

Temporomandibular Joint Disc Plication with Bone Anchored Suture for Disc Displacement

Surgeons at the Penn Center for Temporomandibular Joint Disease are using suture (bone) anchors during surgery for temporomandibular joint disc displacement.

Temporomandibular joint (TMJ) disc displacement, or internal disc derangement, comprises an abnormal relationship between the articular disc and the mandibular condyle and fossa. Symptoms include pain at the TMJ, often radiating to the ear, restricted range of motion (ROM) in the jaw and clicking with jaw movement.

Disc displacement has a wide range of potential etiologies, including arthritis, trauma, personal habits (clenching, chewing habits, etc), and Ehlers-Danlos Syndrome, that result in herniation, stretching, or degeneration of the ligaments that normally hold the disc in place. Displacement occurs with and without reduction, depending upon disc location, and is further categorized by associated deviations of function. A disc that remains anterior to the condyle is defined as disc derangement without reduction (DDwoR), sub-defined by opening limitation (or lack thereof). If the disc returns to the head of the condyle, the condition is defined as disc derangement with reduction (DDWR).

Treatment is not always required for disc displacement, particularly if the mouth retains a reasonable degree of opening (~40mm) and pain is not severe. However should the condition prove refractory to medications, lifestyle changes, and other conservative measures, therapeutic options for disc displacement may include open or minimally invasive TMJ disc repositioning (plication) surgery. Decisions to proceed with surgery are driven by quality of life factors, including interference with eating and pain that disrupts the ability of the patient to function.

The object of disc plication surgery at the Penn Center for Temporomandibular Joint Disease is to provide sufficient mouth opening, pain relief, functional stability, and long-term maintenance of disc position. This is achieved by repositioning the disc to its normal position and attaching it with suture anchors to both ensure that the disc remains in position in relation to the condyle during movement, and optimize the fixation of tendons and ligaments to bone.

The anchoring device is comprised of a bone-inserted anchor containing an eyelet through which a suture is passed. Both the anchor and suture can be composed of permanent or biodegradable materials.

This system has a number of benefits in that it offers secure fixation of the disc to the condyle head, accurate disc repositioning, and stability during movement without depending upon soft tissue as a source of post-surgical structural integrity.^[1]

Generally, reported post-procedural outcomes for disc plication with bone anchored sutures have been positive.^[2,3]

References

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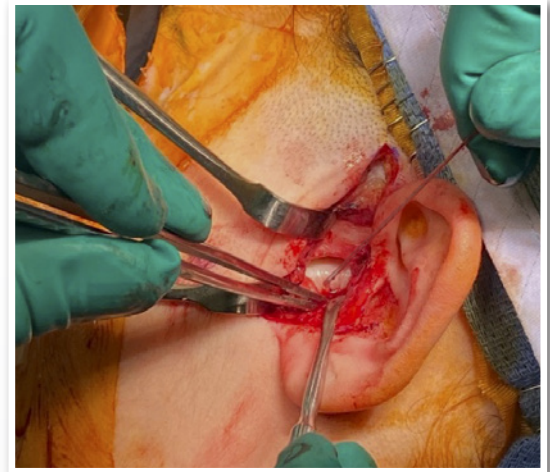


Figure 1: Bone anchor implantation for disc reduction and repositioning.

CASE STUDY

Mrs. M, a 38-year-old woman, visited her primary care physician with a two-week history of sharp, intermittent right-sided facial pain originating at her ear. On examination, her PCP found a limited jaw range of motion (ROM) with significant pain. She started her on a course of NSAIDs and sent her for physical therapy. Unfortunately no improvement was noted after several months, including an arthroscopy of her joint. She was then referred to Penn Oral and Maxillofacial Surgery for evaluation.

There, Mrs. M reported that she had previously experienced locking of her jaw on two occasions, but that these events had proved transitory, and she'd attributed them to stress. On physical examination, clicking was noted on mouth opening, as well as limited lateral movement to the left and severe restriction of mandibular ROM (27 mm). A presumptive diagnosis of disc displacement without reduction (DDwoR) with limited opening was made and subsequently confirmed by MRI.

After a discussion of the treatment options, both conservative (self-management, physiotherapeutic interventions and splinting, among others) and surgical (arthrocentesis, arthroscopy, open surgery), an arthroplasty with disc plication was recommended.

(Continued on back)



(Case Study continued)

Procedure in Detail: Following normal pre-surgical procedures for anesthesia and surgical preparation, a series of procedures were performed to expose the TMJ capsule. These included an endaural incision with superior extension down through the temporoparietal fascia followed by blunt dissection in a plane overlying the temporalis fascia and anterior subperiosteal dissection over the zygomatic arch. Following exposure and insufflation of the TMJ capsule, the joint space was entered via a single horizontal incision.

The TMJ disc was examined and found to be displaced but without perforation. The adhesions surrounding the anterior, posterior, and lateral surfaces of the TMJ disc were then lysed using Iris scissors. Next, a vertical incision was made over the condylar neck; subperiosteal dissection revealed an intact condylar head with no gross degeneration. A hole osteotomy was then made in the posterolateral surface of the condylar neck, at which point a bone anchoring suture was placed into the marrow space (Figure 1). Good retention of the suture was achieved. The disc was then repositioned over the posterior and lateral aspect of the condylar head and sutured into place.

Disc stability and range of motion was confirmed by functioning the TMJ. The joint space was then irrigated with copious normal saline solution. Hemostasis was achieved.

Mrs. M was discharged the same day and follow-up up with the team at one week, one month and at three months, at which time she demonstrated a normal, pain free opening of her mouth.

► About the Penn Center for Temporomandibular Disease

The mission of the Penn Center for Temporomandibular Joint Disease is to advance the understanding and treatment of TMJ joint disease. Finding the source of the pain to define the etiology of TMJ is one of the Center's key services.

In addition to practical evaluations, diagnostic tools include Panorex, MRI and CT imaging. Treatment at the Center is directed at the origin of pain. The first-line therapy for TMJ disorders is short-term medical management. Patients who continue to have symptoms of TMJ disease or progression despite optimal conservative management may benefit from interventional therapy.

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