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

TMJ Ankylosis

SURGICAL MANAGEMENT OF TMJ ANKYLOSIS

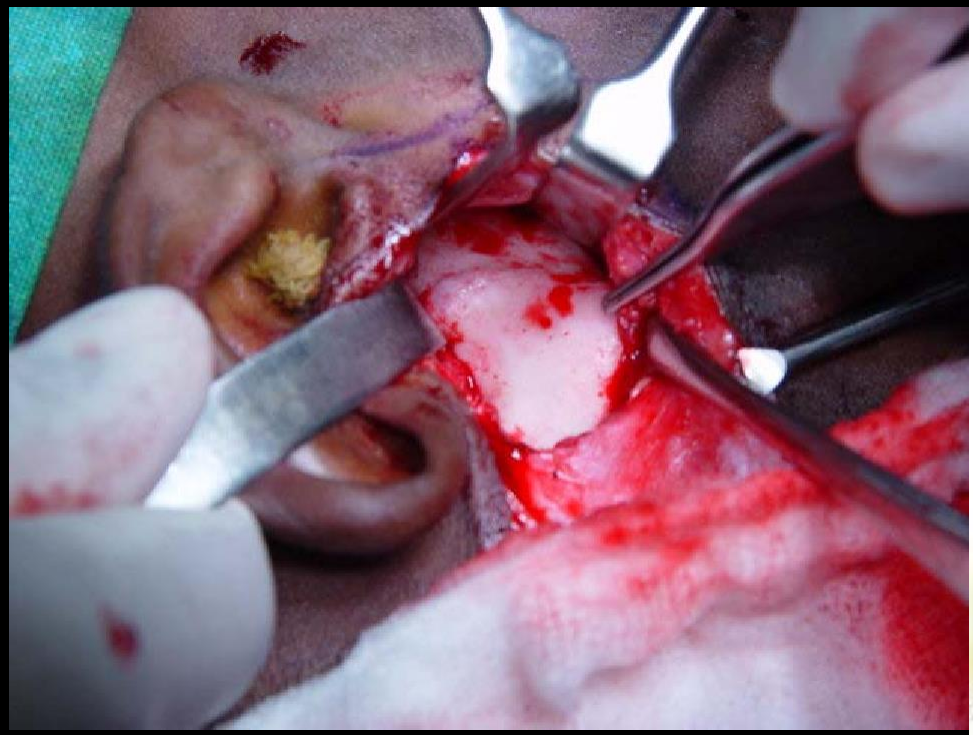
Resection

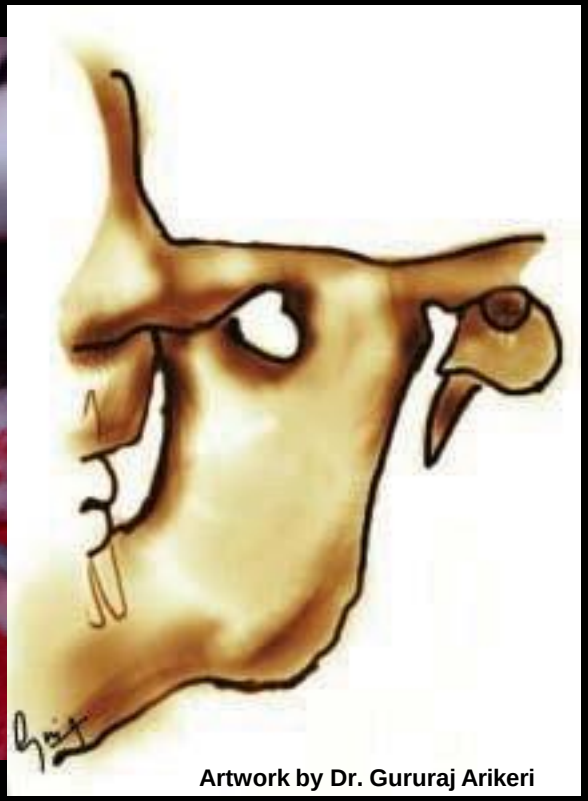
Reconstruction

Resection

- Condylectomy
- Gap arthroplasty
- Interpositional arthroplasty

Morphofunctional InterpositionalArthroplasty



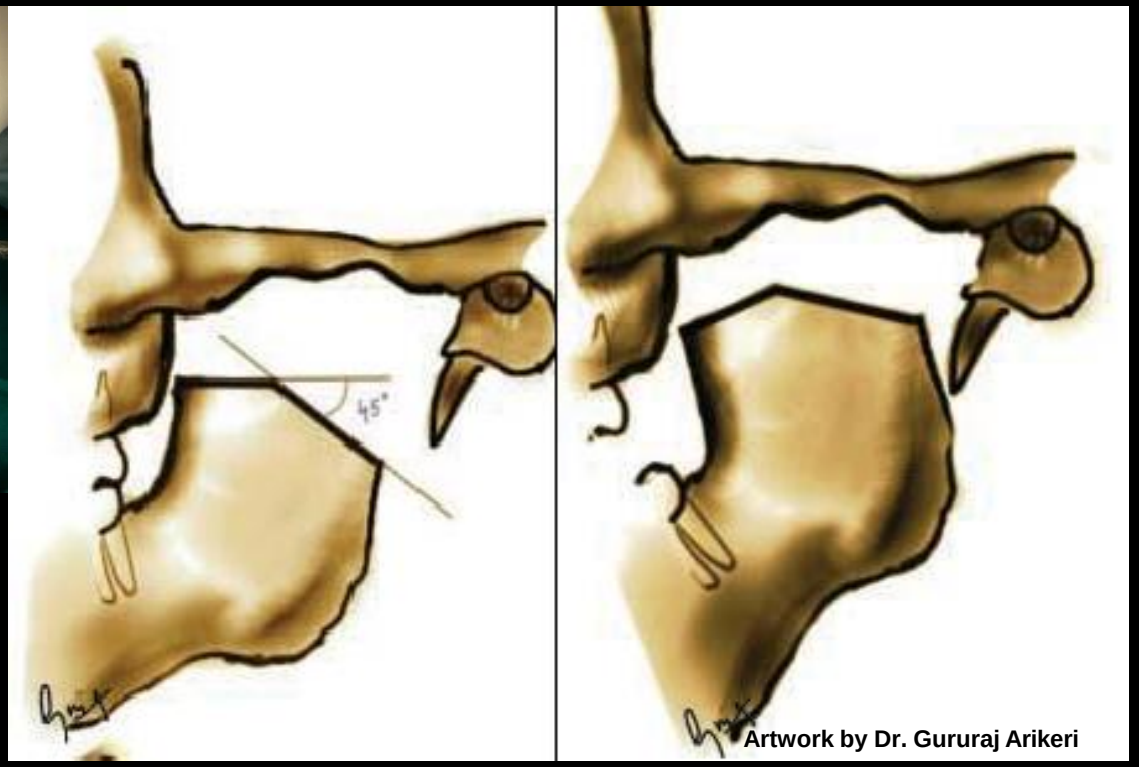


Artwork by Dr. Gururaj Arikeri

- Approach: Preauricular incision to expose the TMJ and coronoid process
  Care should be taken not to injure facial nerve

Morphofunctional InterpositionalArthroplasty

Coronoid Process

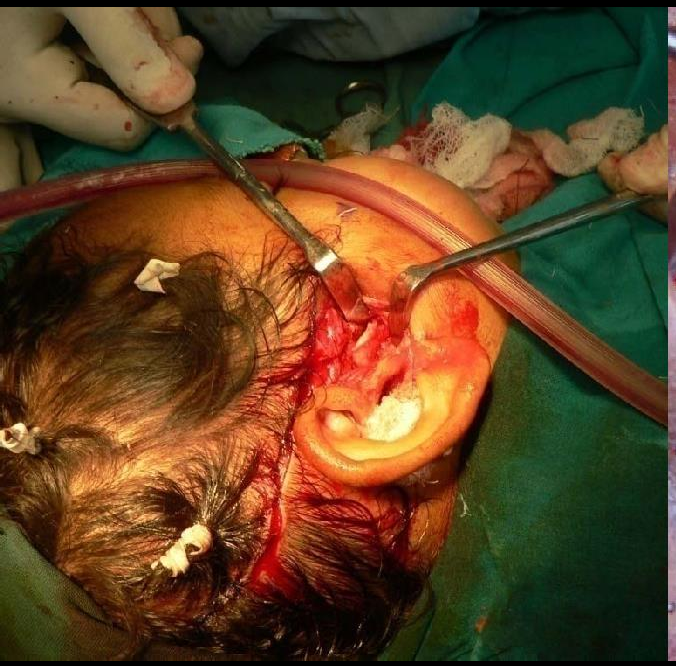


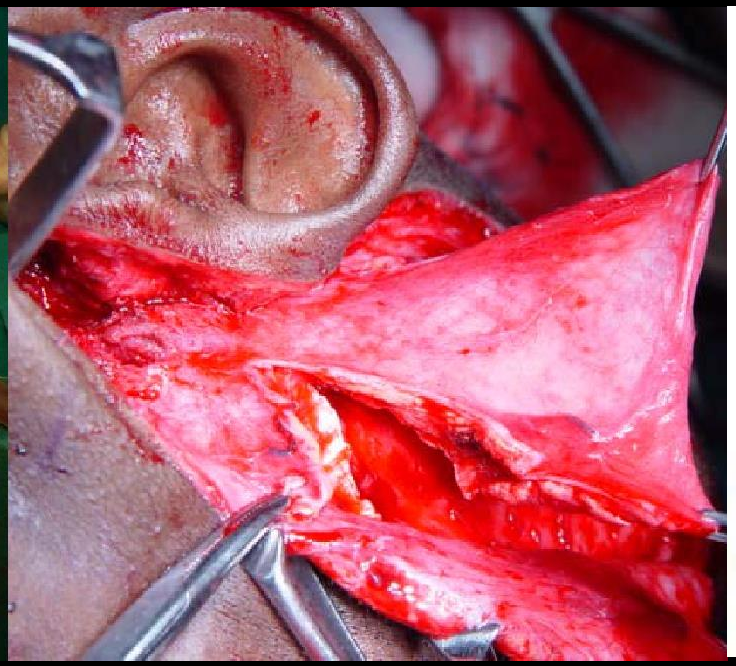
Horizontal osteotomy cuts:
1. Roof of the glenoid fossa and the
2. Ramus of the mandible

