Undisputed applications for TMJ Surgery

- Ankylosis
- Growth disorders
- Recurrent subluxation
- Infections
- Neoplasms
- These make up the minority of TMJ cases

Relative Indications for TMJ Surgery

- TMD is refractory to appropriate non-surgical therapies
- TMJ is the source of pain and/or dysfunction that results ina significant impairment to the patient in day to day acitivity
  - Pain localized to the TMJ
  - Pain on loading of the TMJ
  - Pain on movement in the TMJ
  - Mechainical interferences in the TMJ

Surgical Procedures for Temporomandibular disorders

- Arthrocentesis and lavage
- Arthroscopy
- Arthrotomy
- Modified condylotomy
- Adjunctive procedures for TMJ
  - Botox
  - Coronoidectomy

Arthrocentesis

- Minimally invasive, simplest TMJ intervention follows conservative management
- Local vs. conscious sedation
- Lavage, lysis, manipulation, injection of meds

Arthrocentesis

Indications

-Localized joint pain, acute limitation of motion (interincisal and excursion), inflammatory conditions

- Limited improvement with medical management

Benefits

- Reduction of joint friction, release of fine adhesions, re-establish range of motion
- Evacuation of debris, chemical mediators of pain and inflammation
- Therapeutic, low morbidity, cost effective

Arthrocentesis Technique

- Auriculotemporal nerve block
- Needle positioned at 10-2 point anterior to tragus
- Identify arch and periosteum
- Superior joint space confirmed with vacuum after insufflation, return of joint fluid, mandible motion
- Additional port placed immediately anterior
- Lavage joint with 100-200 cc
- Steroid and anesthetic infiltrated

Arthrocentesis Results

- Significant reduction in pain and increased opening in >70% of patients
- Nitzan, et al: 91.8% success rate in treatment of severe, limited range of motion (1991)
- Hosaka, et al: "Outcome of Arthrocentesis for TMJ with Closed Lock at 3-year follow up."

  70% success rate at 3 months and 78.9% at 3 years
- Goudot, et al: 79% improvement in pain; arthroscopy 52% (2000)

  Functional improvement more significant with arthroscopy (9.6 ± 5.8mm) vs. 4.3 ± 4.4mm

Arthroscopy Technique

Superior Joint Space Insufflation

- 18-gauge needle positioned at 10-2 point anterosuperiorly paralleling ear canal
- Contact lateral rim of glenoid fossa, needle guided around rim inferiorly, medial insertion to enter joint space
- Balloon joint space with ≈ 3-5 cc normal saline; aids trocar placement (plunger rebound indicates correct position

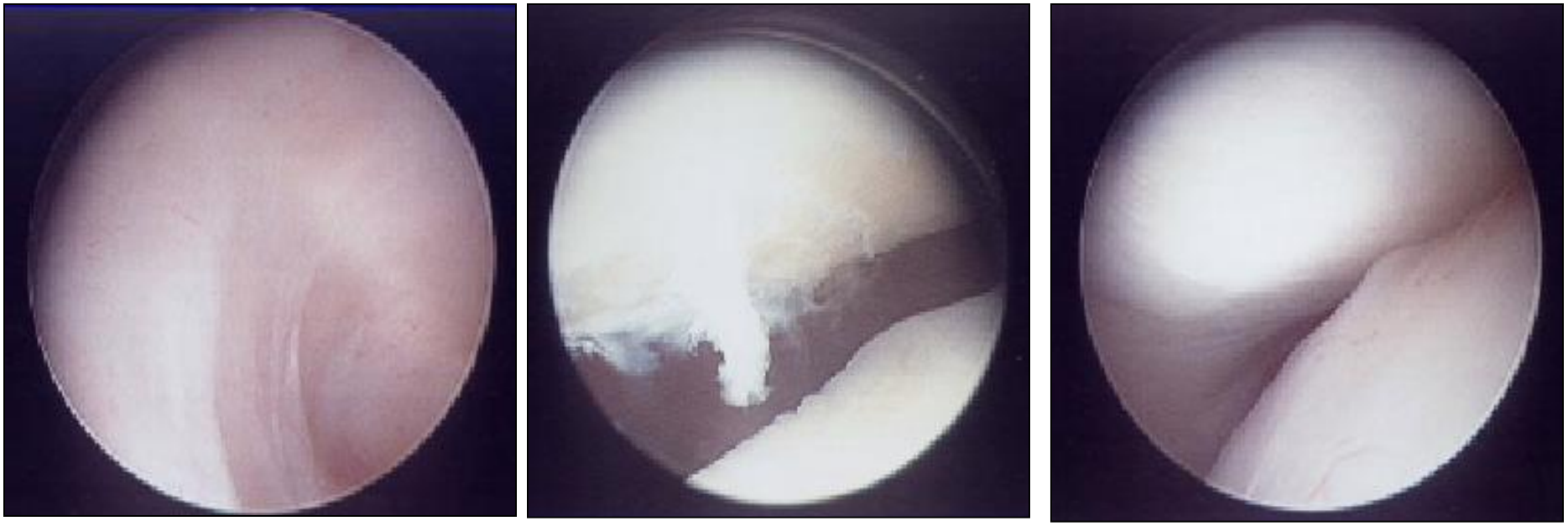
Arthroscopy Technique

Trocar placement

- Cannula and trocar positioned with anterior and superior vector on lateral zygomatic arch in region of posterior slope of articular eminence
- Tip advanced to bone edge, periosteum scored and inferiorly directed for incising capsule
- Stepping off bone ledge rotating through capsule and advancing into superior joint space
- Puncture into posterior recess entering joint in single pass (multiple lacerations increase postoperative inflammation and morbidity)

Arthroscopy Technique

Arthroscopy Technique



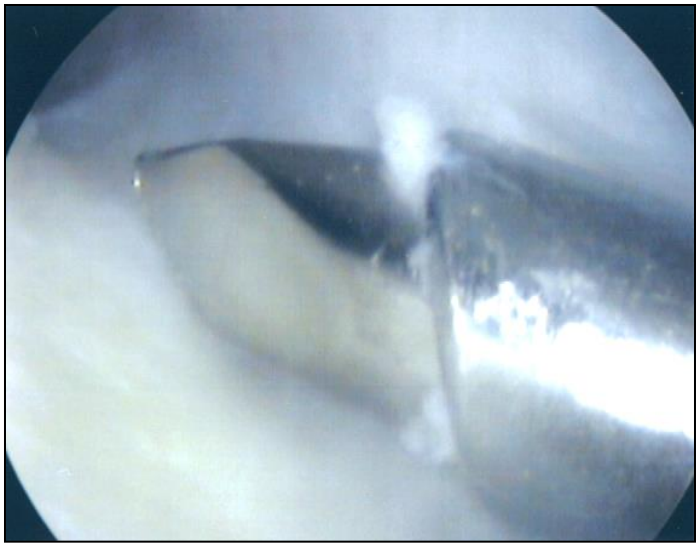
- Arthroscope advanced through lateral recess to visualize anterior aspect of articular eminence, anterior disk and anterodiskal tissue
- Access to anterior recess provides visualization for placement of second working port

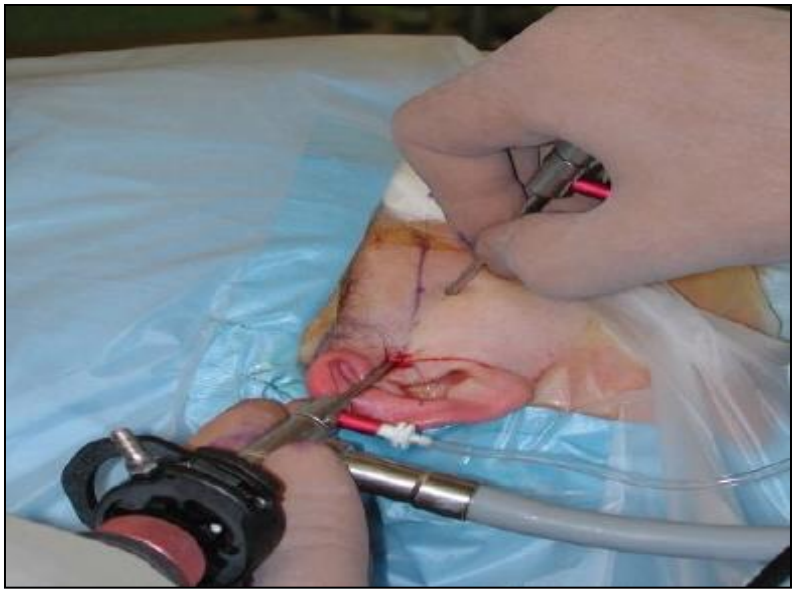
Arthroscopy Technique

Triangulation

Working port placed after stab incision at 25-10 point (minimum of 15 mm separation between ports)

Second portal in eminence region placed under direct visualization allows instrumentation of joint contents

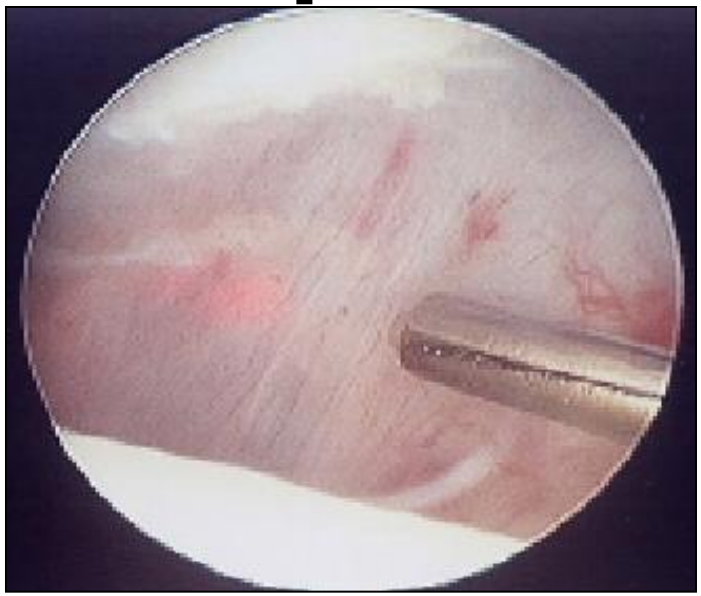


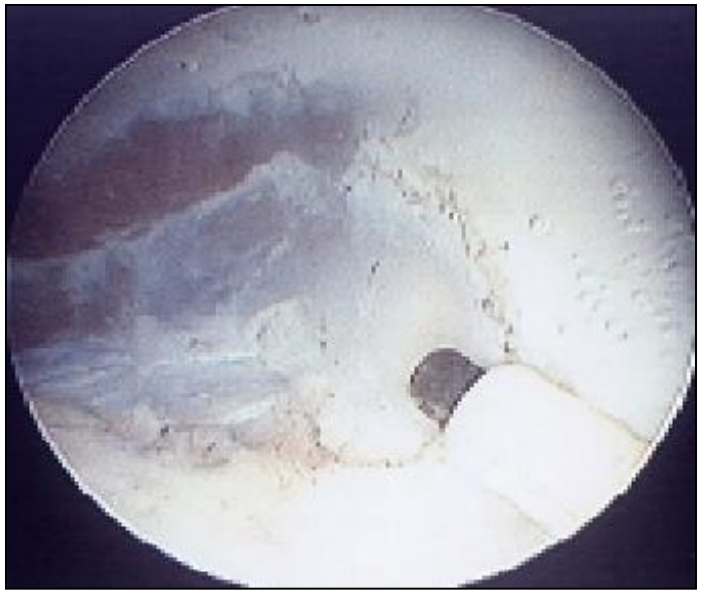


Arthroscopy Technique

Instrumentation

- Blunt trocar, radiofrequency probe, motorized shaver, and/or laser utilized
- Treatment of adhesions, pathology, internal derangements and removal of tissues
- Depth roughly 20 – 25 mm from skin to center of joint
- Lavage of joint with irrigation expands joint space, allows visualization during instrumentation and flushes irritants (inflammatory and pain mediators)

