during the period of bone and muscle regeneration. The bone and muscle were not able to regenerate properly due to the loss of essential nutrients and the presence of inflammatory cells.

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due to immobilization of the joint during the period of IMF.

Several authors report on various time spans for IMF when inserting costochondral rib grafts. Kaban et al. applied about 1 week of IMF after reconstruction and rigid fixation of the graft with screws only. However, Lindqvist et al. kept the patient in fixation for a mean of 3.5 weeks and Macintosh & Henny for 4–8 weeks, both groups reporting very satisfactory long-term results. It cannot be ruled out that the reankylosis found during the fifth operation was caused by the period of IMF, but the authors still think that a significant muscular component contributed to this disappointing result.

In the case presented, it appeared that the graft was not strong enough to withstand the excessive forces necessary to promote mobilization of the TMJ. In retrospect, it would have been better to use general anesthesia with muscle relaxation for evaluation of the mouth opening and to try to increase its range. This would probably have reduced the risk for fracture of the graft.

This case demonstrates the potential weakness of a rib graft even 3–4 months after insertion. It is probably better not to position the rib in a transverse fashion. Forceful opening of the mouth should be avoided for at least 6 months to allow for complete bone remodeling. The period of IMF should also be reduced to a minimum in order to avoid the possibility of reankylosis.

References

Address:
M. A. W. Merkx, MD, DMD
University Hospital Nijmegen
Department of Oral and Maxillofacial Surgery
PO Box 9101
NL 6500 HB Nijmegen
The Netherlands