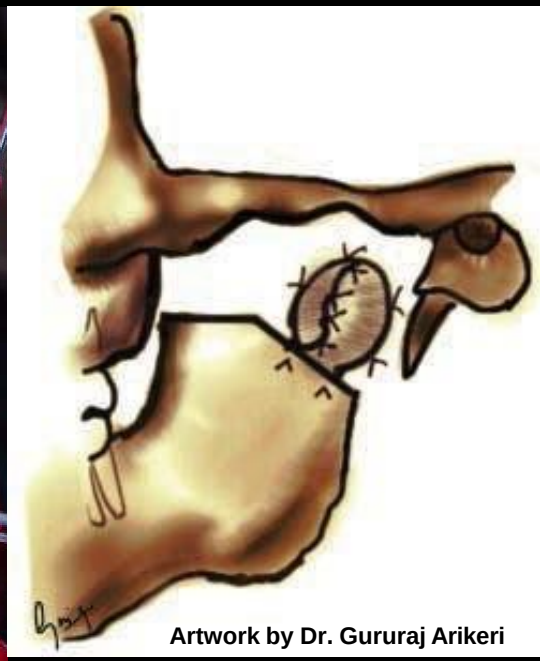
Unilateral Primary Ankylosis: l.0 cm to 1.5 cm Resection

Secondary Ankylosis: l.5 cm to 2.0 cm Resection

Morphofunctional InterpositionalArthroplasty







Artwork by Dr. Gururaj Arikeri

Galea: Primary, Unilateral, Pseudo Ankylosis

Galea+Temporalis Fascia: Secondary, Unilateral, Bony Ankylosis

Temporalis Muscle: Bilateral Bony Ankylosis (Primary Or Secondary)

Morphofunctional InterpositionalArthroplasty

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 InterpositionalArthroplasty

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 suface 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

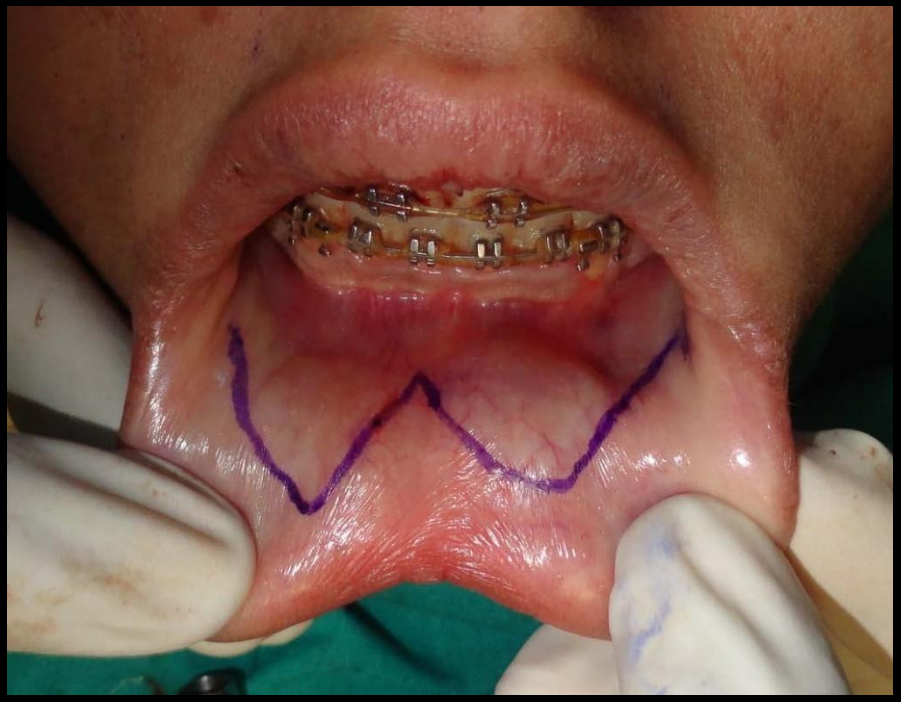
Orthognathic surgery

Genioplasty

Done for correcting the assymetry 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

Incision

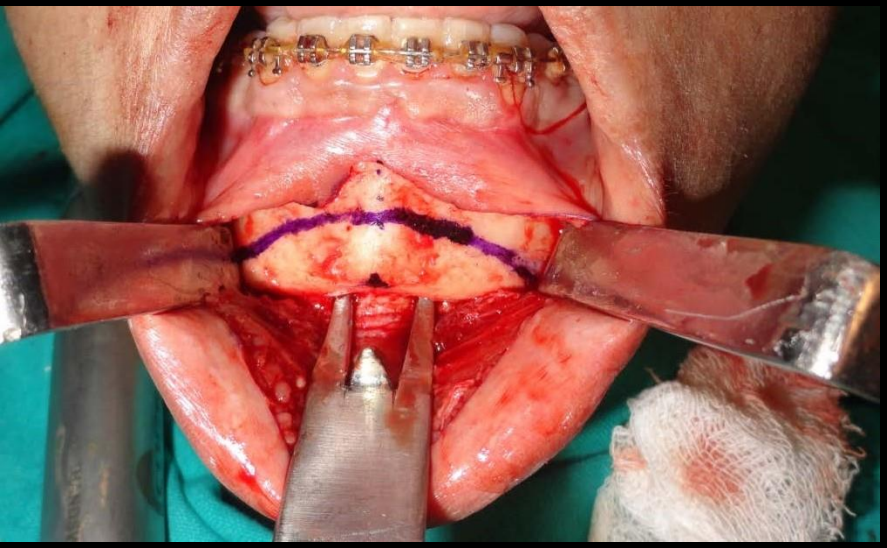


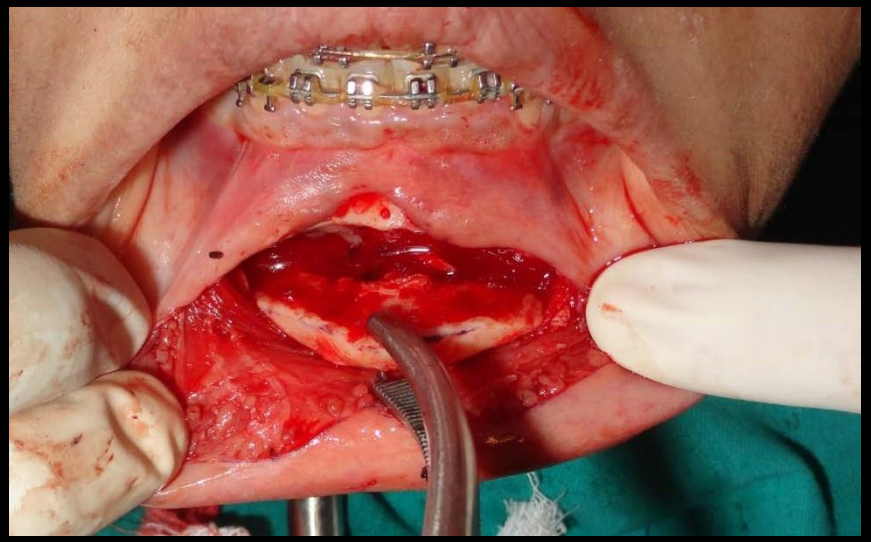
‘Crown’ incision / Mommart’s incision is given to avoid vestibular shortening and tension free closure.