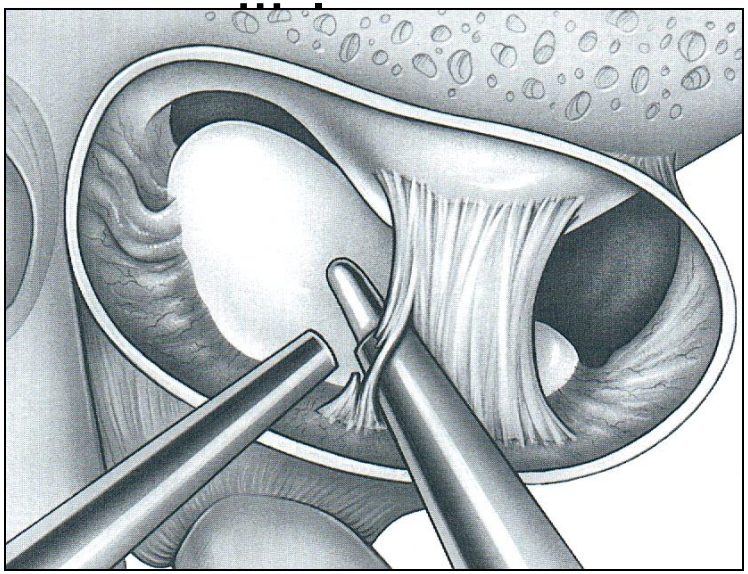


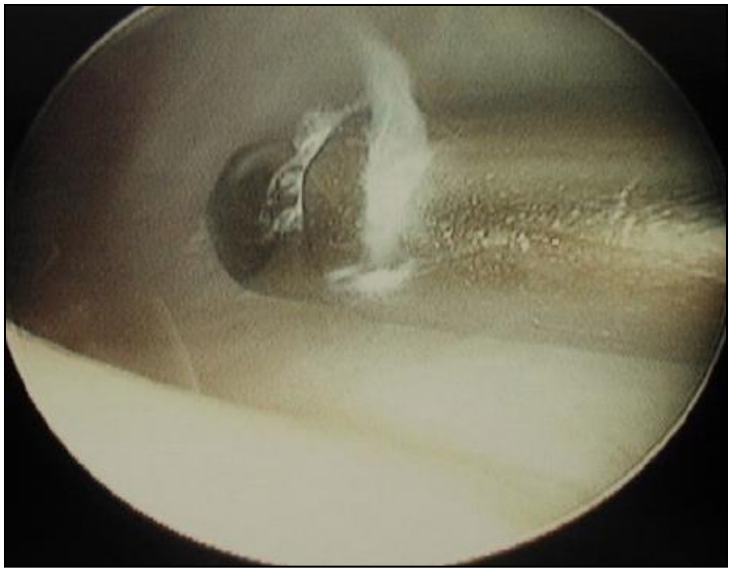


Arthroscopic Maneuvers

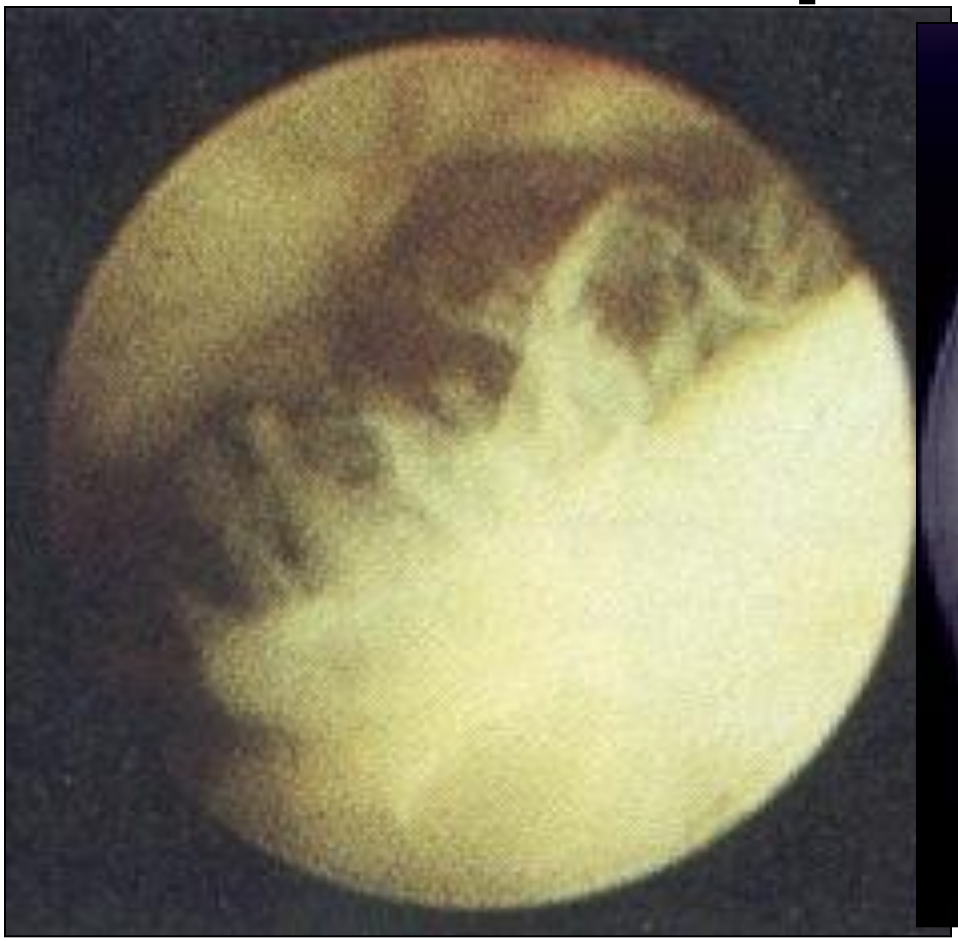
Lysis and Lavage

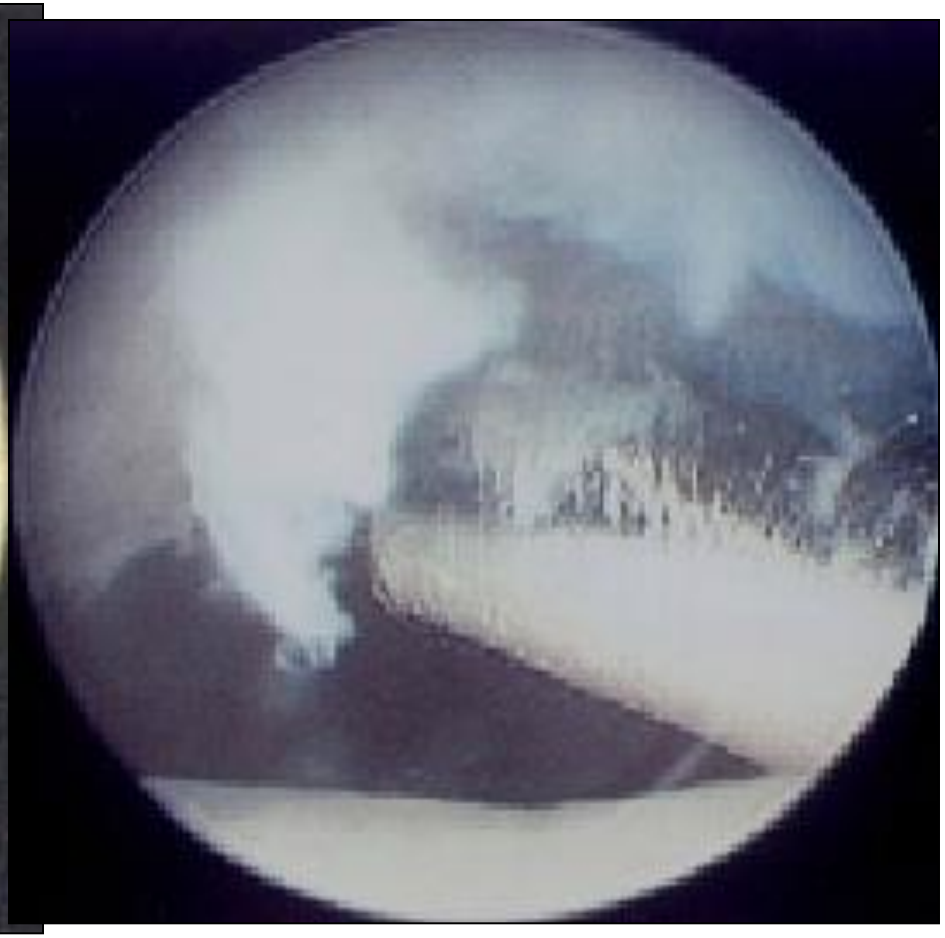
- Most conservative form and gold standard of arthroscopy
- Adhesions released with blunt probes or instrumentation (radiofrequency or laser)
- Confirm disk mobilization depressing retrodiskal tissues and manipulation of





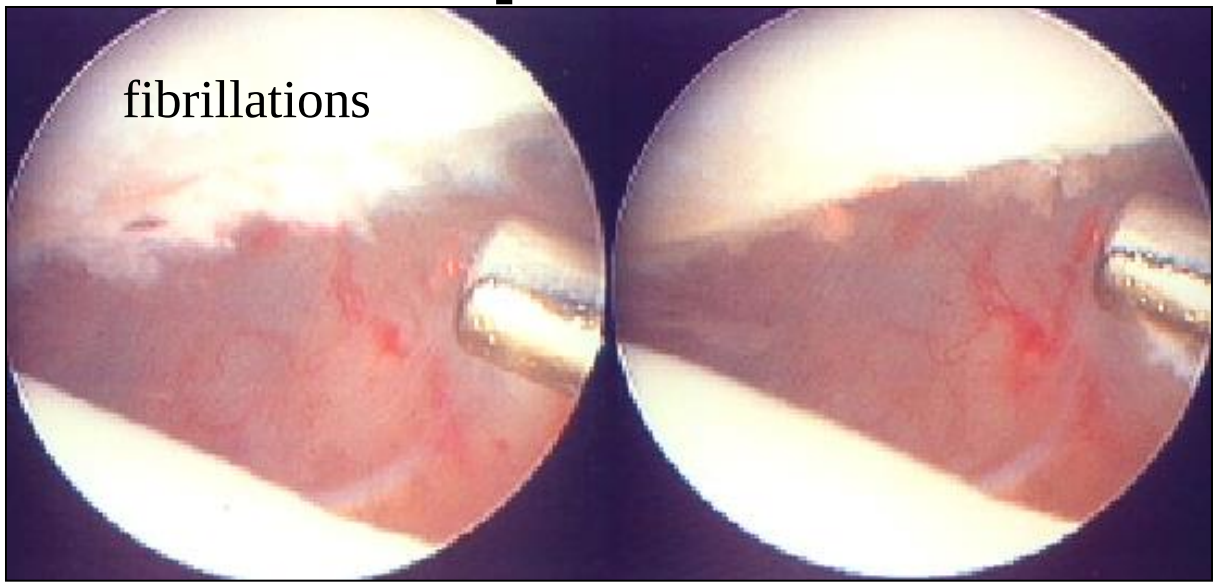
Arthroscopic Maneuvers

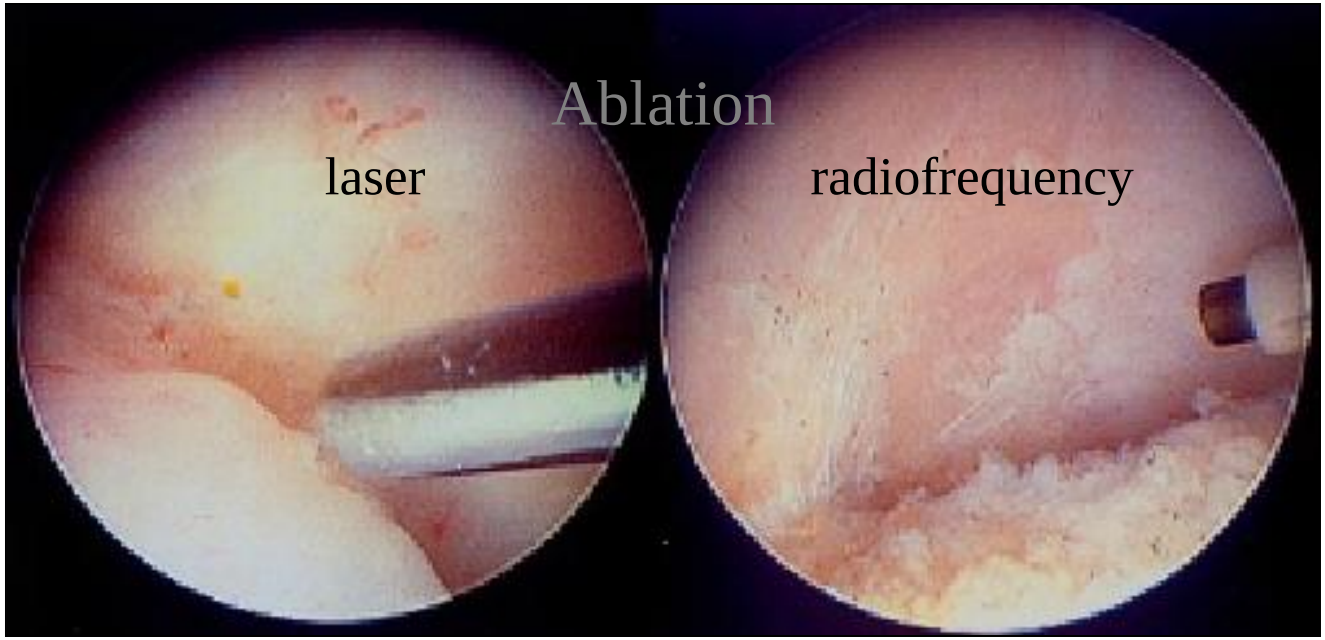




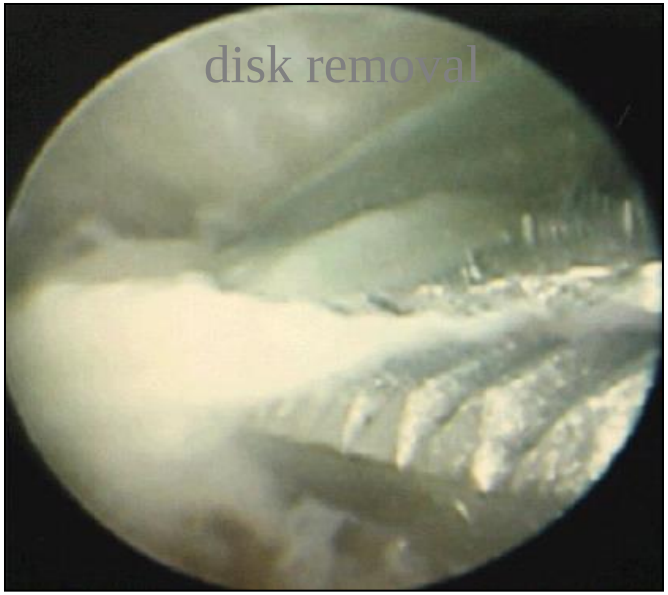
Arthroscopic Maneuvers
Releasing Procedures

