MORPHOFUNCTIONAL APPROACH TO TREAT TMJ ANKYLOSIS

RESECTION OF TMJ ANKYLOSIS

FACIAL ASYMMETRY CORRECTION

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GSR Institute of Facial Plastic Surgery

- Non-profit hospital established in 1996
- Dedicated Cleft & Craniofacial Centre of Excellence
- 1,500 cleft and cranio-facial surgeries are done every year
- 2 surgeons and 4 fellows with full support team
- More than 25,000 cleft & craniofacial surgeries have been performed since 1996
- 600 primary new born cleft children are treated every year

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TMJ Ankylosis
SURGICAL MANAGEMENT OF TMJ ANKYLOSIS

Resection

Reconstruction
Resection

- Condylectomy
- Gap arthroplasty
- Interpositional arthroplasty
Morphofunctional Interpositional Arthroplasty

• Approach: Preauricular incision to expose the TMJ and coronoid process. Care should be taken not to injure the facial nerve.
Morphofunctional Interpositional Arthroplasty

Horizontal osteotomy cuts:
1. Roof of the glenoid fossa and the
2. Ramus of the mandible

Unilateral Primary Ankylosis: 1.0 cm to 1.5 cm Resection
Secondary Ankylosis: 1.5 cm to 2.0 cm Resection

Coronoid Process

Artwork by Dr. Gururaj Arikeri
Morphofunctional Interpositional Arthroplasty

Galea: Primary, Unilateral, Pseudo Ankylosis
Galea+Temporalis Fascia: Secondary, Unilateral, Bony Ankylosis
Temporalsis Muscle: Bilateral Bony Ankylosis (Primary Or Secondary)
Morphofunctional Interpositional Arthroplasty

Costochondral graft: Cut into thin sheets of 1-3mm
Auricular cartilage graft: Rolled and compressed
To form a compact bundle to fit into the gap created

NEO CONDYLIZATION: Tightly compacting the cartilaginous sheet bundle adapts it into the shape of condyle
Morphofunctional Interposition Arthroplasty

Intense physiotherapy of mouth opening is continued for 6 months post operatively.

Periodical OPG radiographs are taken every year for 5 years to assess reankylosis.
Morphofunctional TMJ Ankylosis Resection

In standard ankylosis treatment the graft used to interpose gets mobile, which hampers both the vertical height and also induces fibrosis, leading to reankylosis.

In morphofunctional approach, the rolled cartilage sheets survive in low oxygen tension and maintain the ramal height and antero posterior dimension.

The galeal/temporalis muscle flap used for interpositioning also prevents reankylosis by avoiding the contact of glenoid fossa and the superior surface of the graft.

Also, with the force exerted by the mandibular stump on the warped graft, the superior facet of the graft takes up the shape of the condyle, helping in both form and function.
Reconstruction of Facial Asymmetry

Genioplasty

Distraction Osteogenesis

Orthognathic surgery
Genioplasty

Done for correcting the asymmetry of the genium in the antero posterior an vertical dimensions.

**Sliding genioplasty:** mild deficiency in antero-posterior or vertical dimension of the genium

**Double sliding genioplasty:** Significant deficiency of the antero-posterior dimension of the genium

**Propeller genioplasty:** asymmetry combined with mild deficiency in vertical and antero-posterior dimension of the genium
‘Crown’ incision / Mommart’s incision is given to avoid vestibular shortening and tension free closure.
Sliding Genioplasty

Done when there is a mild asymmetry and deficiency of the antero posterior dimension of the genium
Sliding Genioplasty
Sliding Genioplasty
Double Sliding Genioplasty

Done when there is a significant deficiency in antero-posterior or vertical dimension of the genium

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Double Sliding Genioplasty
Double Sliding Genioplasty
Double Sliding Genioplasty
Propeller Genioplasty

Done when there is asymmetry combined with mild deficiency in vertical and antero-posterior dimension of the genium
Propeller Genioplasty (Asymmetric Jawline)
Types of Distraction Osteogenesis

- **Direction**
  - Uni-directional
  - Bi-directional

- **Placement**
  - Intraoral
  - Extraoral

- **Maxillo Mandibular Distraction:** For correcting maxillary cant

- **Morphofunctional Distraction:** Done before TMJ resection to correct sleep apnea
Intraoral Uni-directional Distraction Osteogenesis

STAGE I – Distraction Osteogenesis by using intra oral ramal distractor

STAGE II - Bilateral release of ankylosotic mass and removal of distractors
Distractor placement and distraction

12 mm distraction

20 mm distraction

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Pre-operative status for distractor removal and ankylosis release
Bilateral TMJ Ankylosis release simultaneous distractor removal
Intraoral Uni-directional Distraction Osteogenesis
Intraoral Uni-directional Distraction Osteogenesis

Post op 5 months
Extraoral Bi-directional Distraction Osteogenesis
Bi-directional distractor placement
0-24mm Distraction
Extraoral Bi-directional Distraction Osteogenesis
Extraoral Uni-directional Distraction Osteogenesis
Extraoral Uni-directional Distraction Osteogenesis
Extraoral Uni-directional Distraction Osteogenesis
Distraction Osteogenesis and Orthognathic Surgery for correction of Maxillo-Mandibular defect after TMJ ankylosis release
Multivector distractor placement
0-22mm Distraction

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Distractor removal after 6 months
Lefort I impaction with genioplasty
Lefort I impaction with genioplasty
Pseudoankylosis

- 4-5 mm of ramus segment removed.
- Maintaining the function and vertical height with masseter muscle interpositioning.
- Advantageous as it does not reduce vertical height.
Pseudo-ankylosis
Orthomorphic Distraction

Horizontal osteotomy cuts made from angle to the symphyseal region

Distraction vectors applied in an outward and forward direction

Thereby maintaining the mandibular contour as same as the contralateral side
Orthomorphic Distraction Osteogenesis
Orthomorphic Distraction Osteogenesis
Orthomorphic Distraction Osteogenesis
Orthomorphic Distraction Osteogenesis