Sliding Genioplasty

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

Sliding Genioplasty





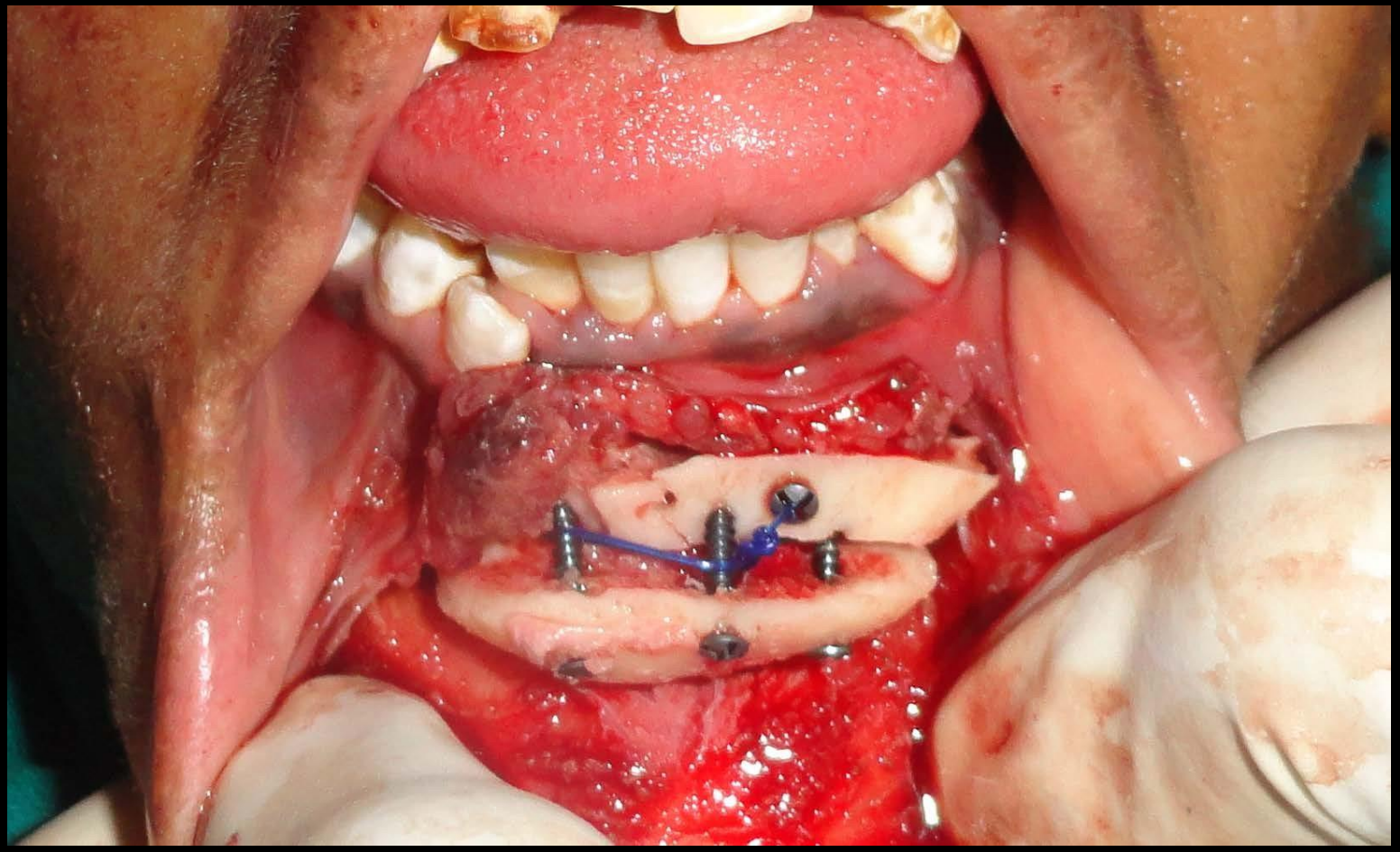
Sliding Genioplasty

Sliding Genioplasty

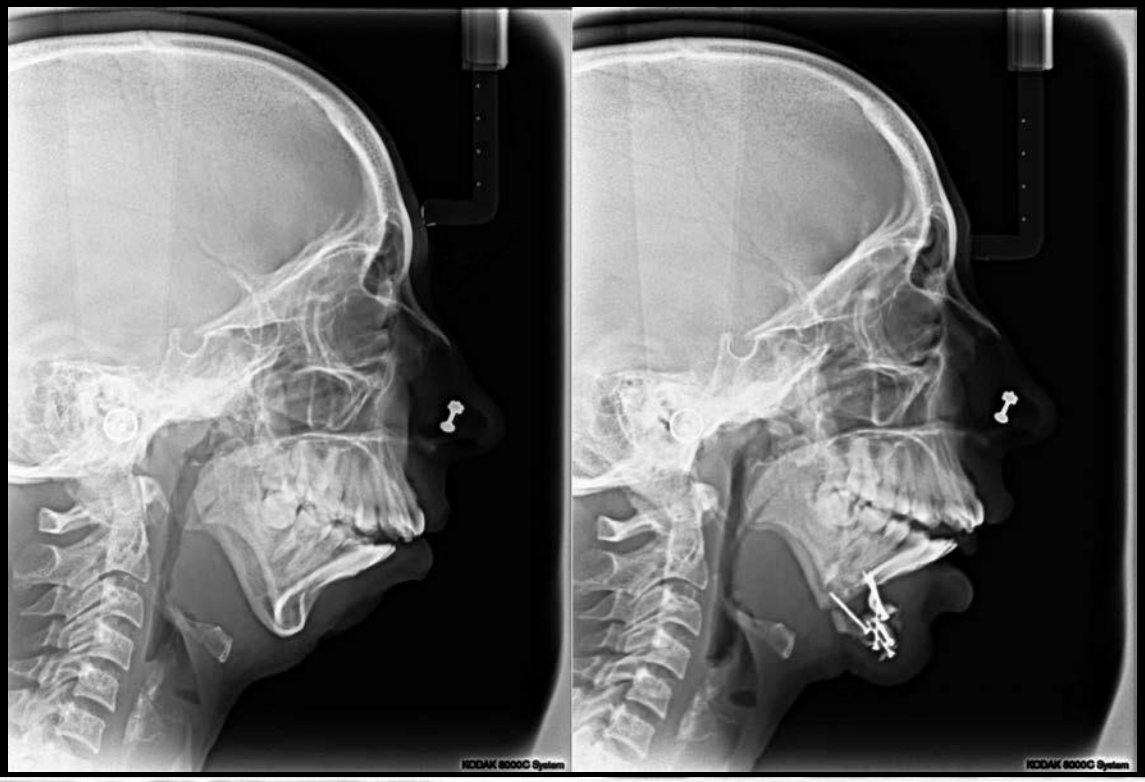
Double Sliding Genioplasty

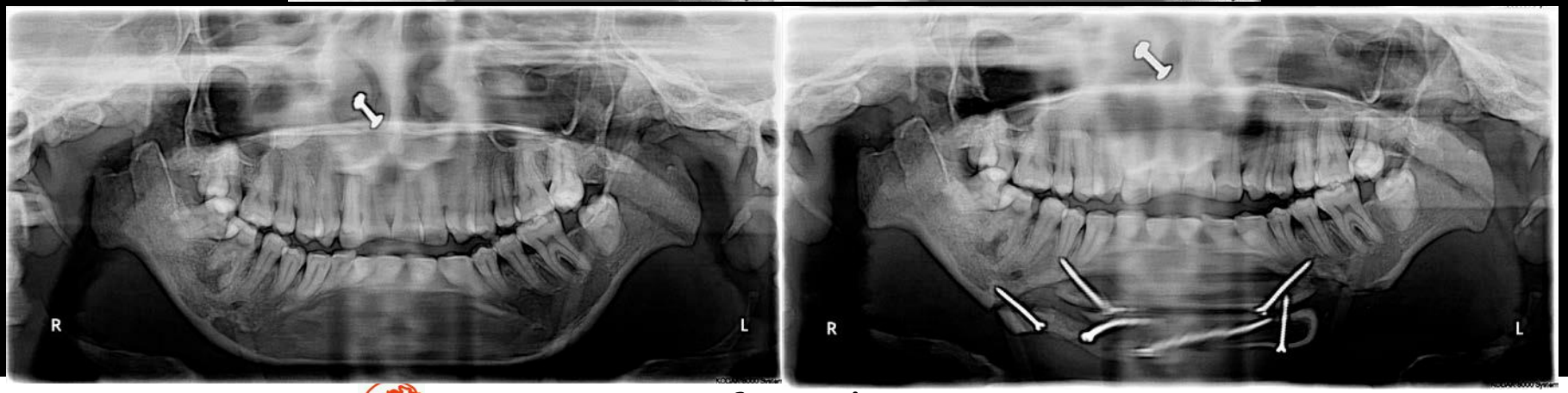
Done when there is a significant deficiency in antero-posterior or vertical dimension of the genium