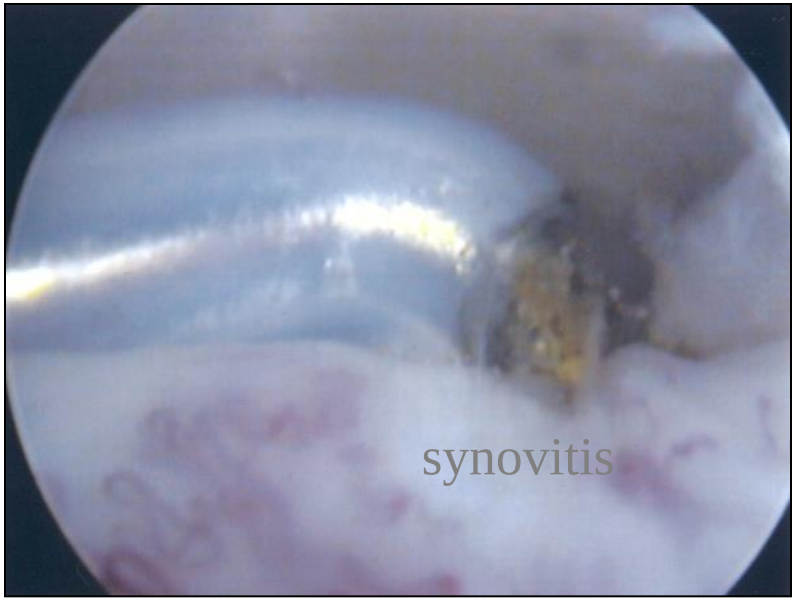
Arthroscopic Maneuvers

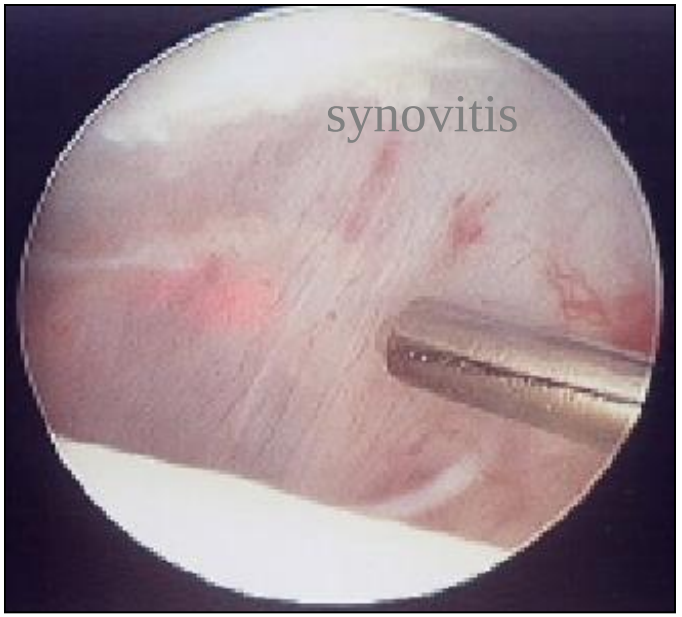




Arthroscopic Maneuvers

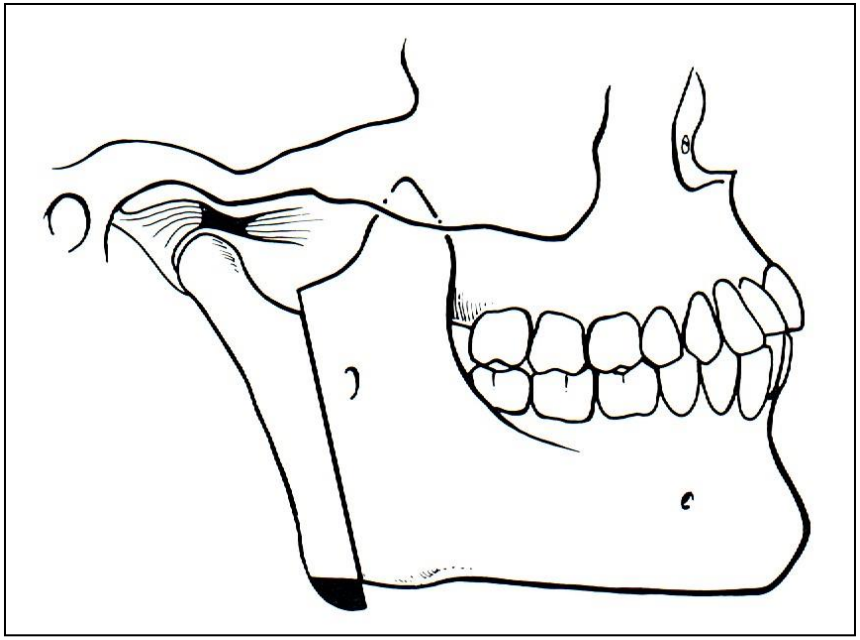


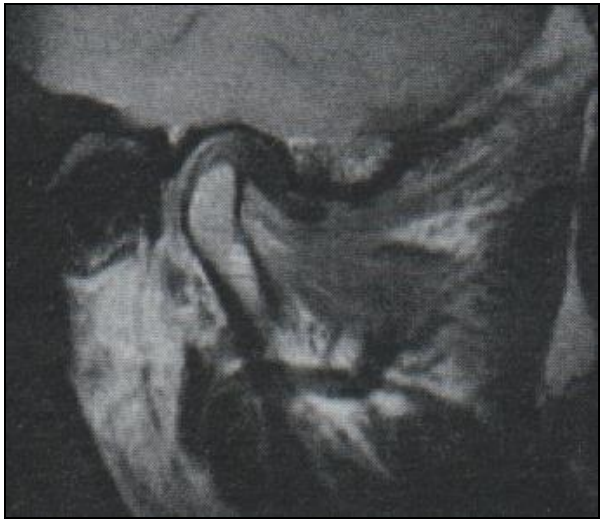


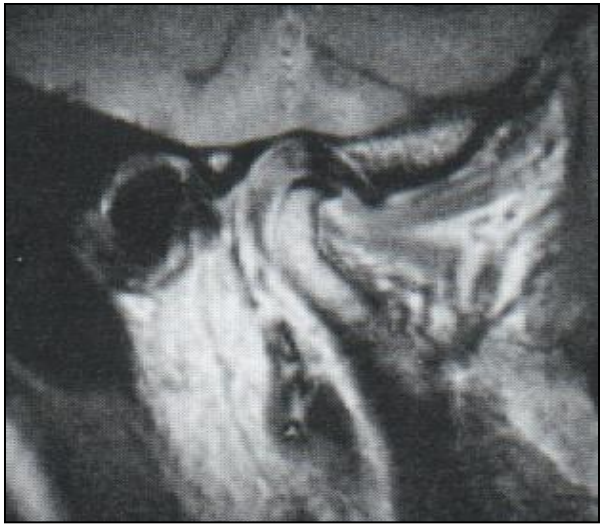


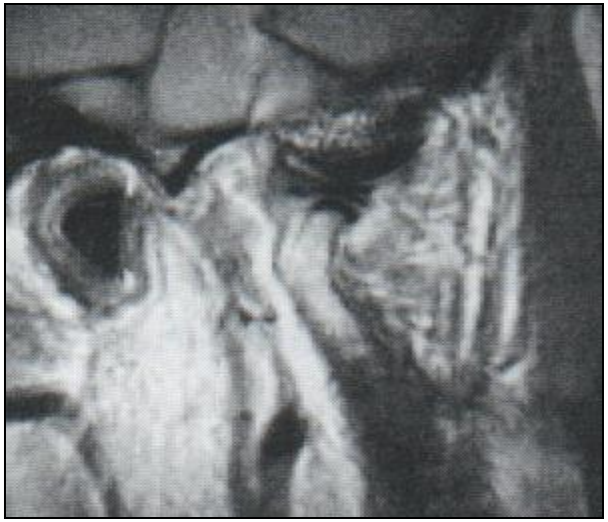
Condylotomy

- Condylar sag aids range of motion and internal derangement
- Complications include malocclusion and sensory disturbances