Double Sliding Genioplasty

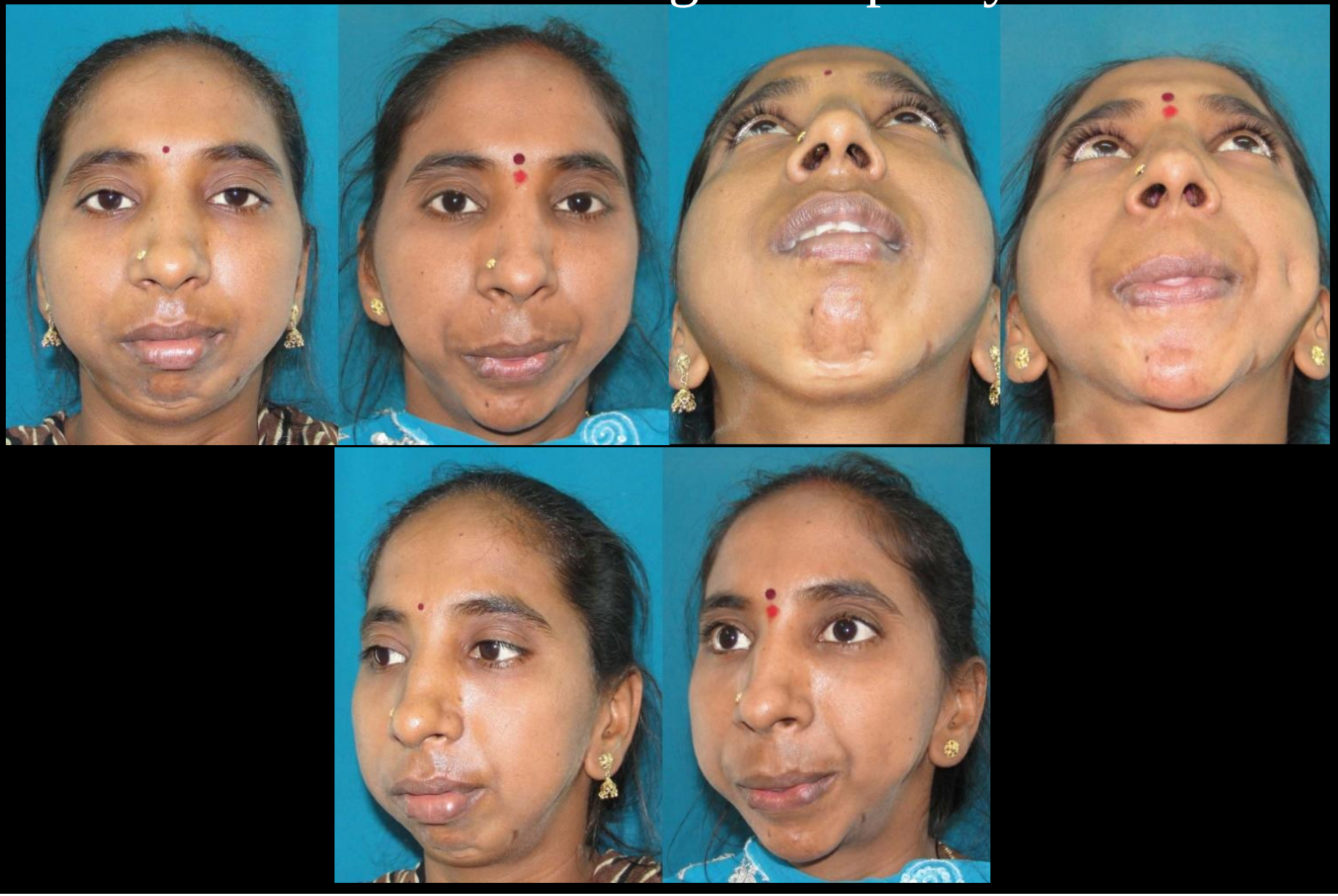


Double Sliding Genioplasty





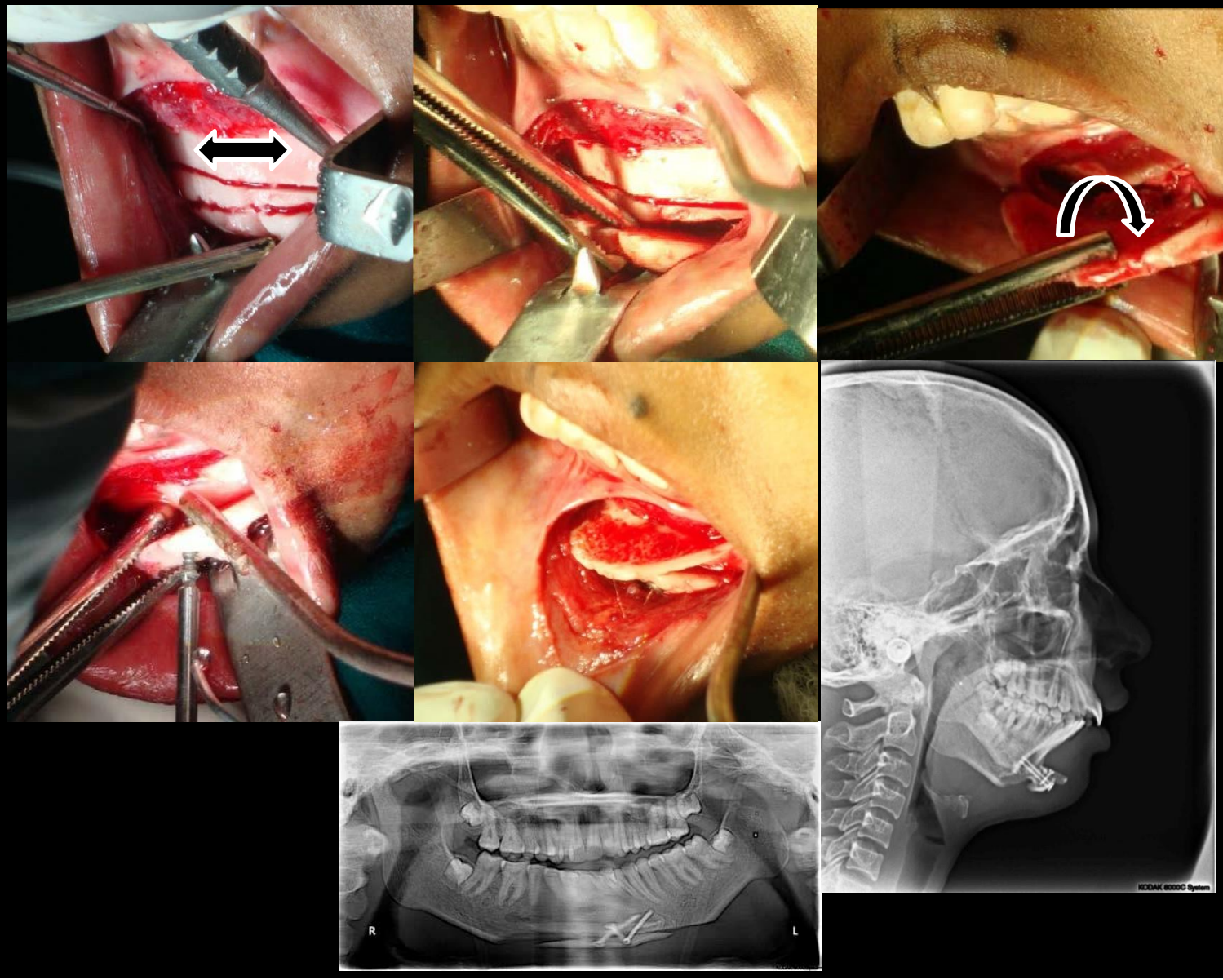
Double Sliding Genioplasty



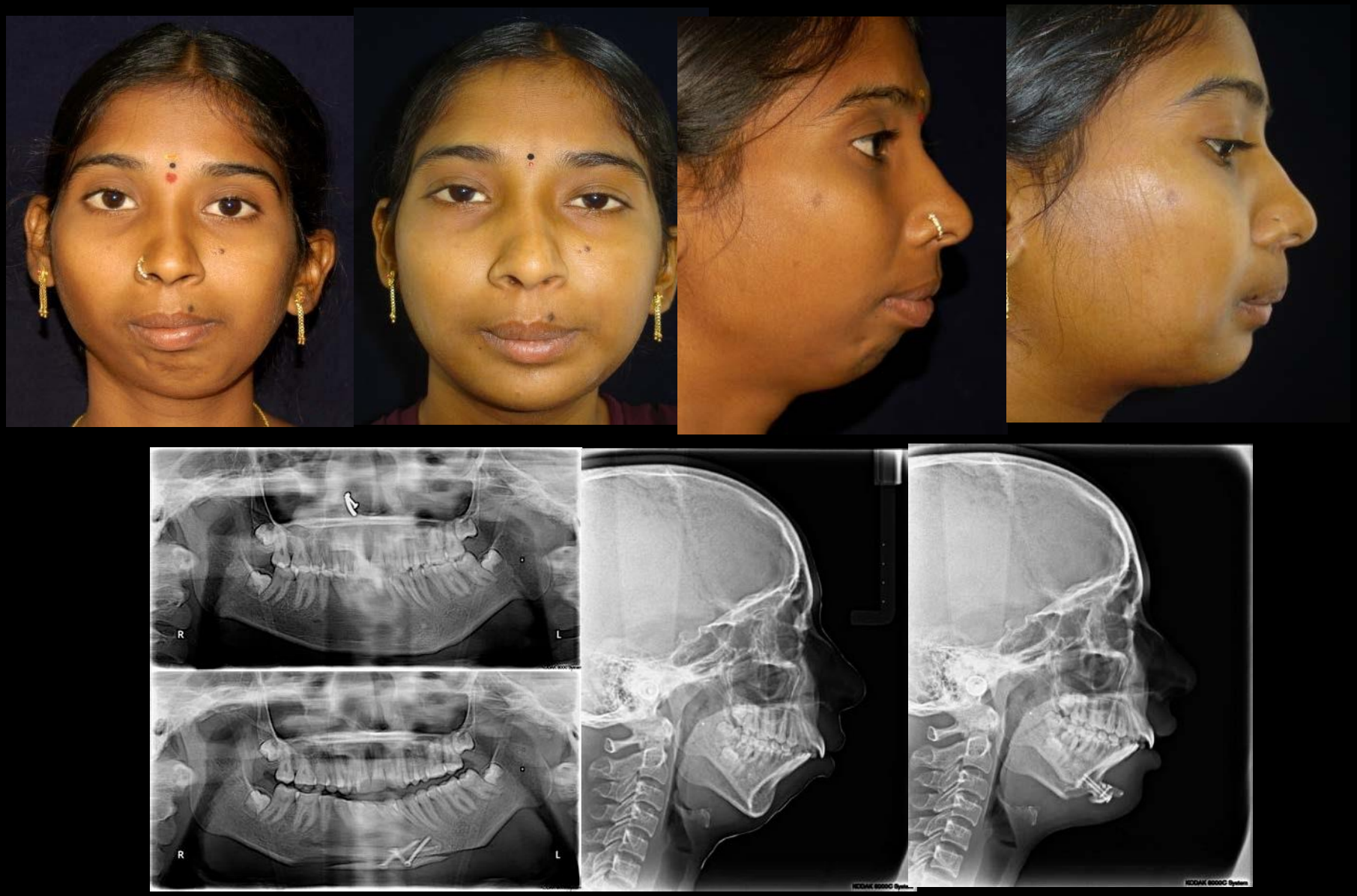
Propeller Genioplasty

Done when there is asymmetry combined with mild deficiency in vertical and antero-posterior dimension of the genium

Propeller Genioplasty



Propeller Genioplasty (Asymmetric Jawline)

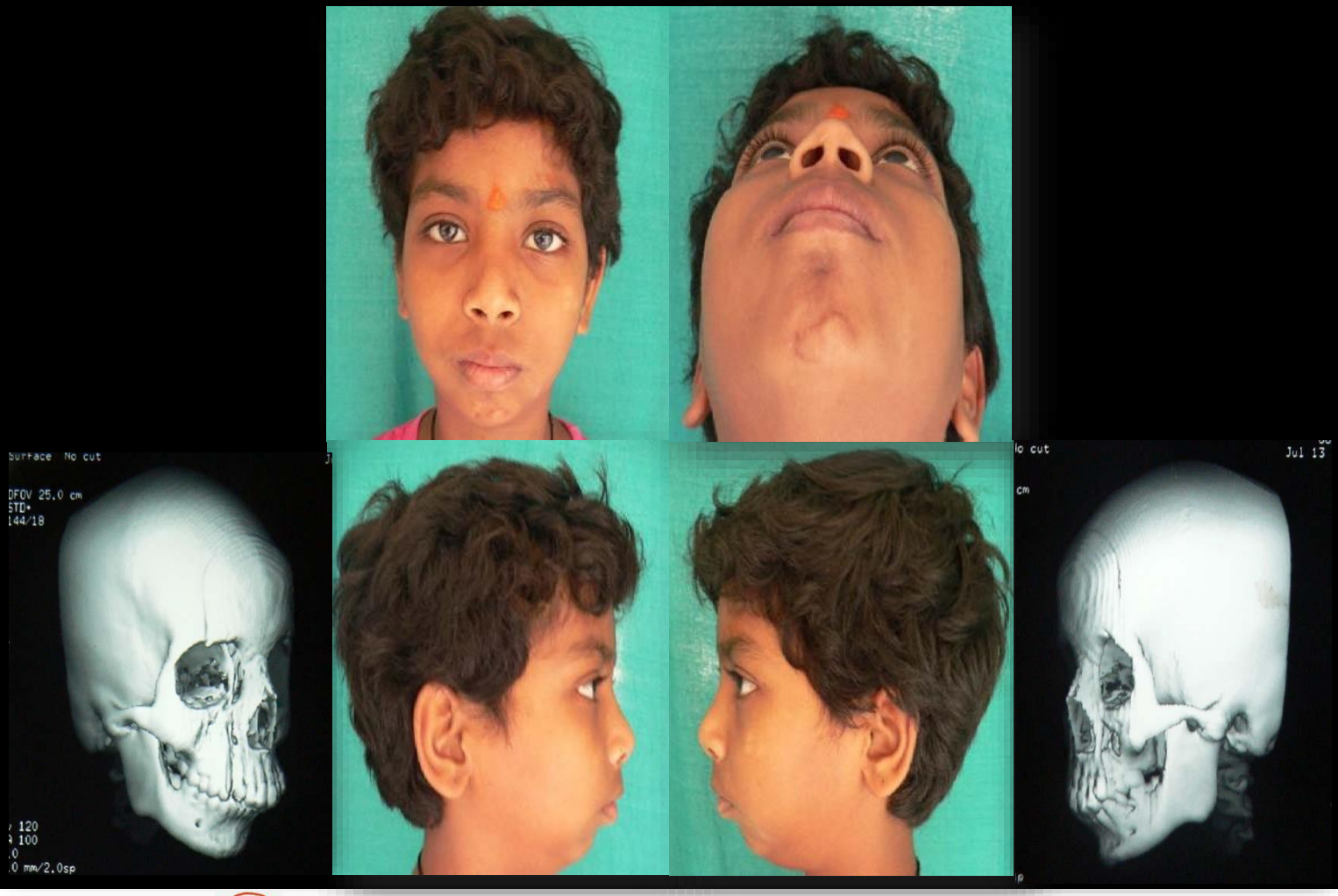


Types of Distraction Osteogenesis

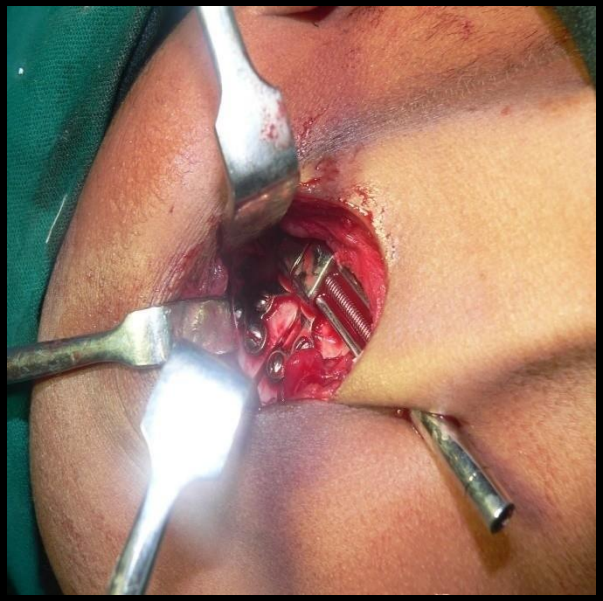
- Direction
  - Uni-directional
  - Bi-directional
- Placement
  - Intraoral
  - Extraoral
- Maxillo Mandibular Distraction: For correcting maxillary cant
- Morphofunctional Distraction: Done before TMJ resection to correct sleep apnea

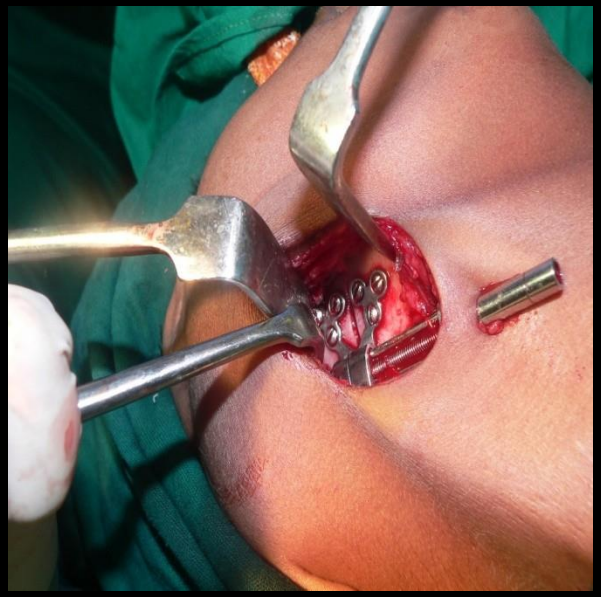
Intraoral Uni-directional Distraction Osteogenesis

STAGE I – Distraction Osteogenesis by using intra oral ramal distractor
STAGE II - Bilateral release of ankylotic mass and removal of distractors

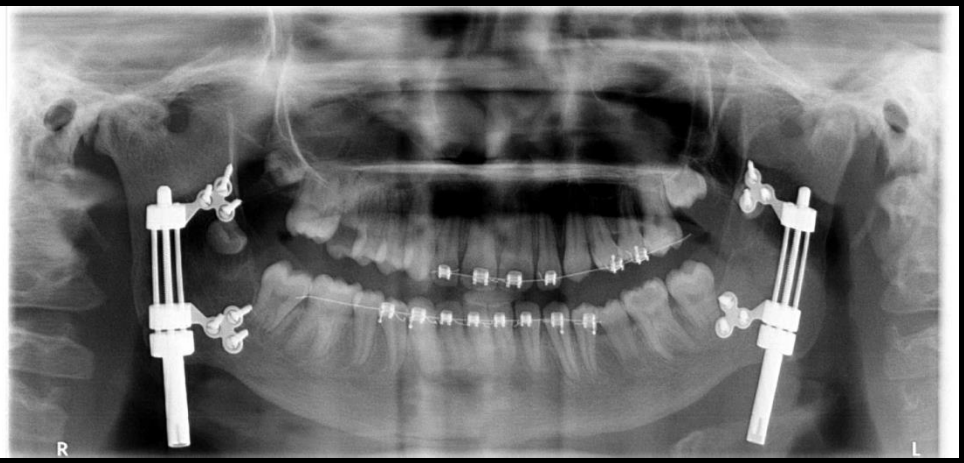


Distractor placement and distraction





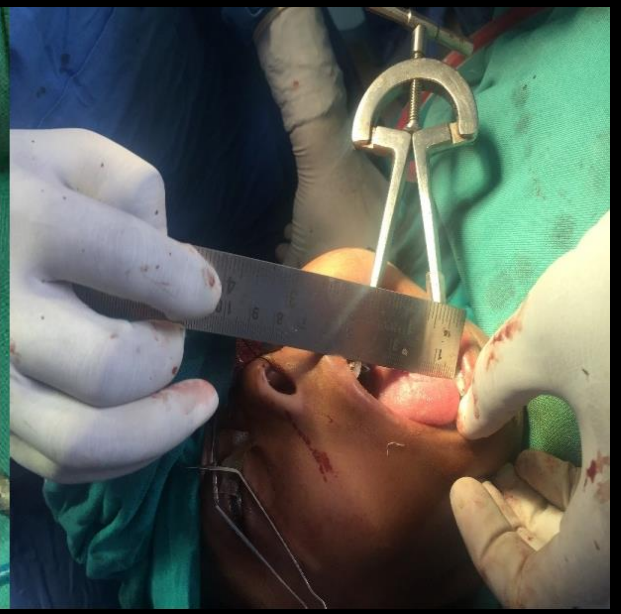
12 mm distraction

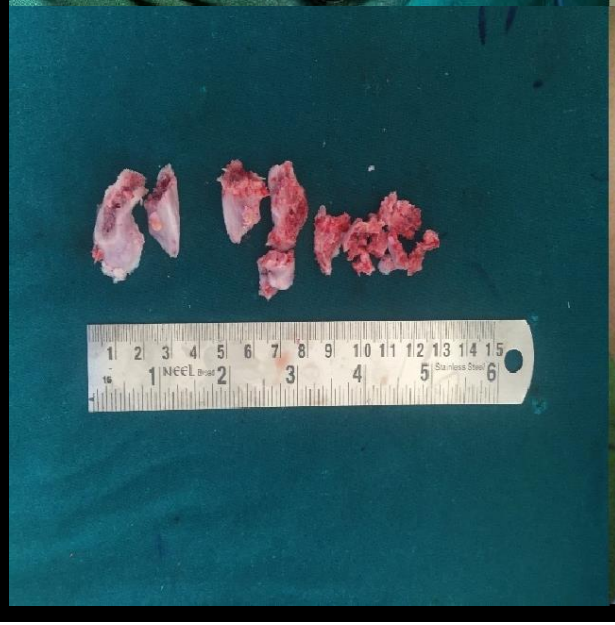


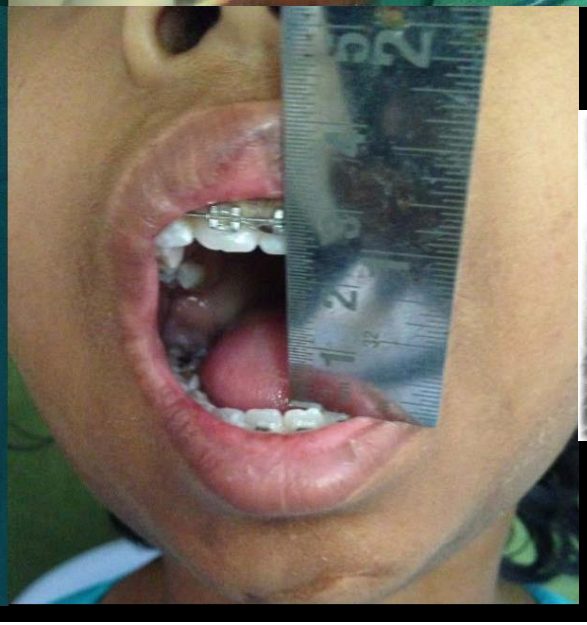
20 mm distraction

Pre-operative status for distractor removal and ankylosis release

Bilateral TMJ Ankylosis release simultaneous distractor removal







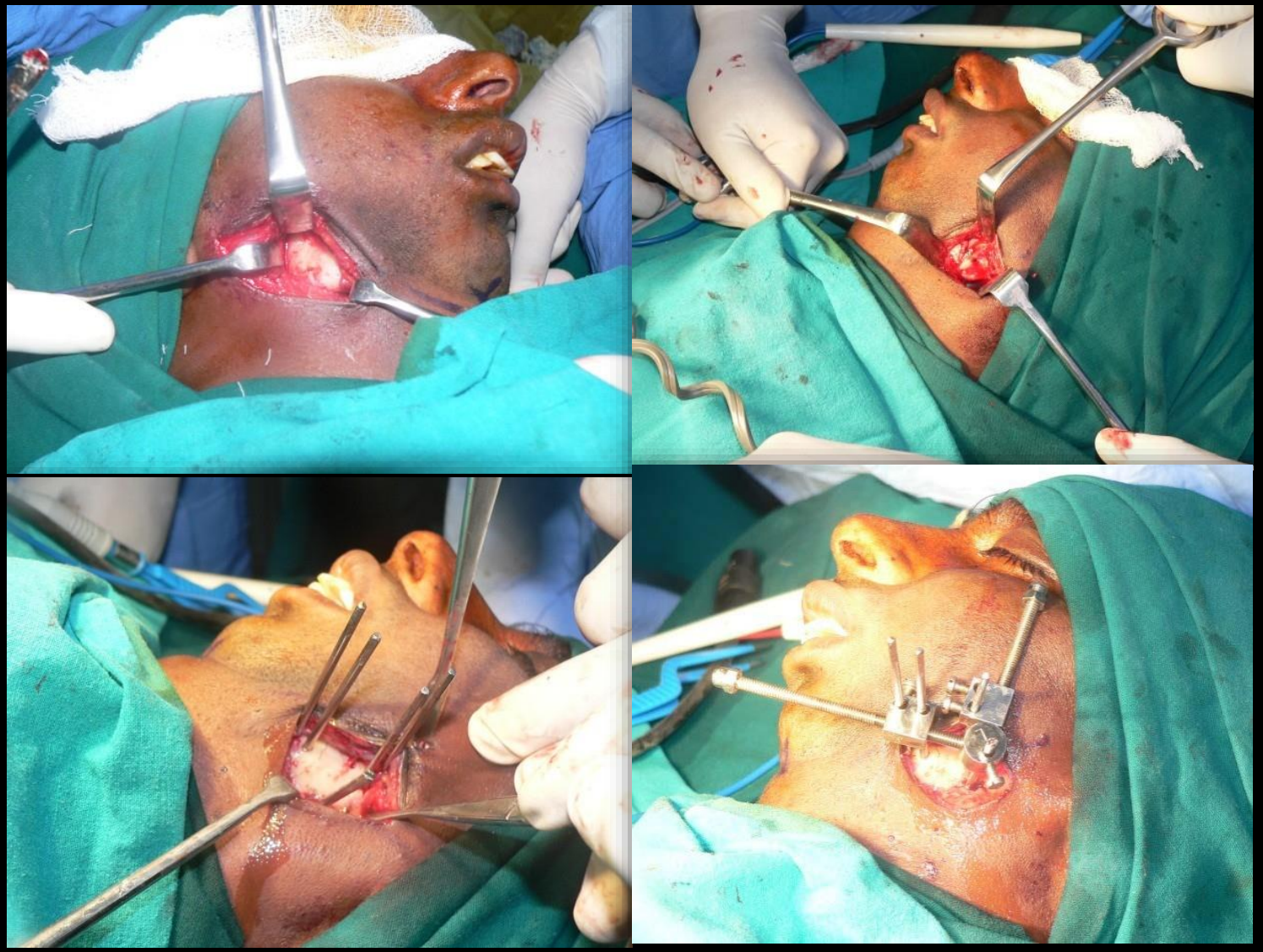
Intraoral Uni-directional Distraction Osteogenesis