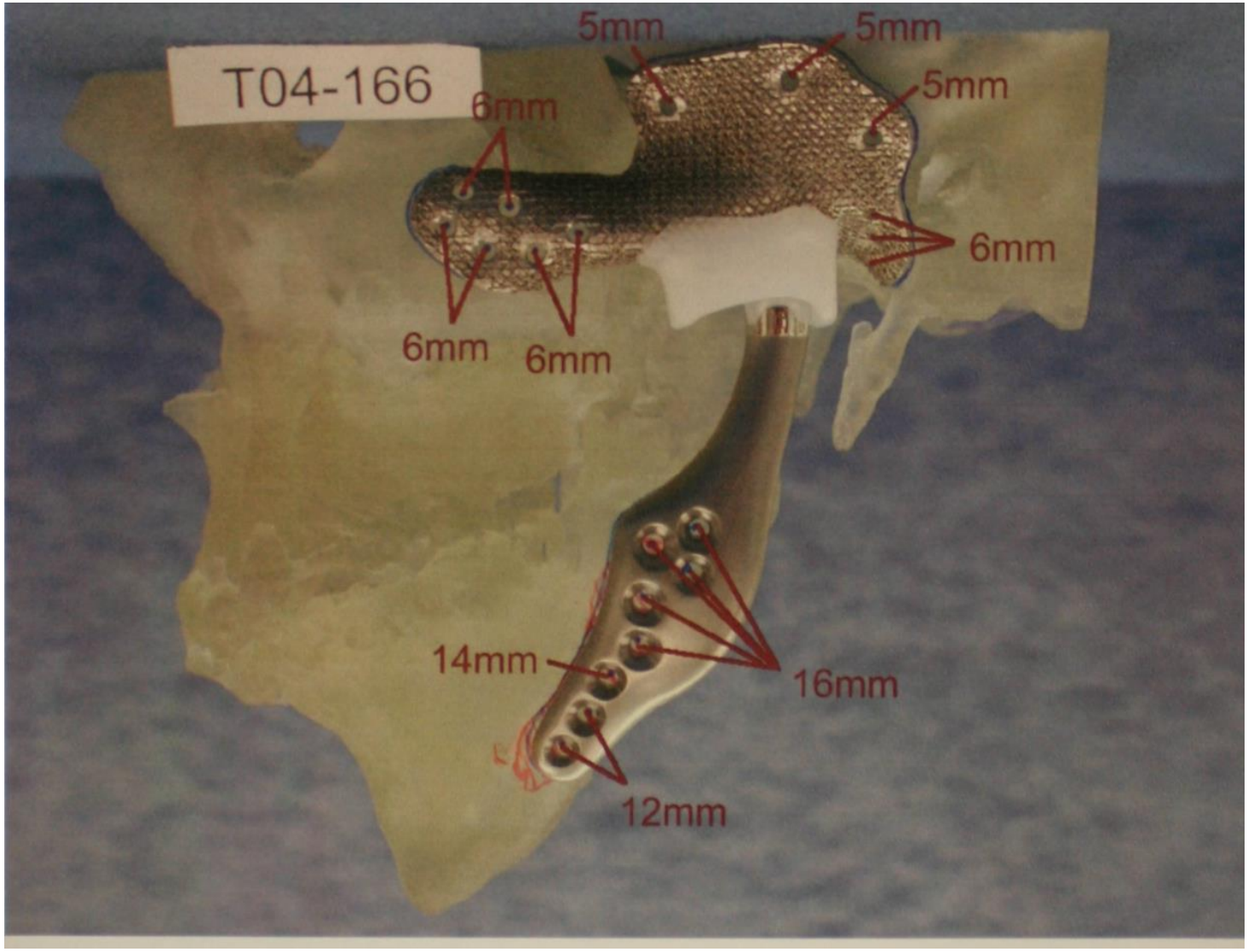




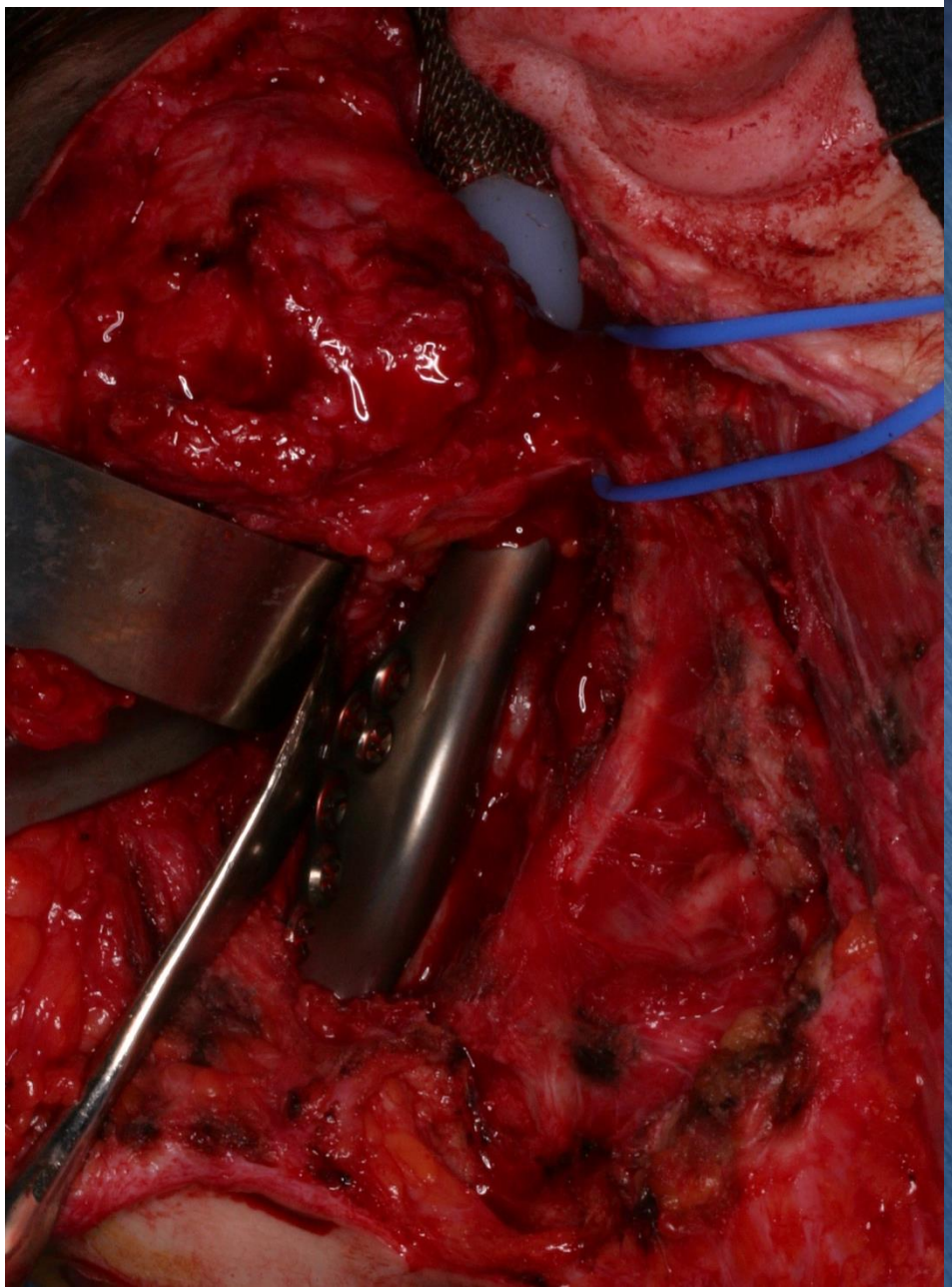




Arthrotomy – Total Joint Reconstruction



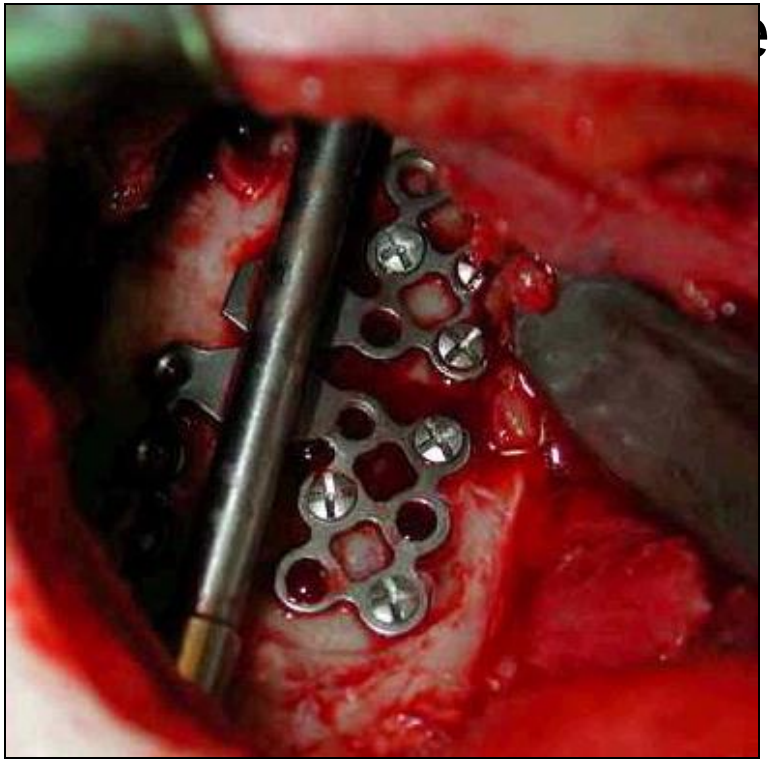
Arthrotomy – Total Joint Reconstruction



Adjunctive Measures

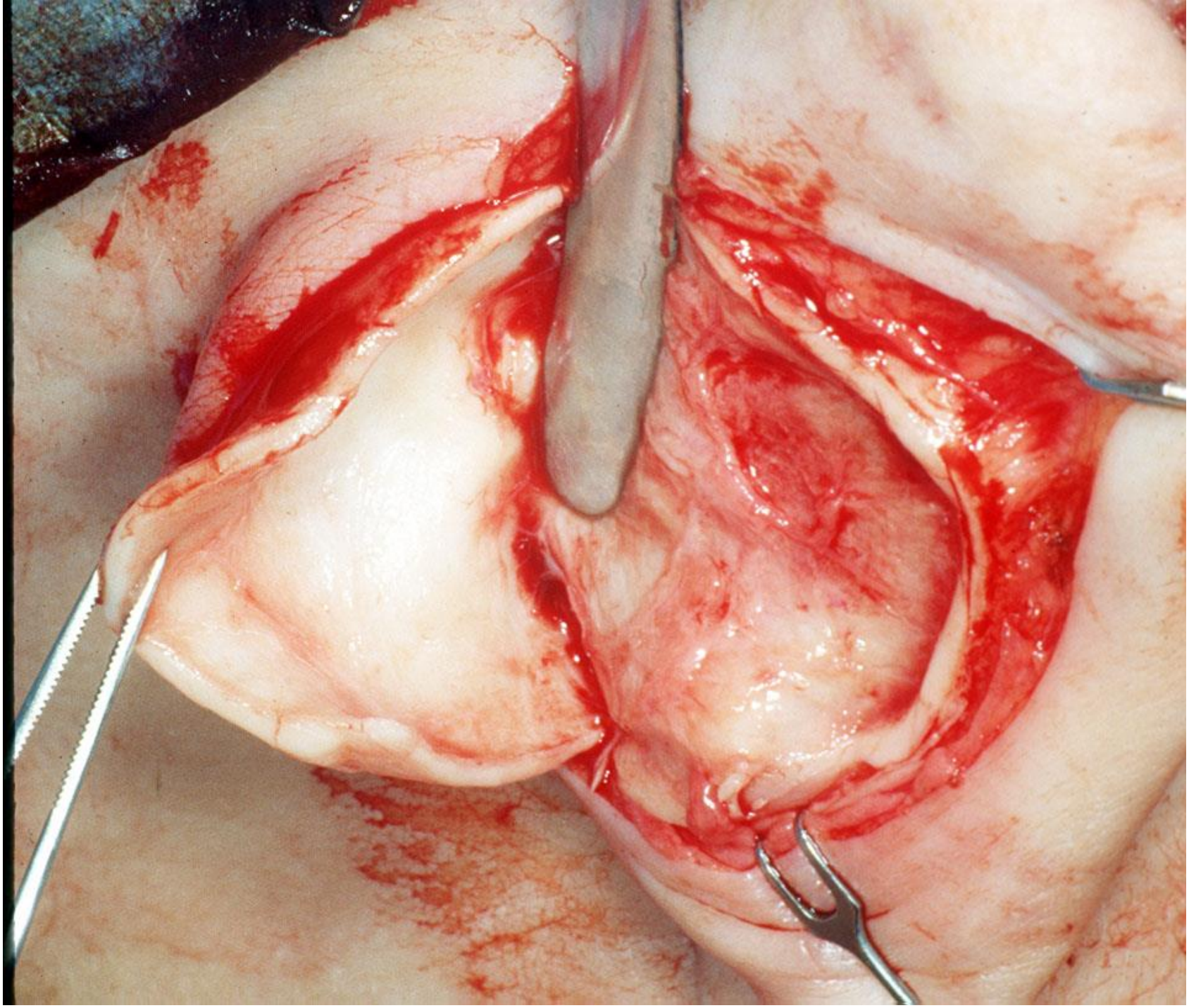
Distraction Osteogenesis

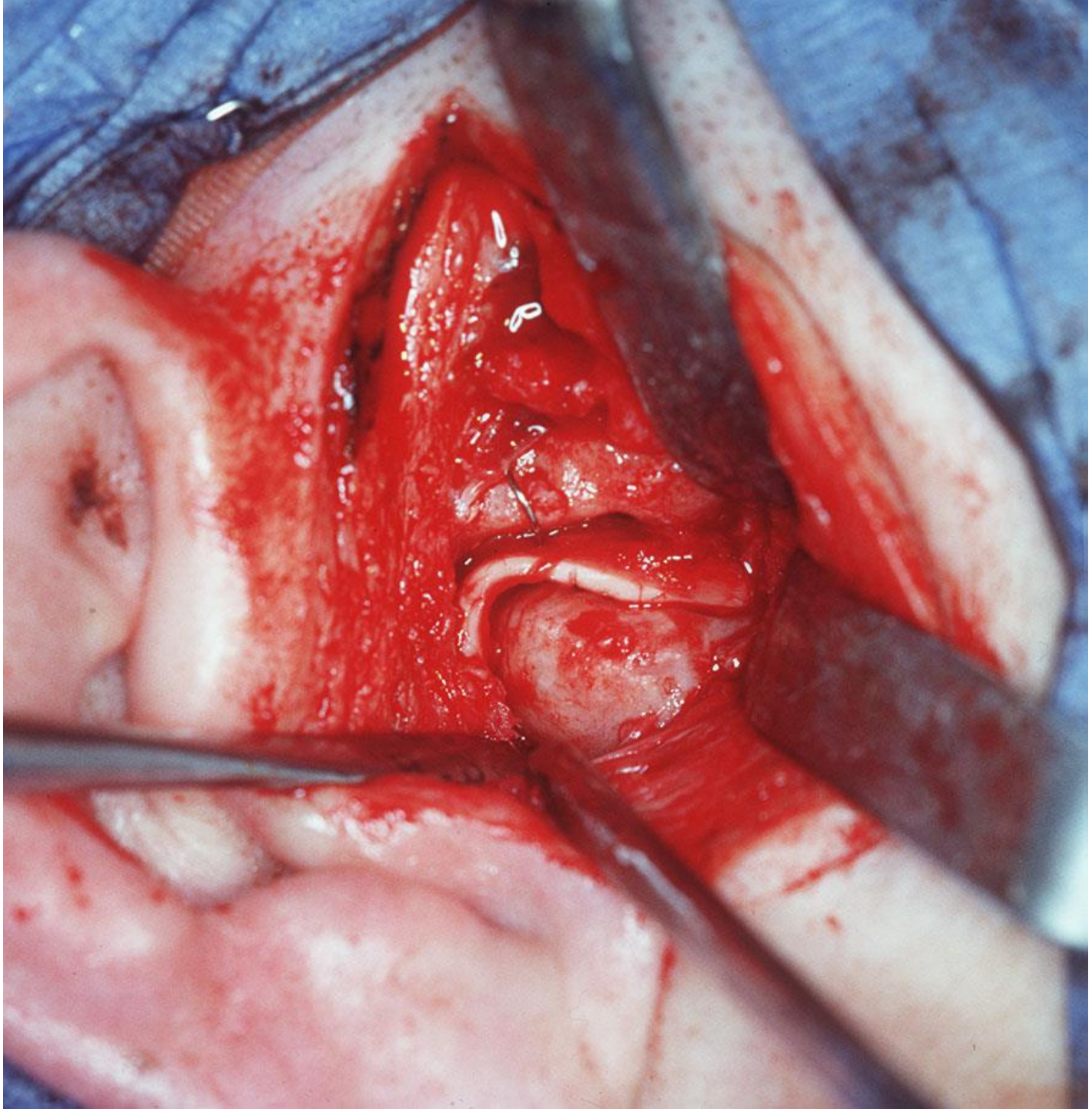
Condyle recreated post-condylectomy or



AURICULAR CARTILAGE

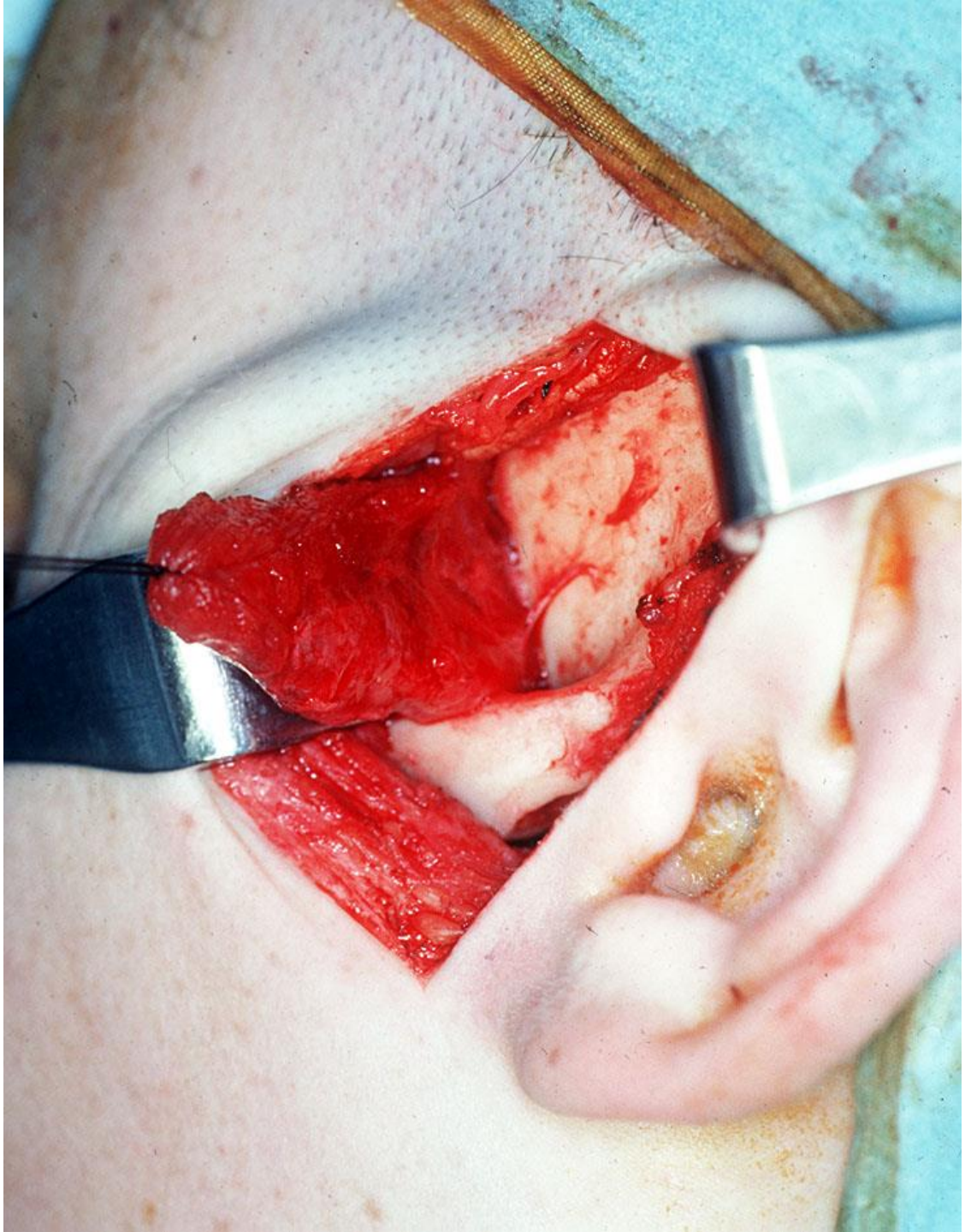
- Witsenburg 1984, Matukas 1990, Kent and Widner 1990
- Somewhat operative technique dependent
- Stabilization varies
- Early complication minimal
- Fun procedure - otoplasty effect