Intraoral Uni-directional Distraction Osteogenesis

Post op 5 months

Extraoral Bi-directional Distraction Osteogenesis

Bi-directional distractor placement

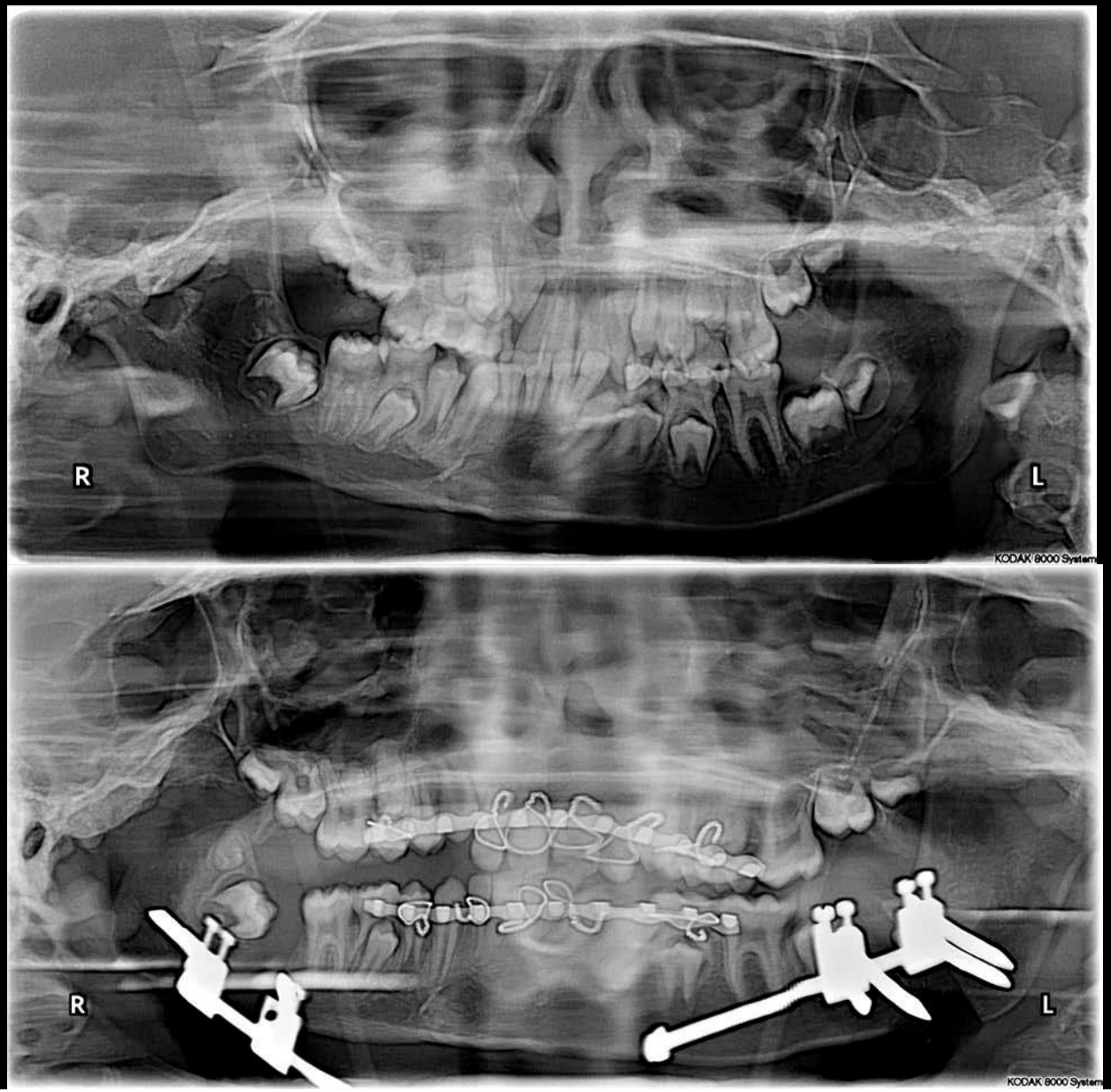


0-24mm Distraction

Extraoral Bi-directional Distraction Osteogenesis

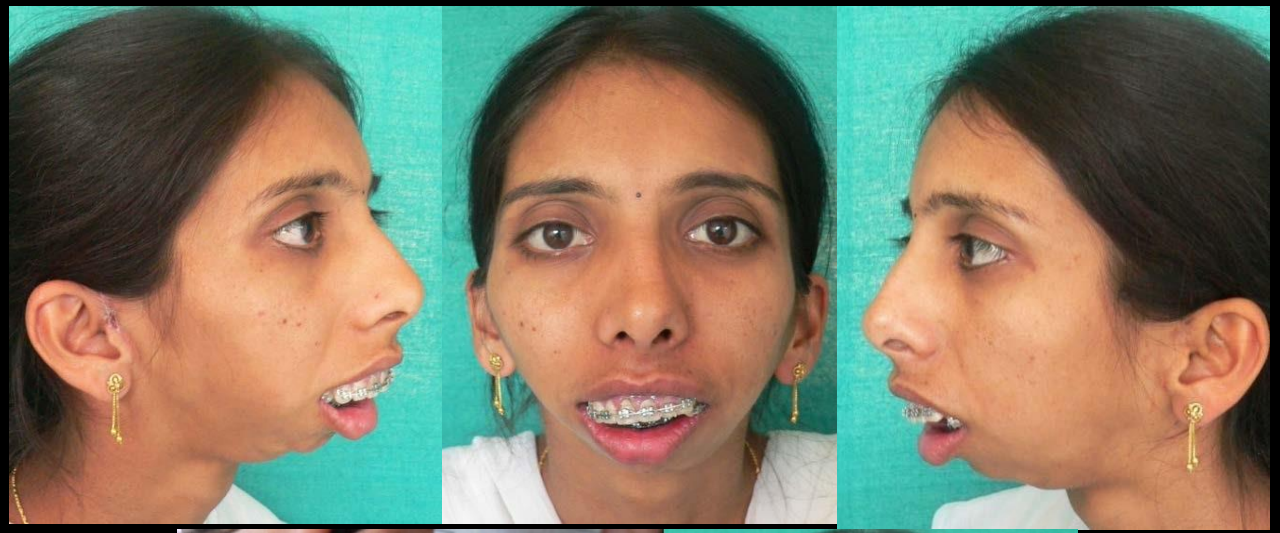
Extraoral Uni-directional Distraction Osteogenesis

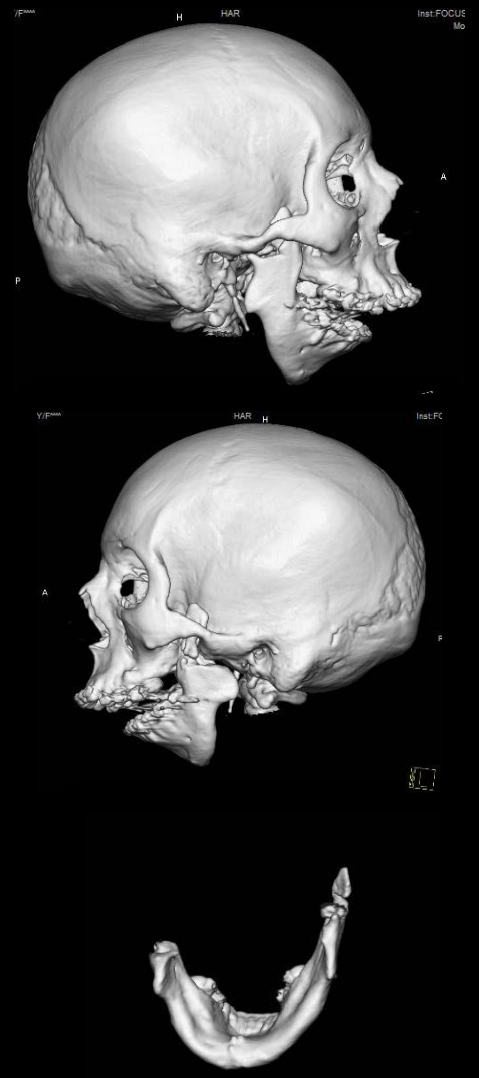
Extraoral Uni-directional Distraction Osteogenesis



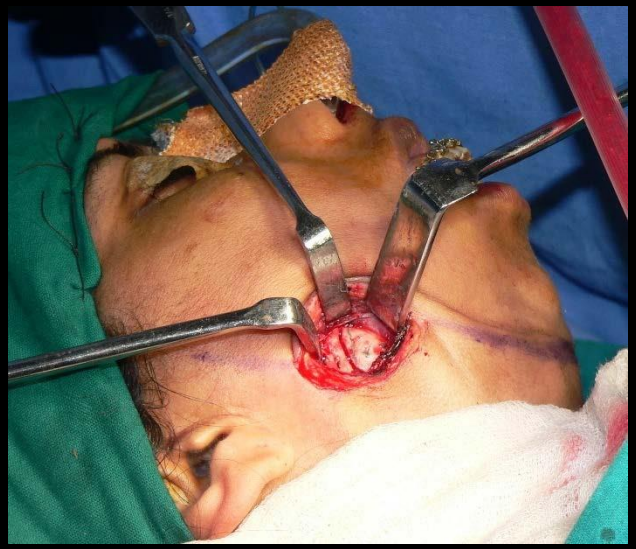
Extraoral Uni-directional Distraction Osteogenesis

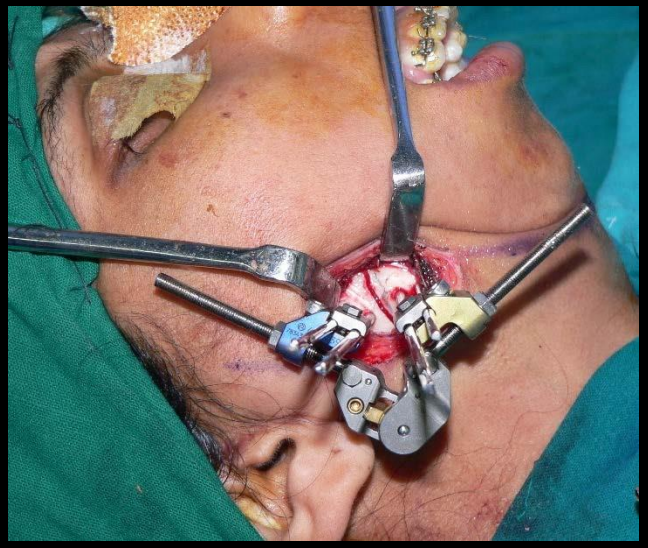
Distraction Osteogenesis and Orthognathic Surgery for correction of Maxillo-Mandibular defect after TMJ ankylosis release