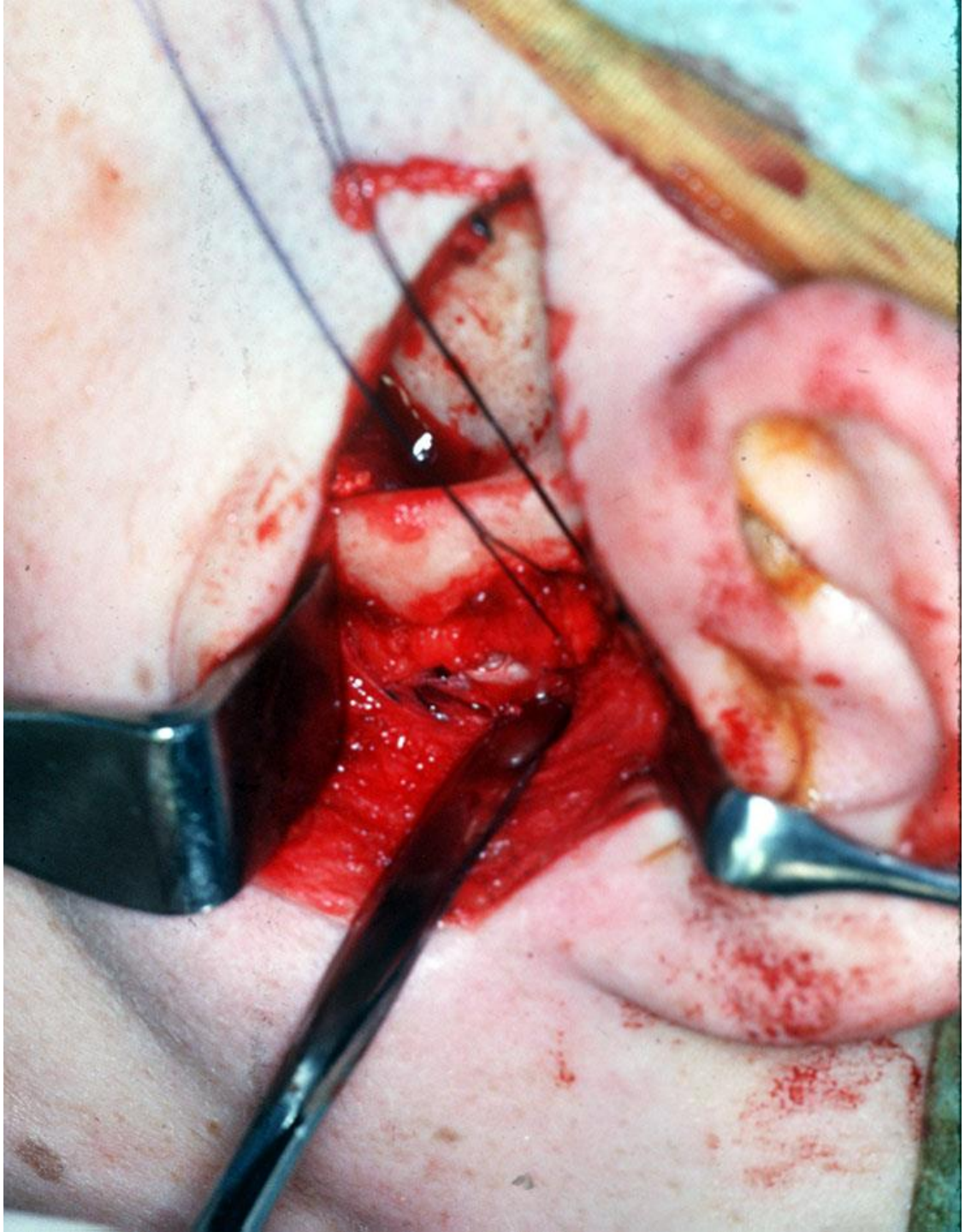


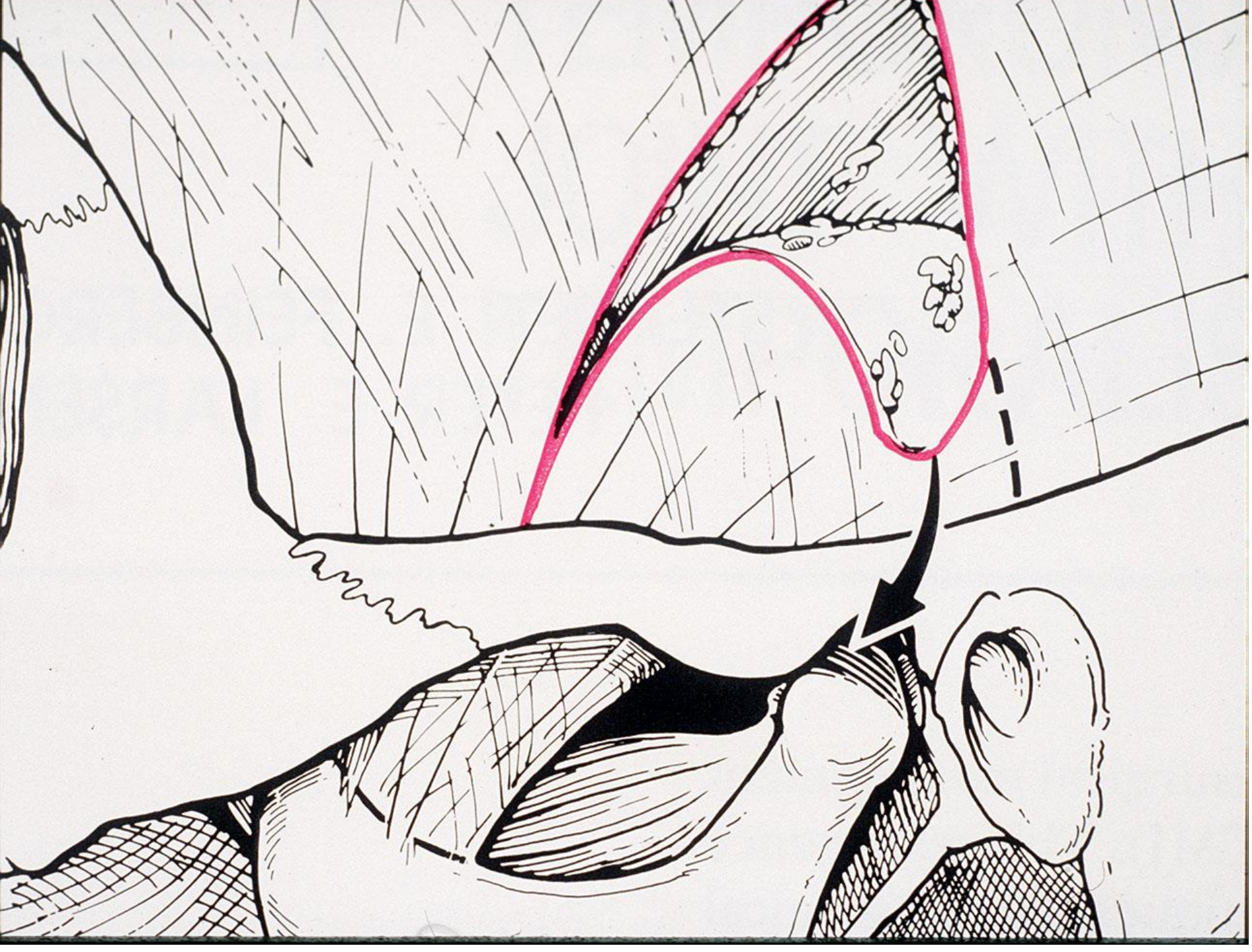


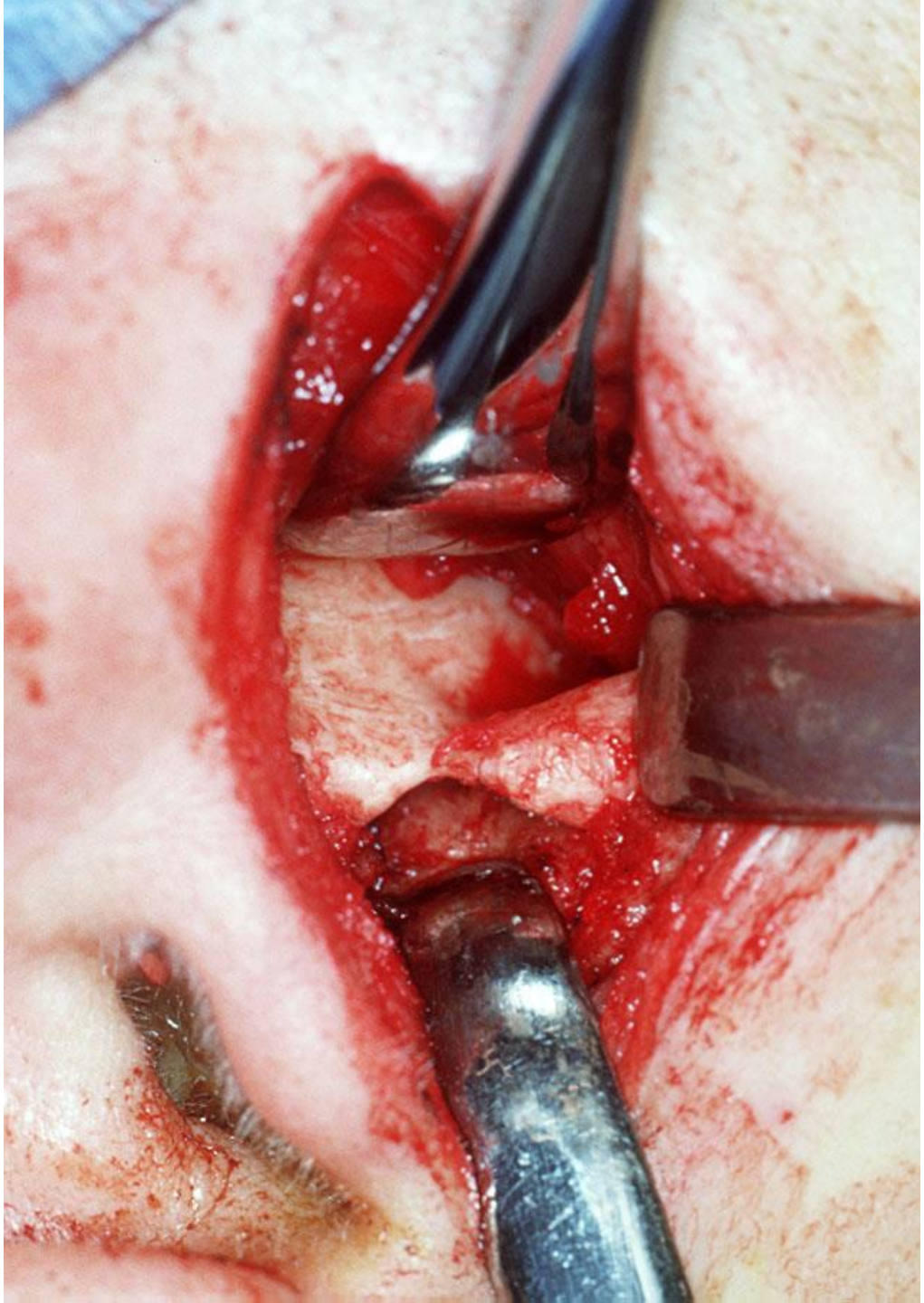
DISC REMOVAL WITH AUTOLOGOUS TEMPORALIS MUSCLE/FASCIA FLAP: INDICATIONS

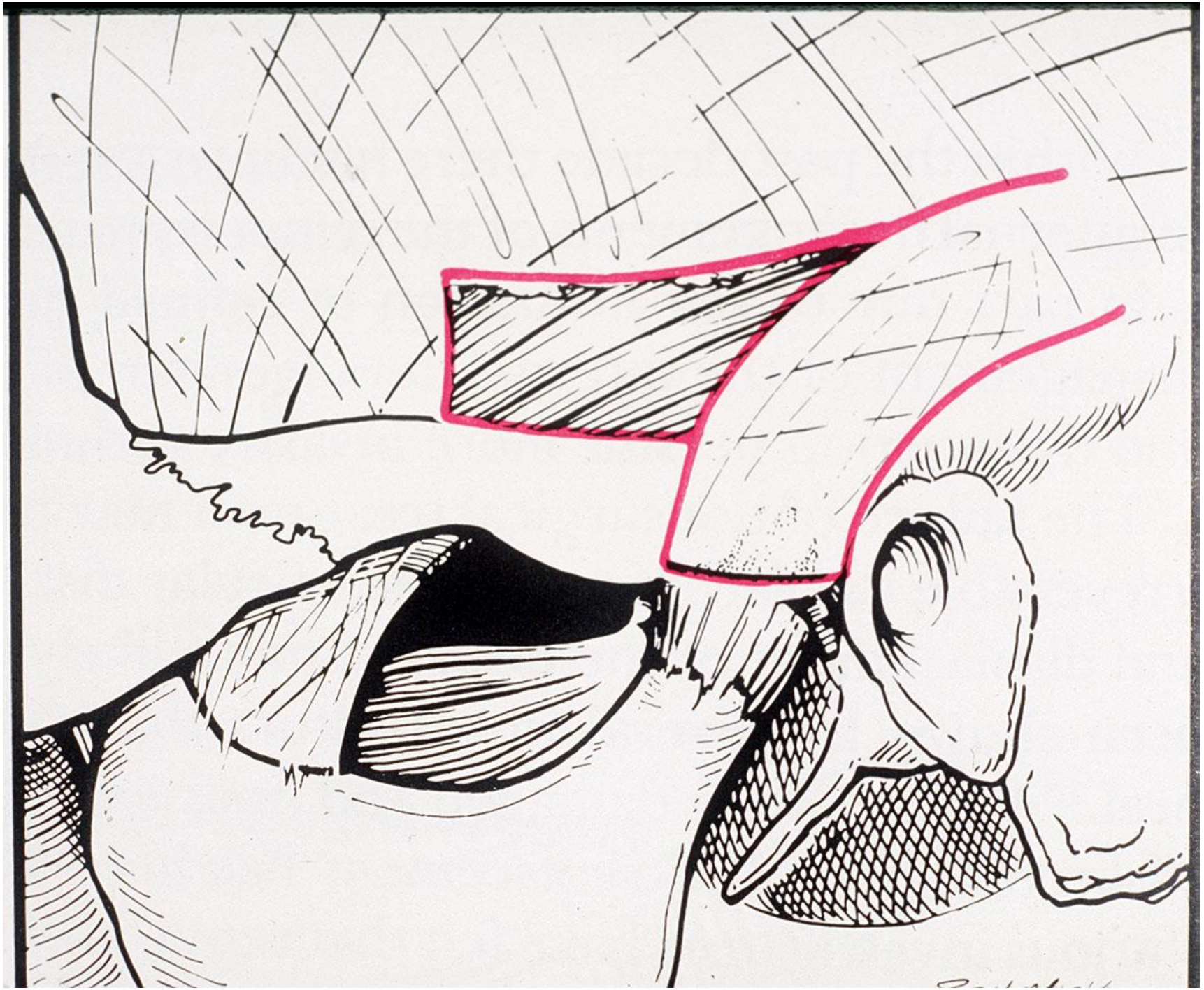
- Disc replacement where significant vertical dimension (up to 4-5mm) of the condyle has been lost and lateral pterygoid function of the mandibular condyle has not been compromised
- Patient refuses a graft from an additional donor site

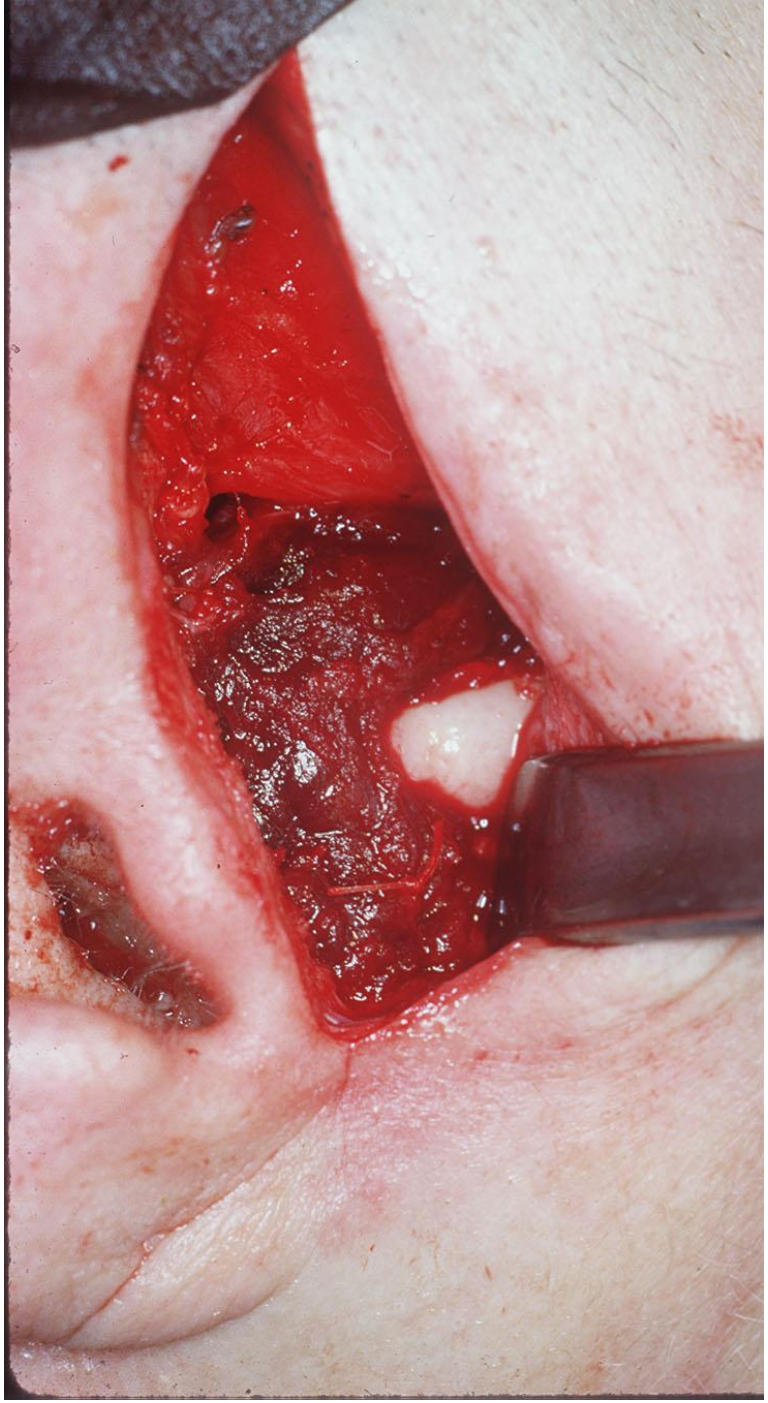












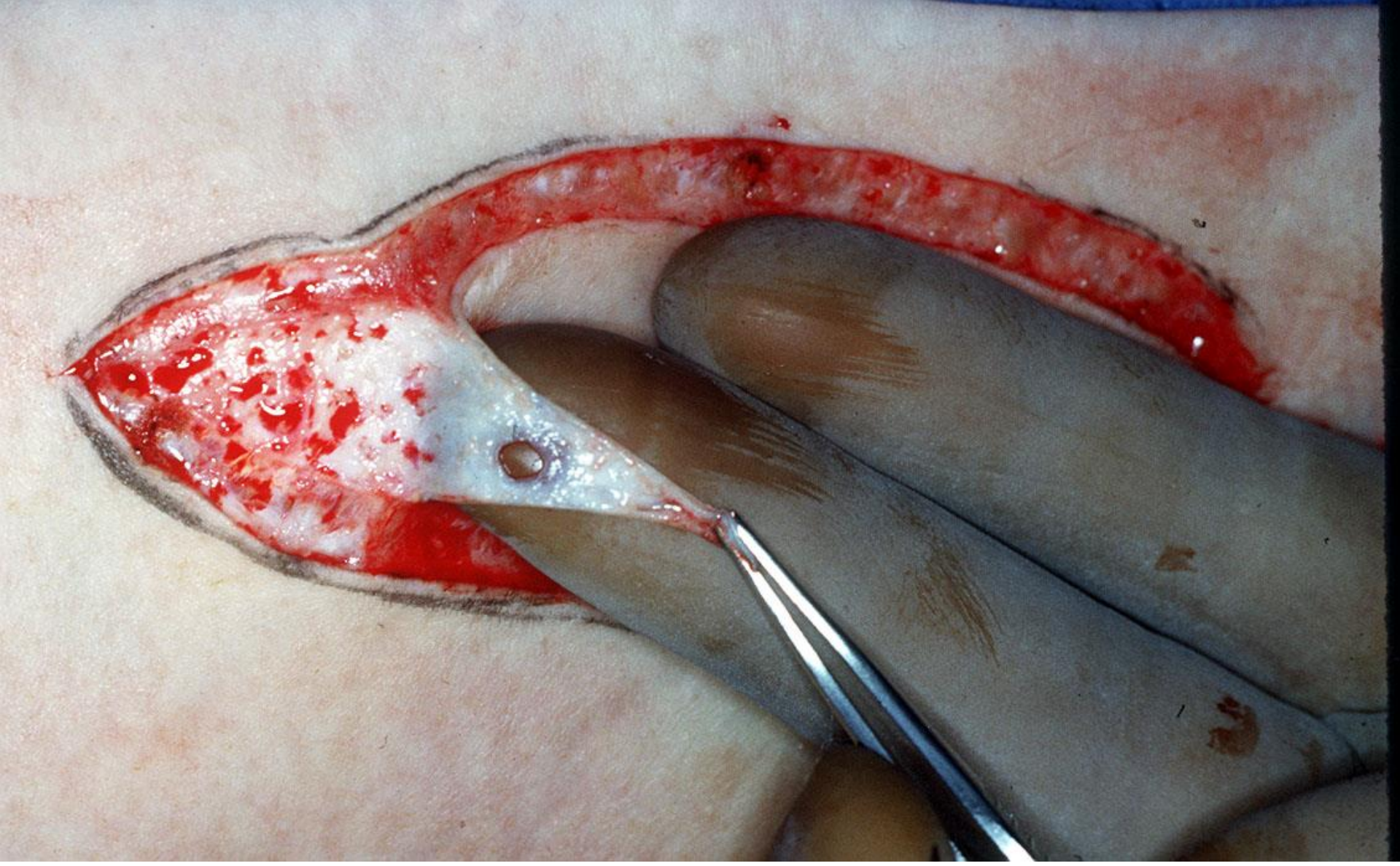
DERMIS GRAFTS

Clinical-Georgiade 1957, Zetz and Irby 1984, Meyer 1988

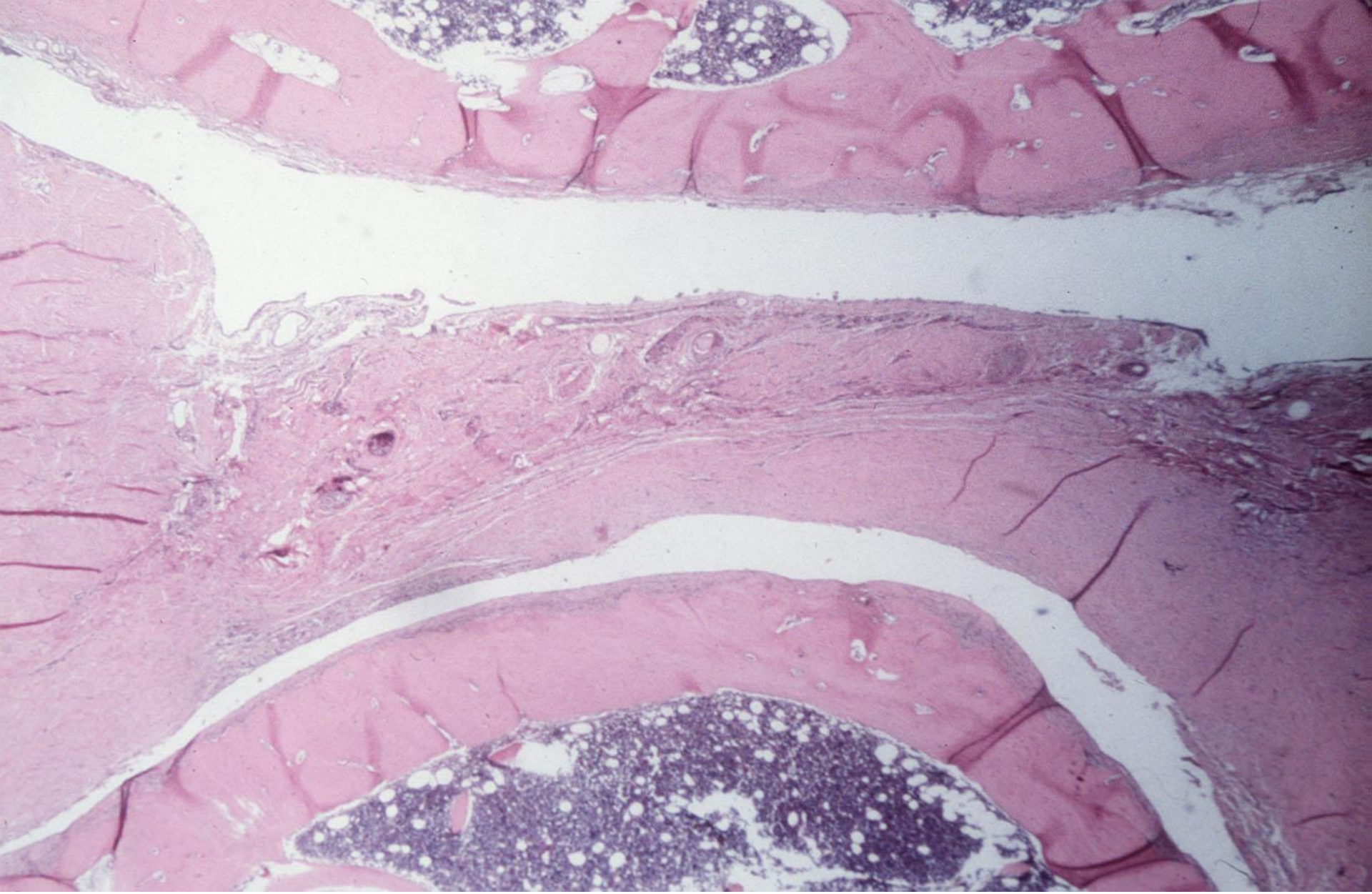
- Disc repair
- Disc replacement
- Ankylosis cases - thickness of dermis depends on gap
- With costochondral grafting

DERMIS GRAFT

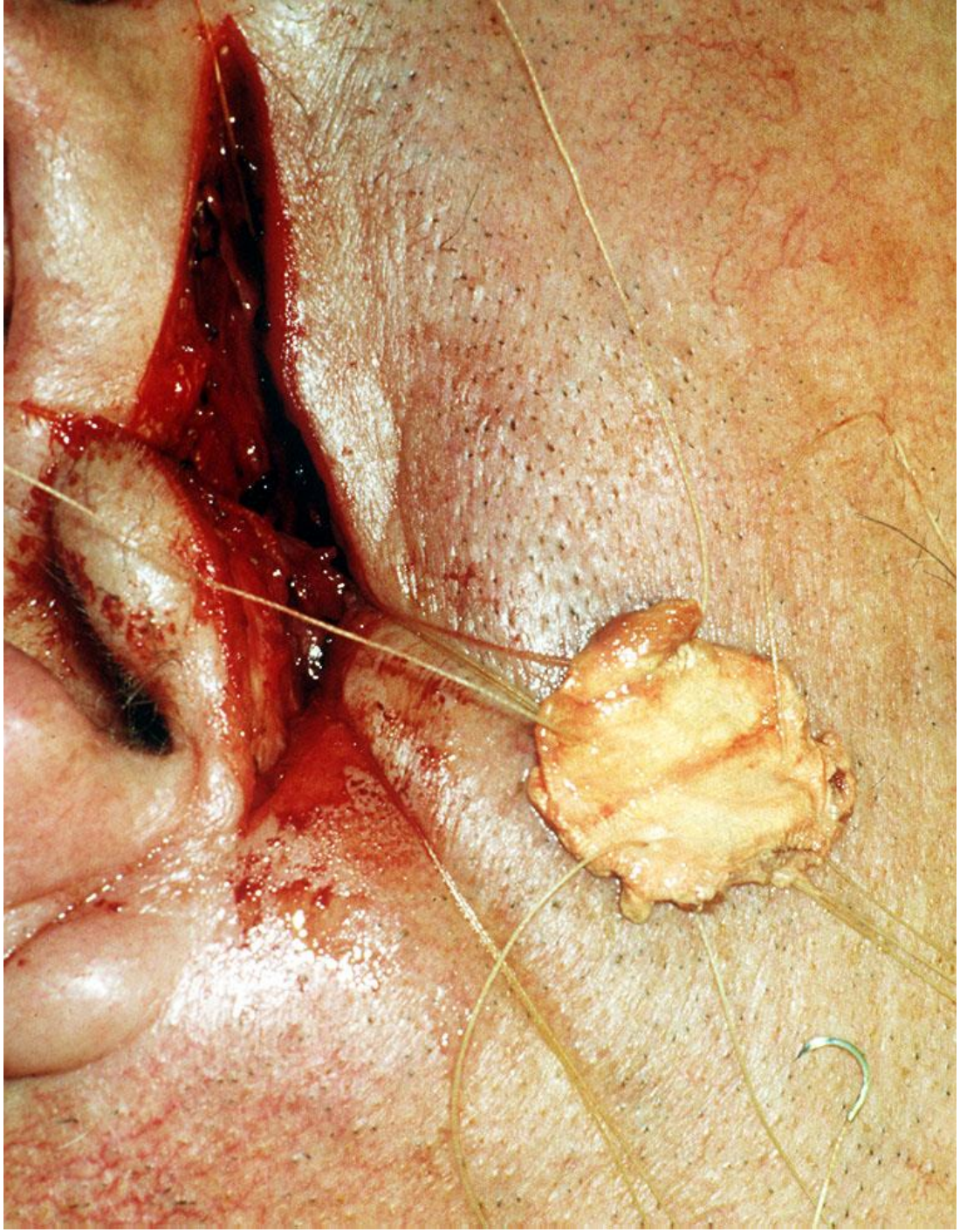
- Resembles a disc when used as a patch in perforations
- Reported superior ability to withstand joint loading compared to other tissues