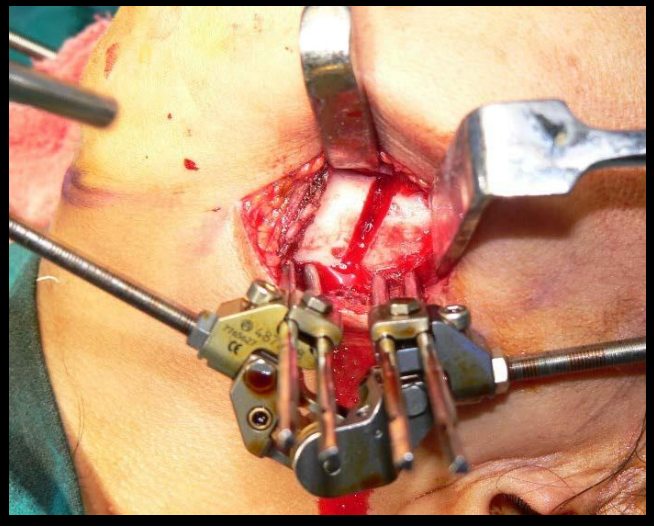




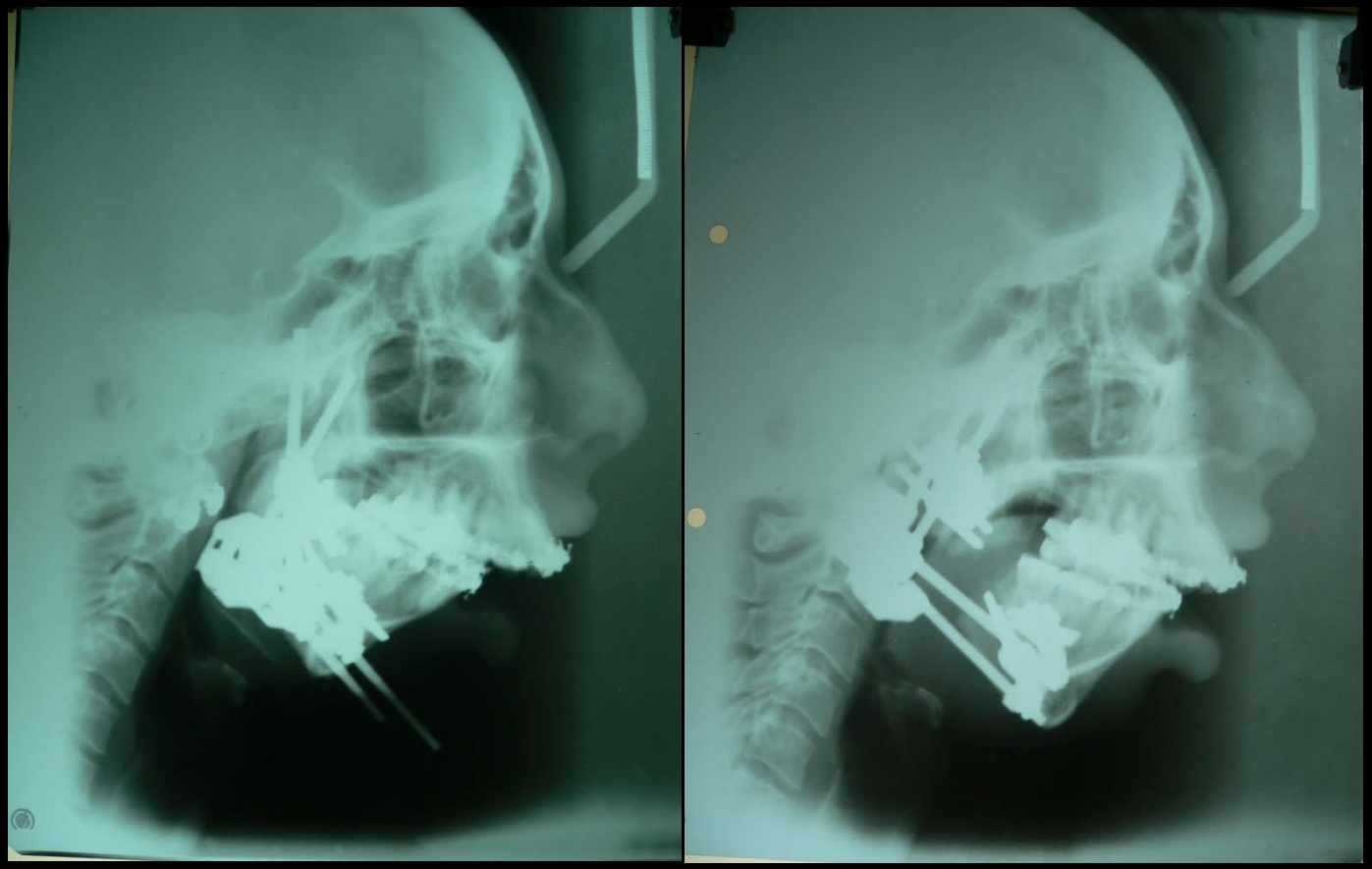
Multivector distractor placement





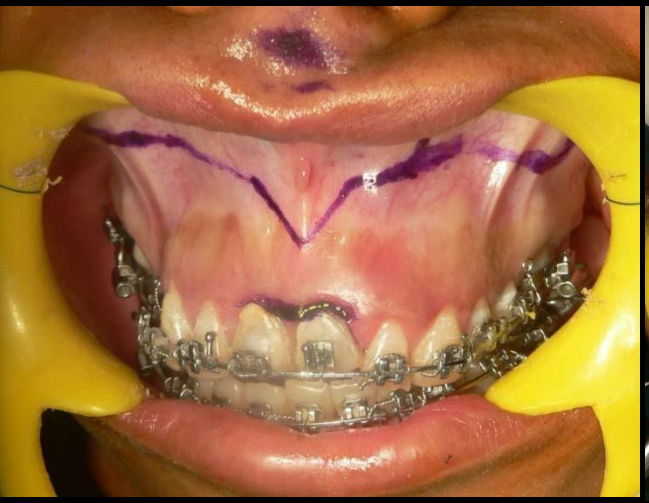


0-22mm Distraction

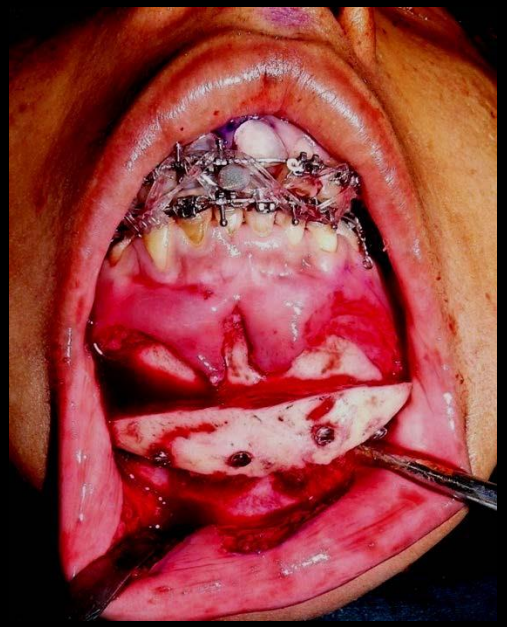


Distractor removal after 6 months

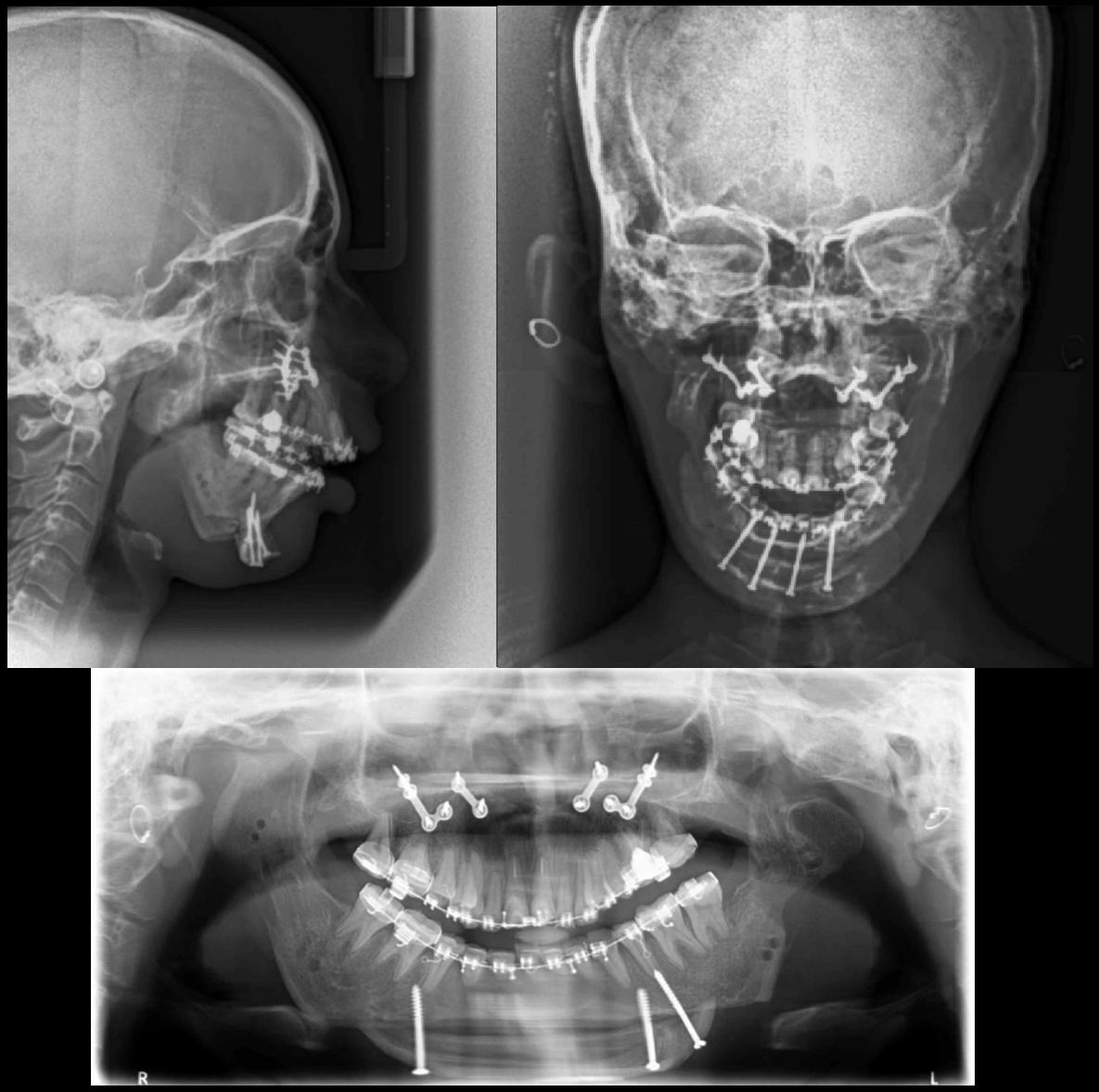
Lefort I impaction with genioplasty





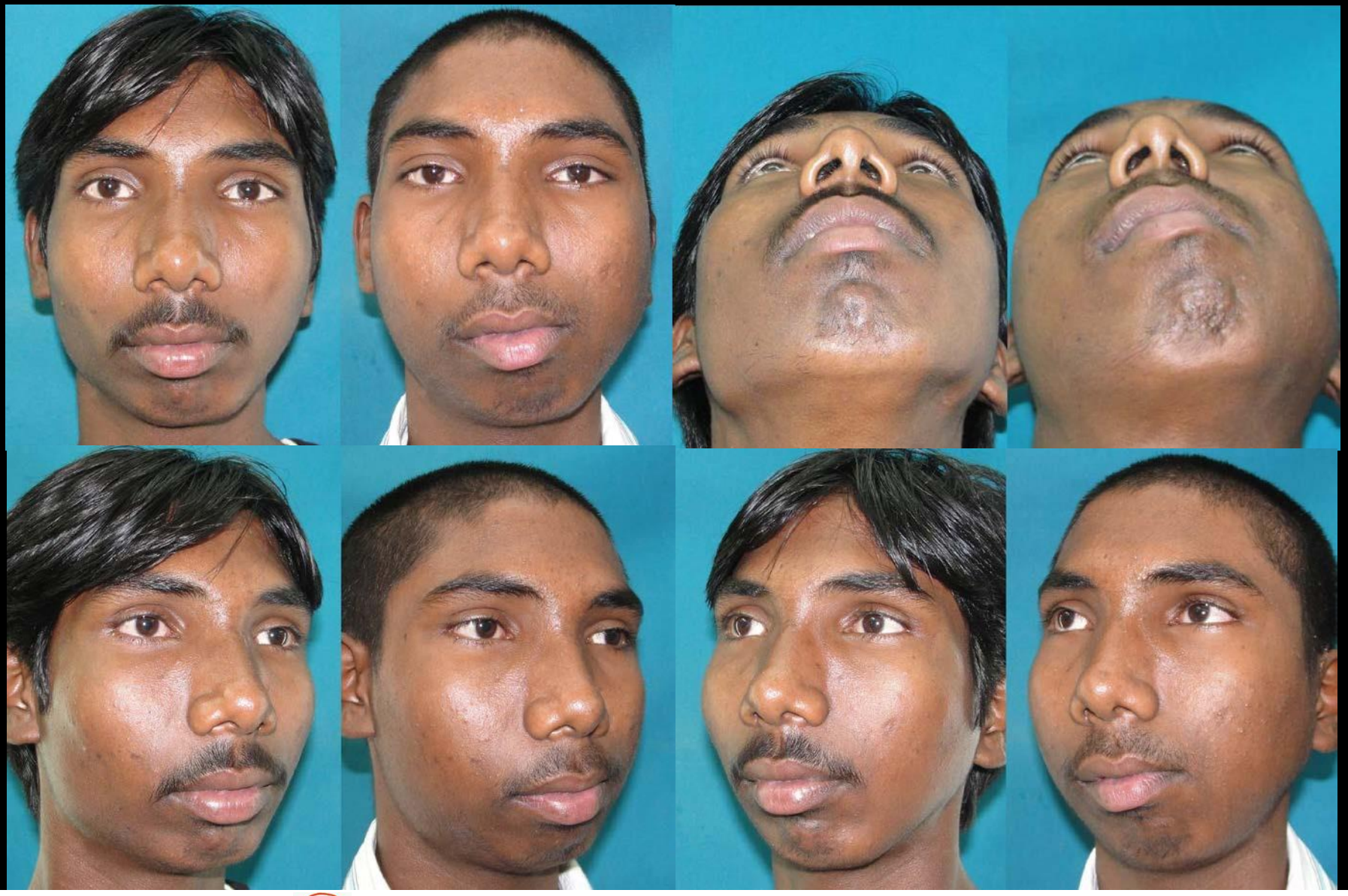
Lefort I impaction with genioplasty