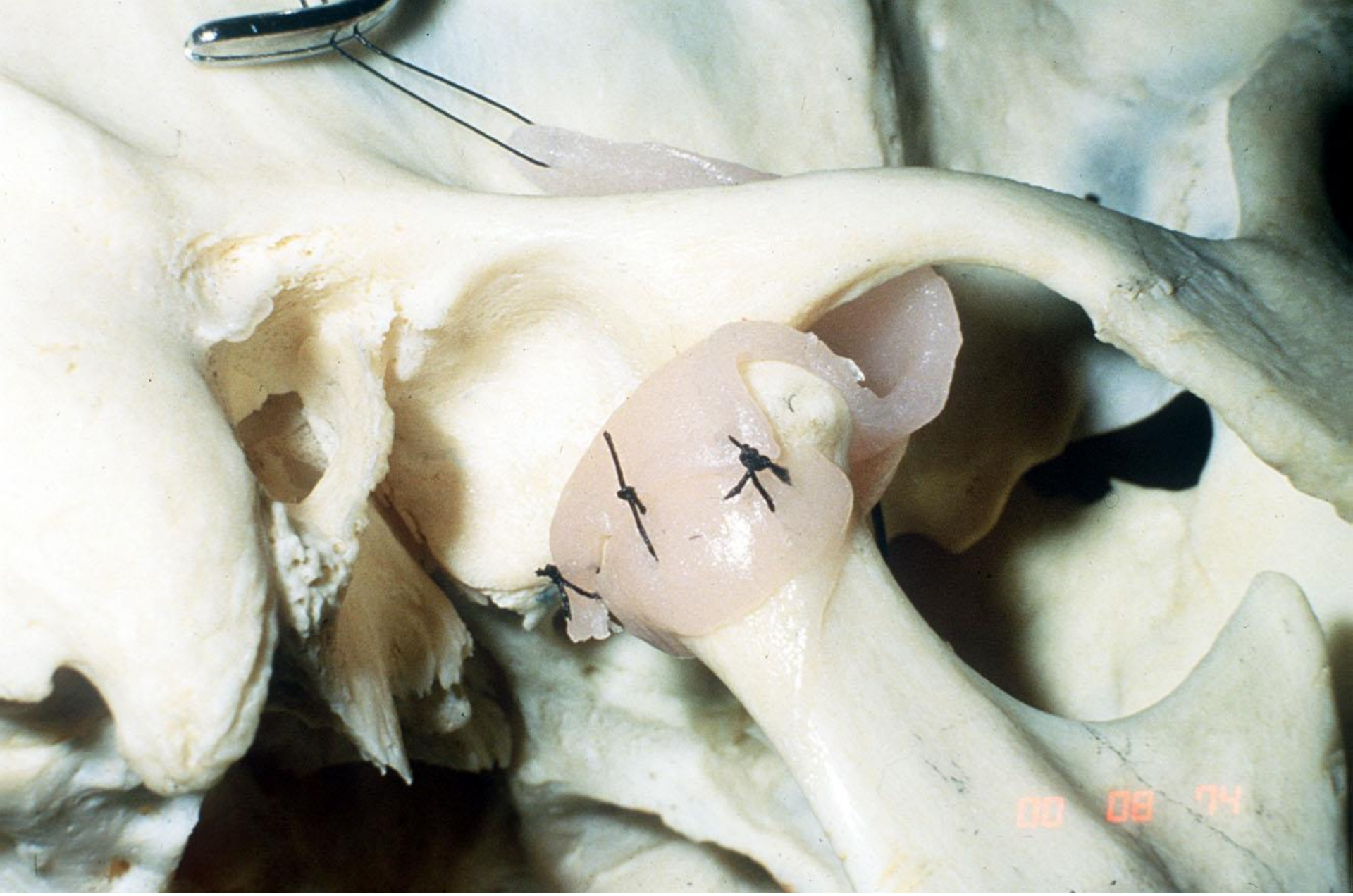


De-epithelializing prior to dermis harvest



Dermis in monkey - Tucker

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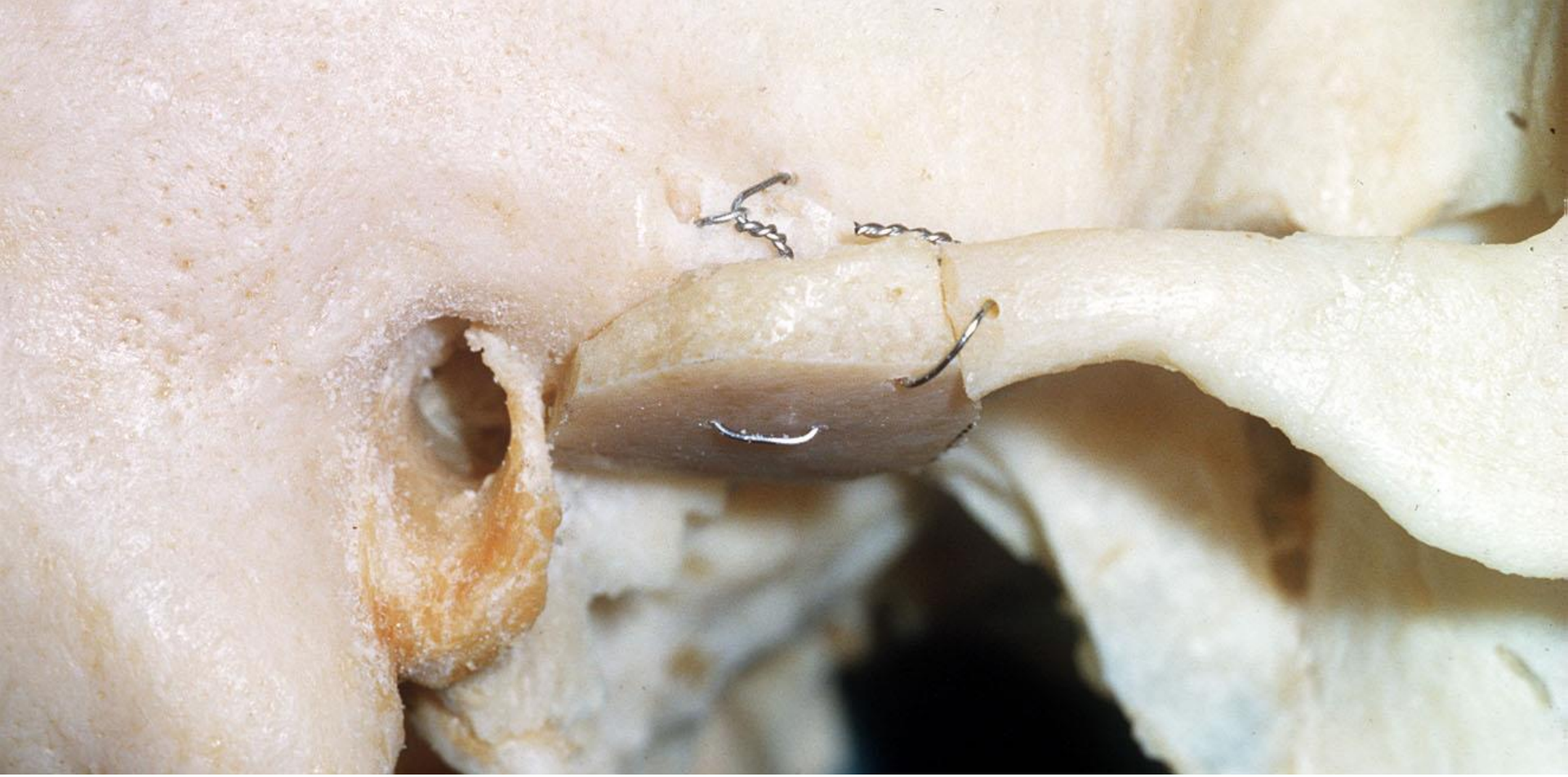
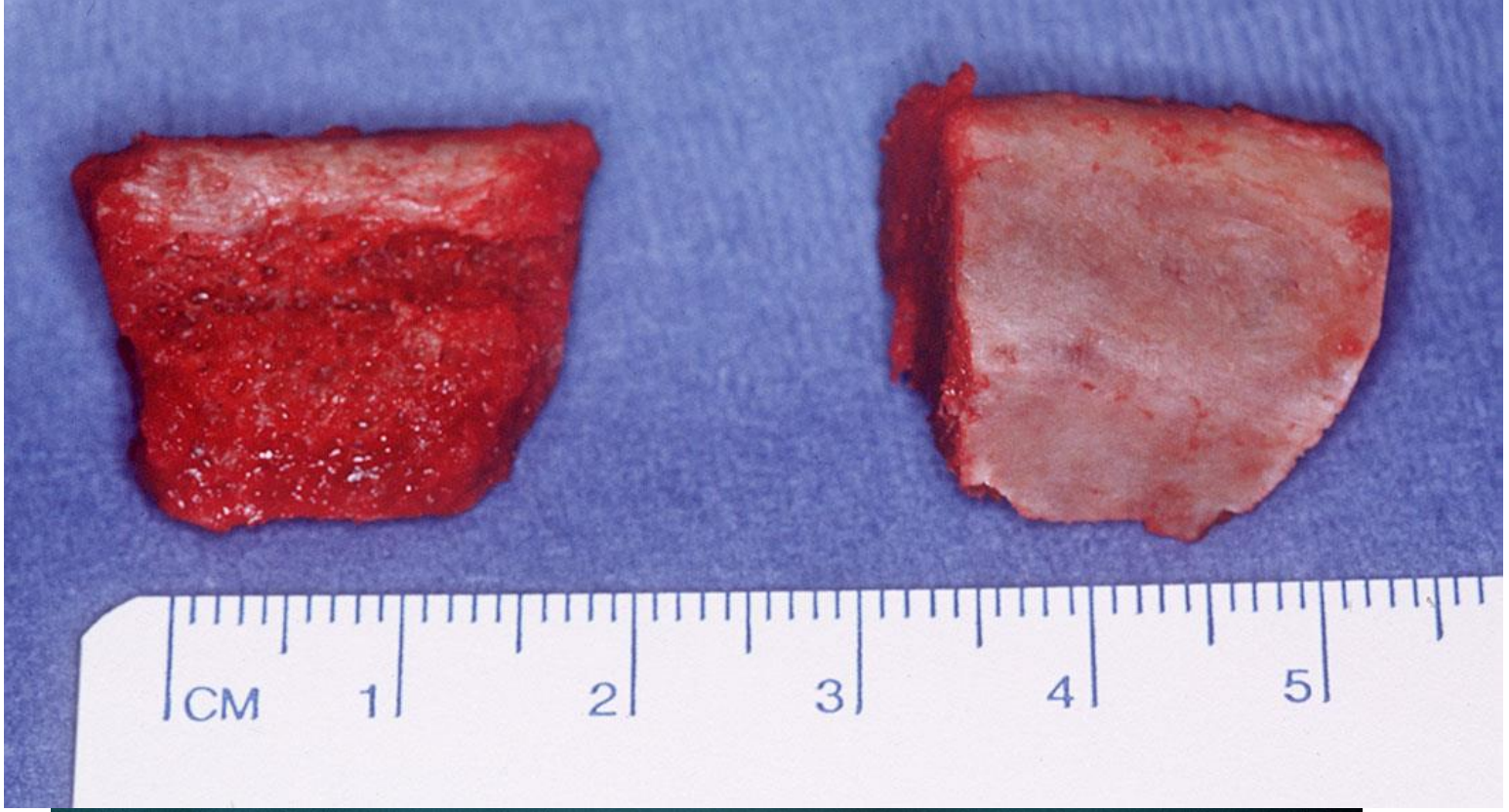
FOSSA - ARCH - EMINENCE RECONSTRUCTION

- Large fossa perforation and thinning - cranial, rib
- Large fossa perforation with arch loss - iliac crest, cranial
- May be done with partial/total joint procedures

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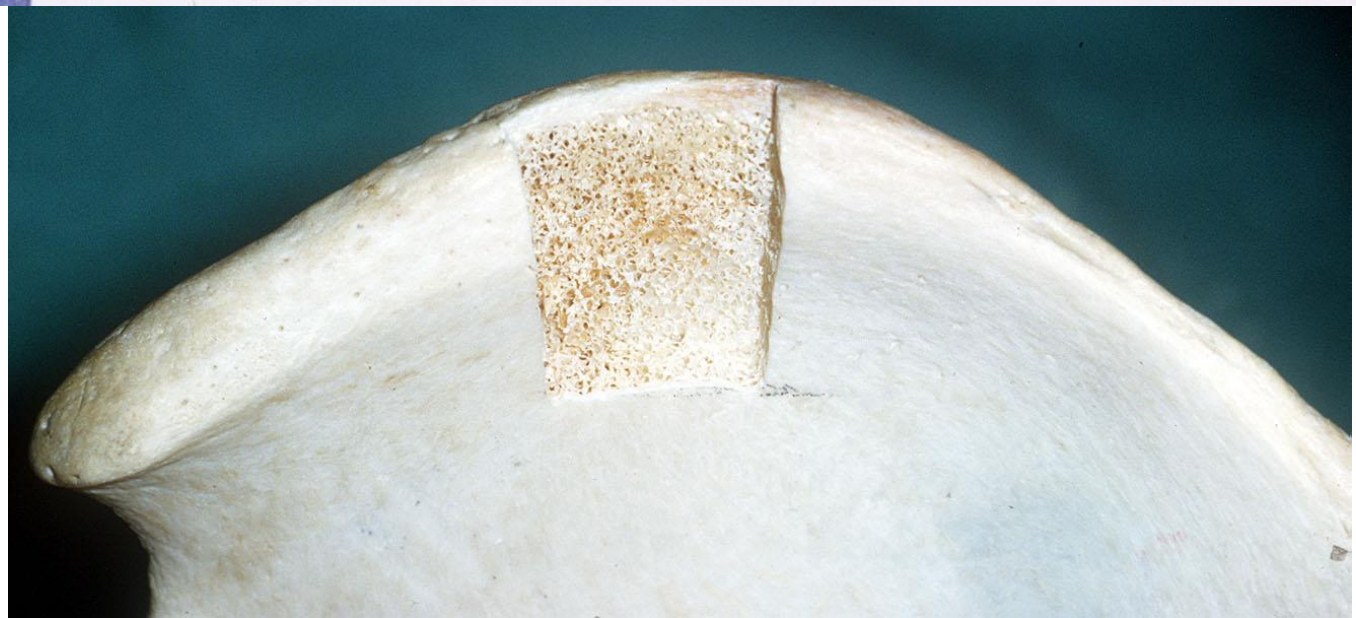
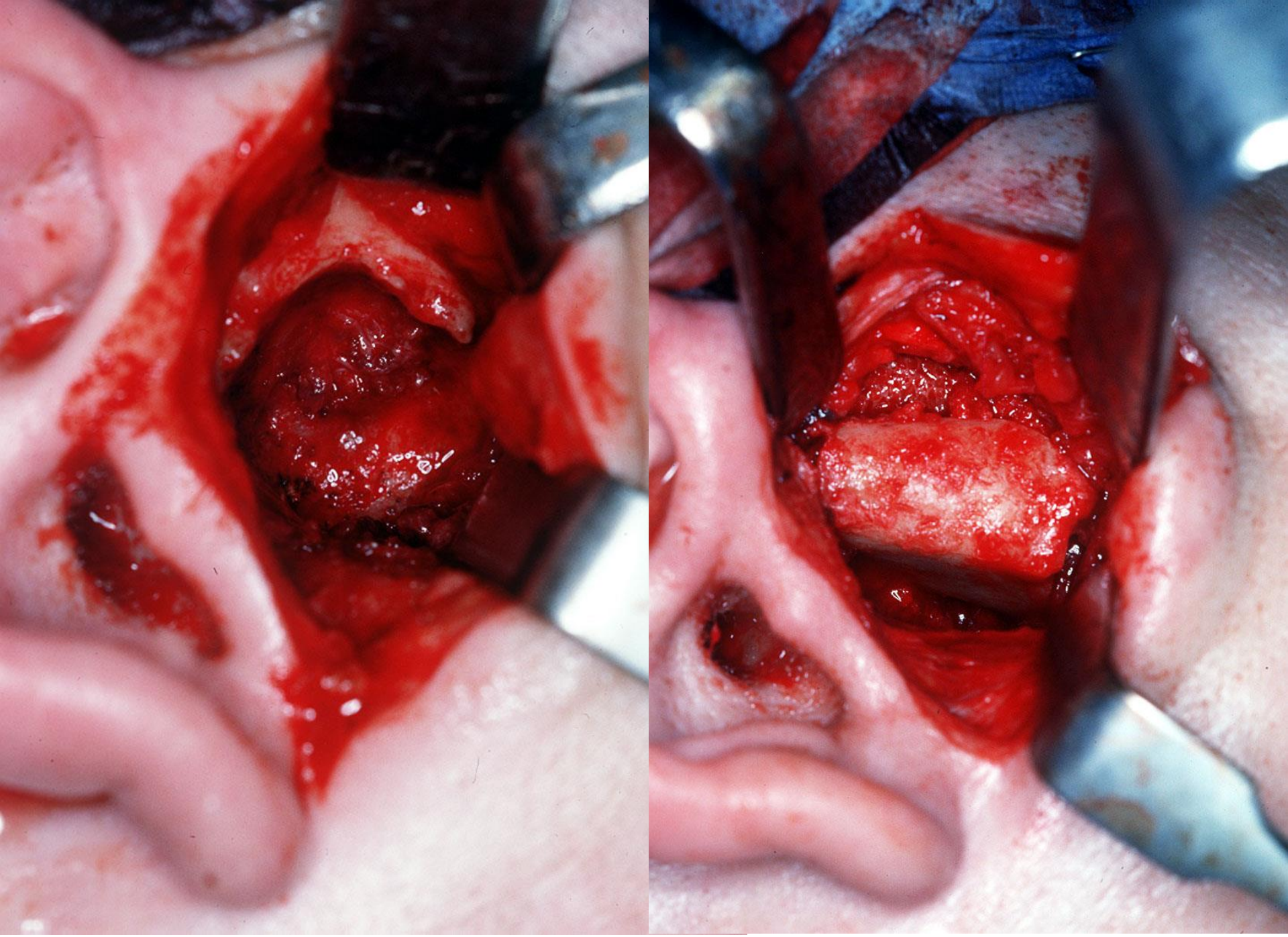
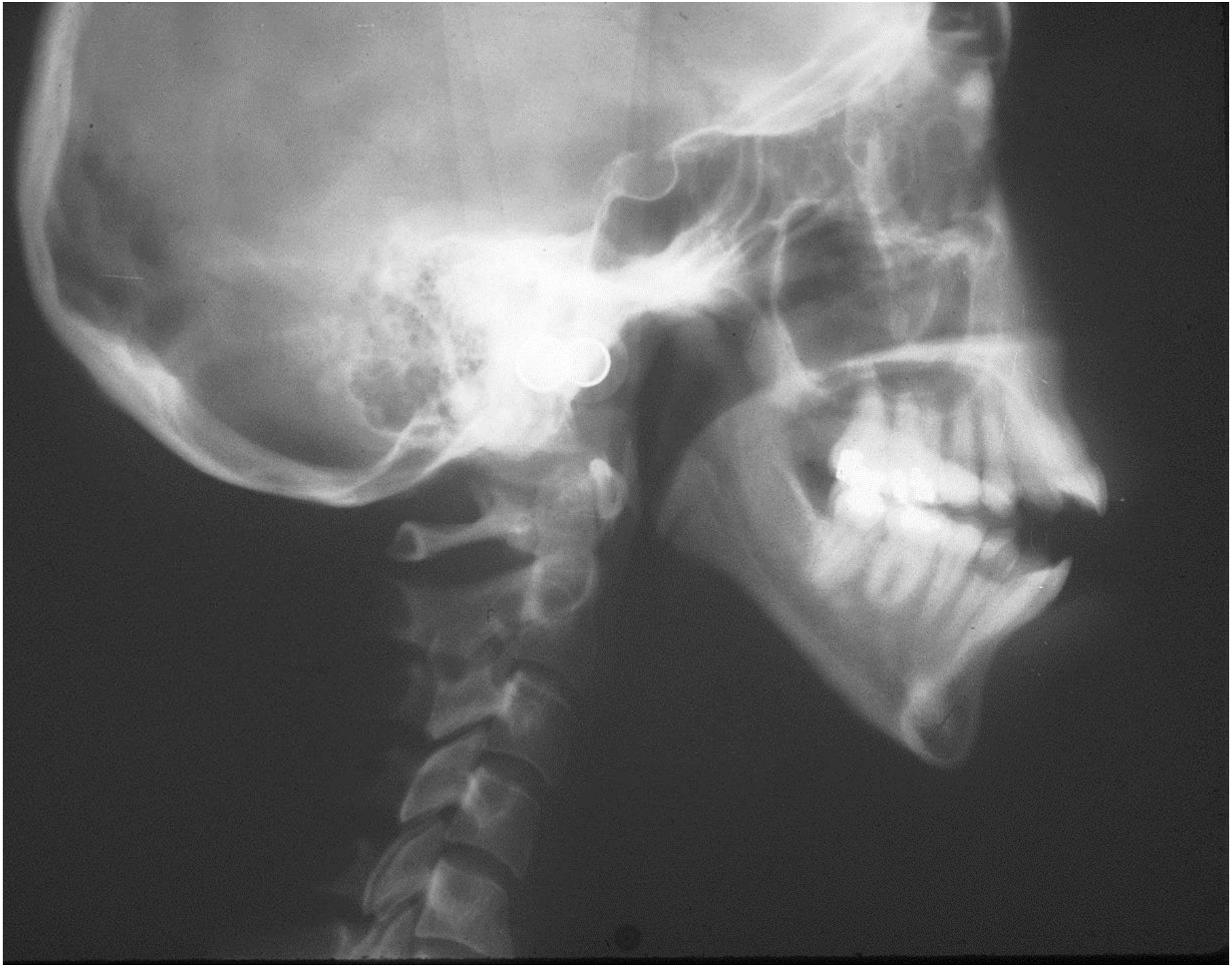


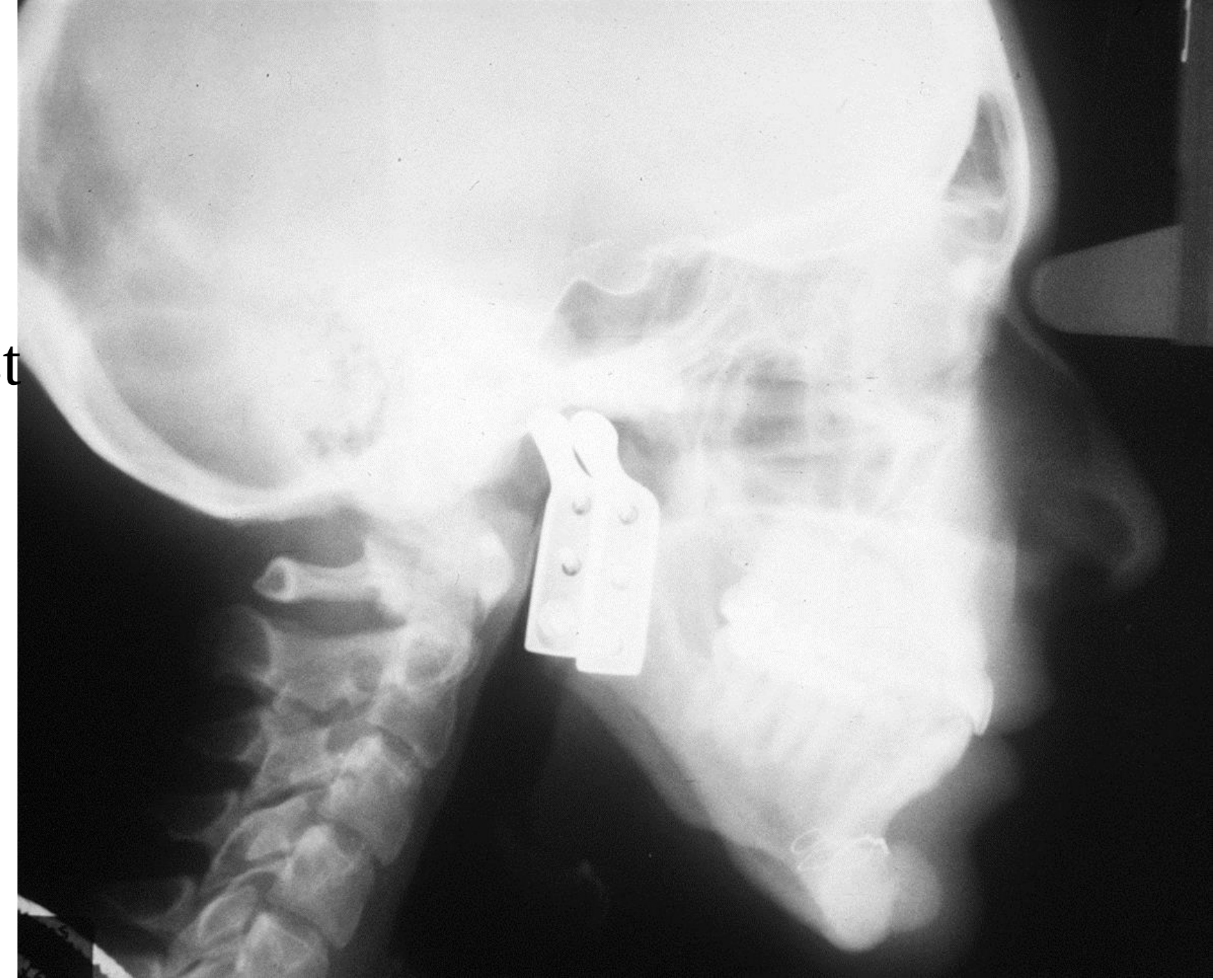


INDICATIONS

- Condylar height loss greater than 7-8 mm
- Loss of lateral pterygoid muscle
- Trauma
- Multiple joint surgery
- Advanced rheumatoid-disease and DJD
- Ankylosis
- Hypoplasia

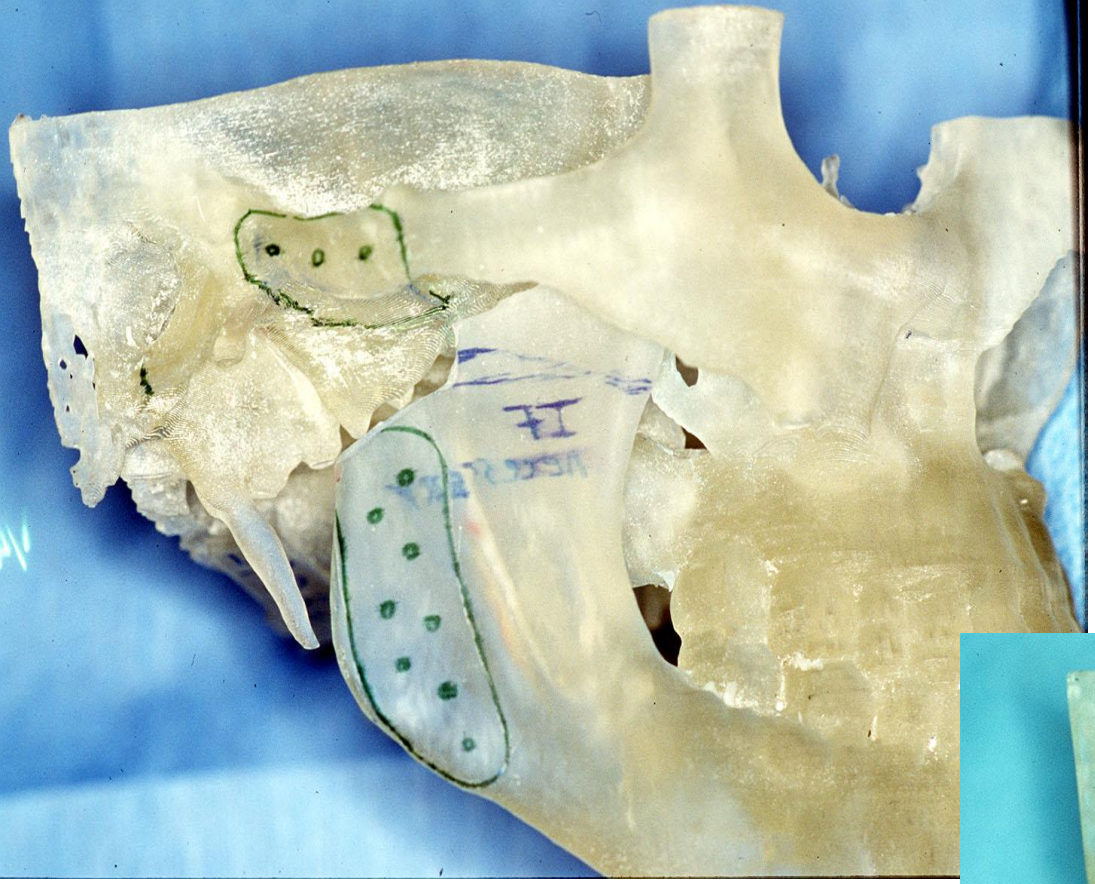


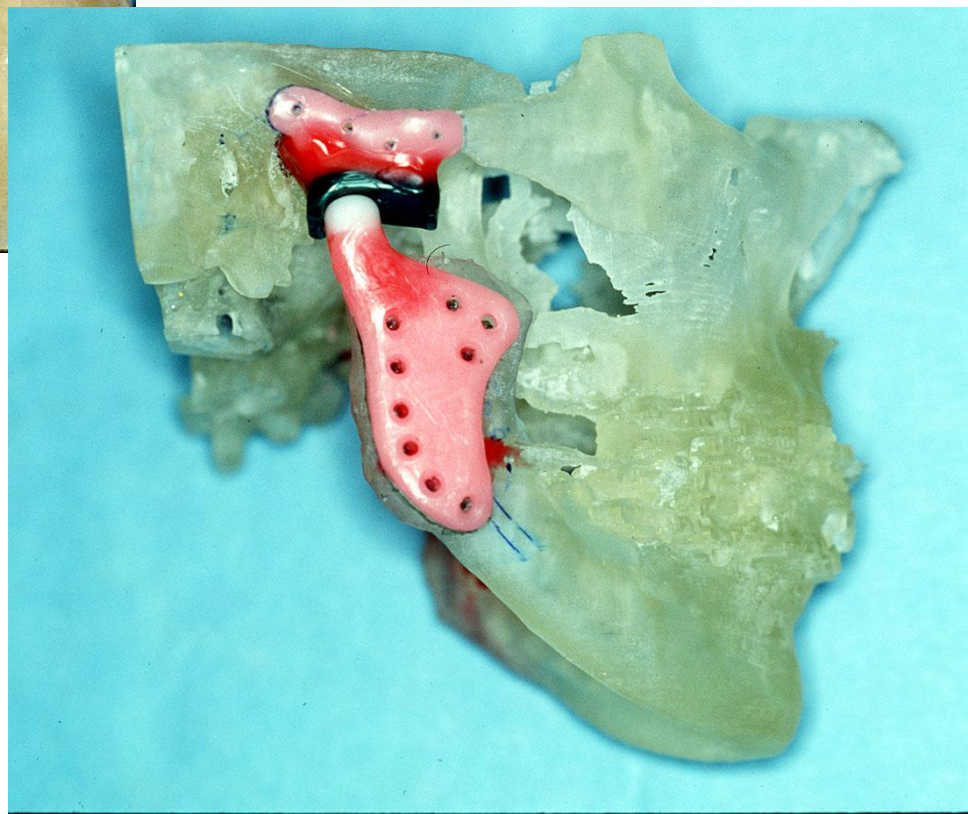
15 Yr Post op

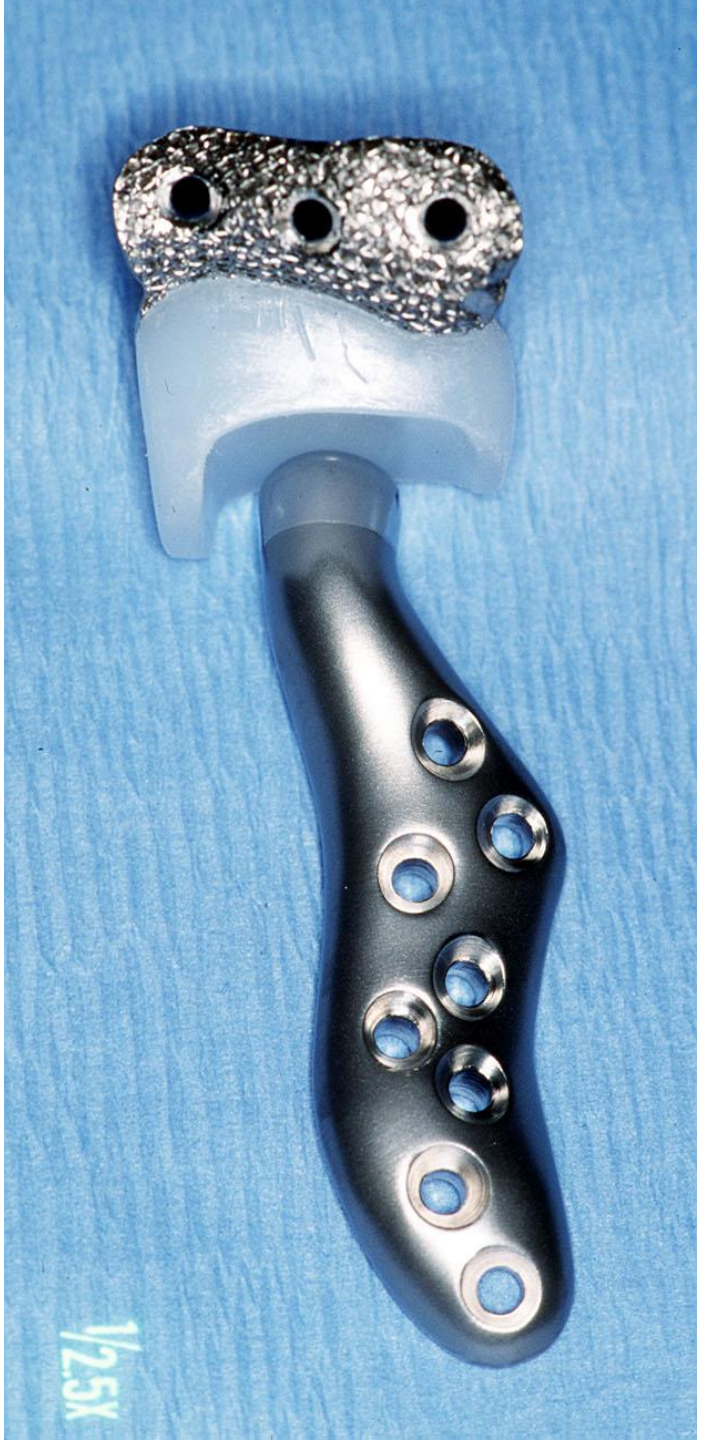


TECHMEDICA - TMJ CONCEPTS

- Custom CAD/CAM design based on CT, computer generated plastic model, and surgeon imput



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