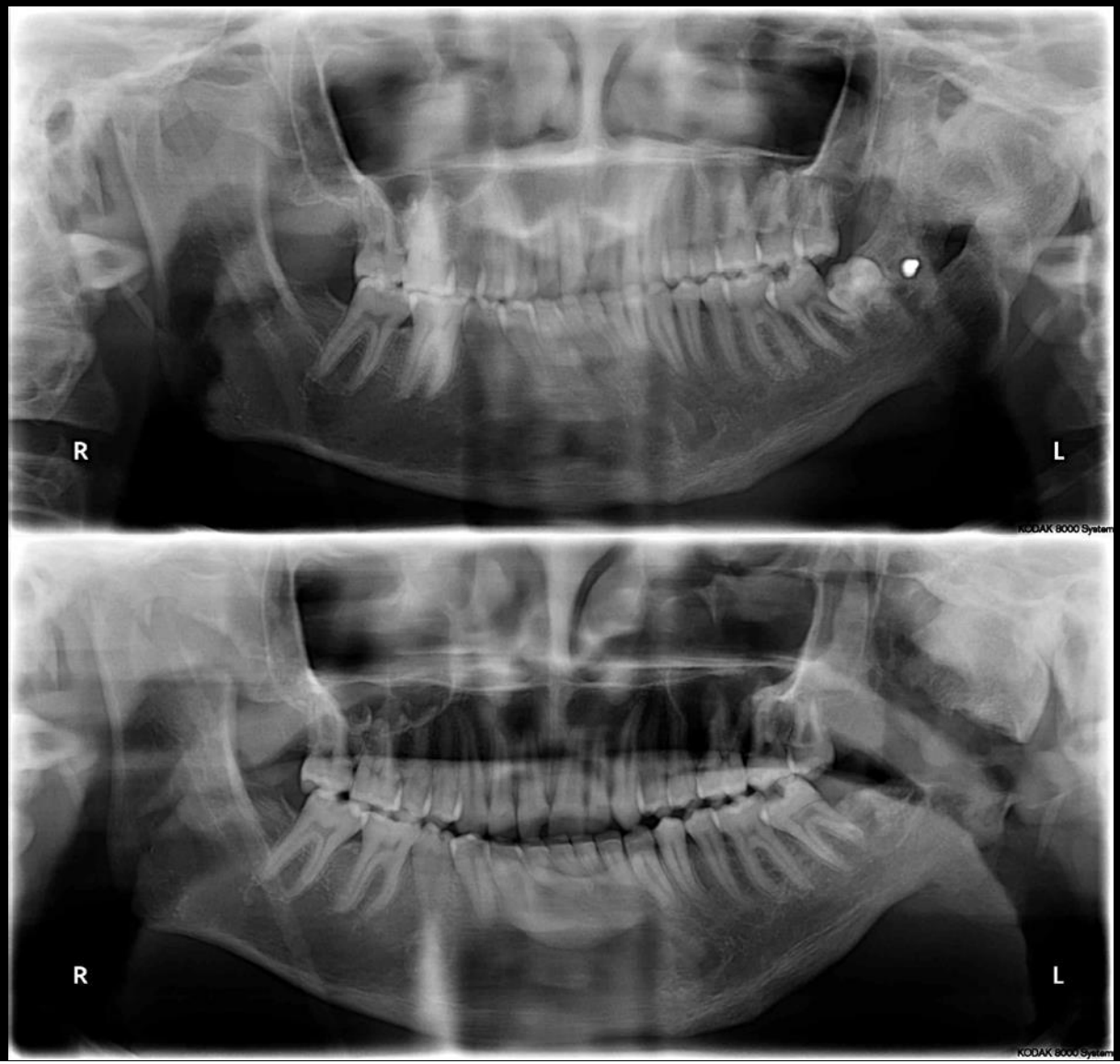
Pseudoankylosis

- 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



Pseudo-ankylosis



Orthomorphic Distraction

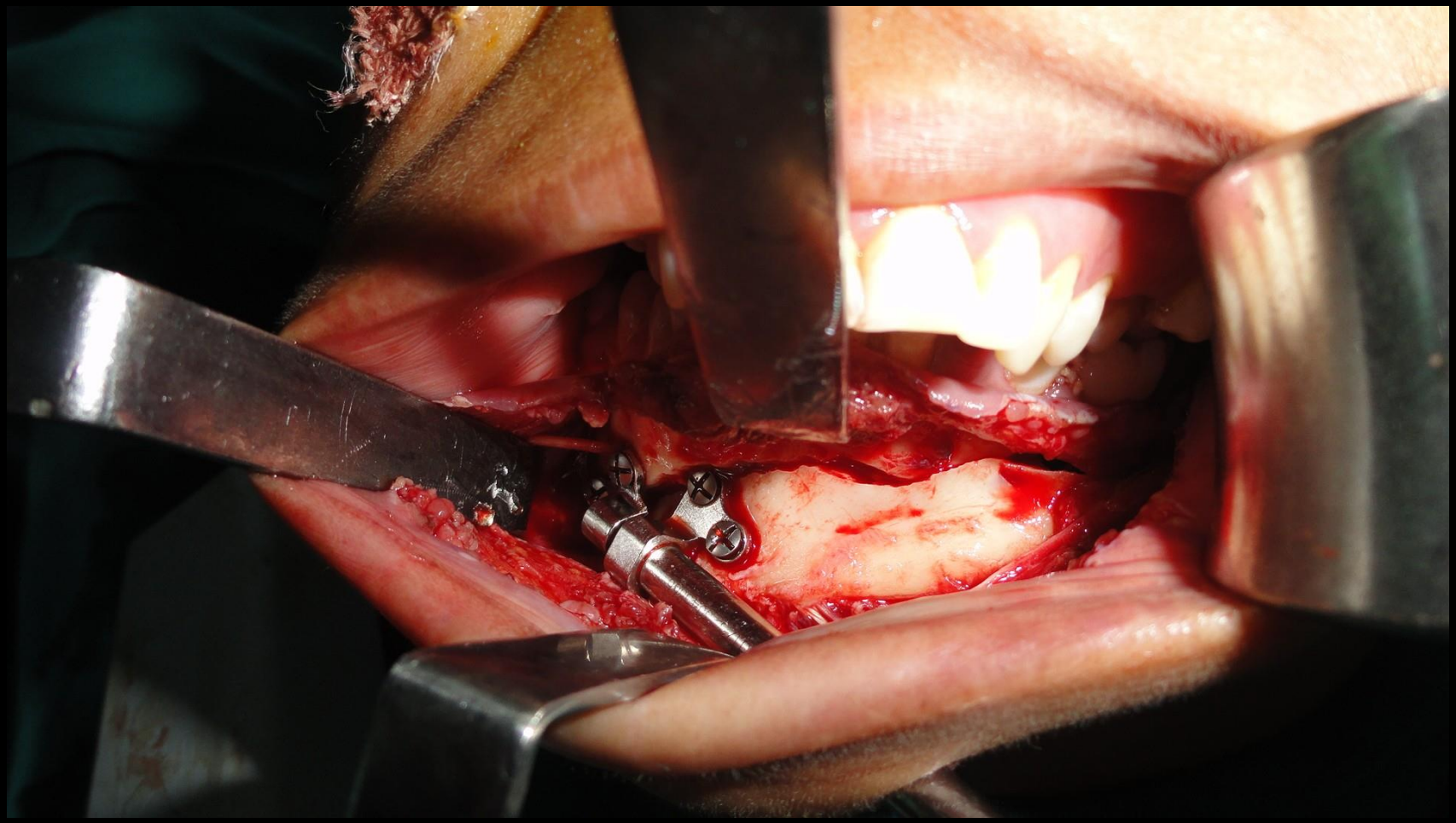
Horizontal osteotomy cuts made from angle to the symphyseal region

Distraction vectors applied in an outward and forward direction

Thereby maintaining the mandibular contour as same as the contralateral side

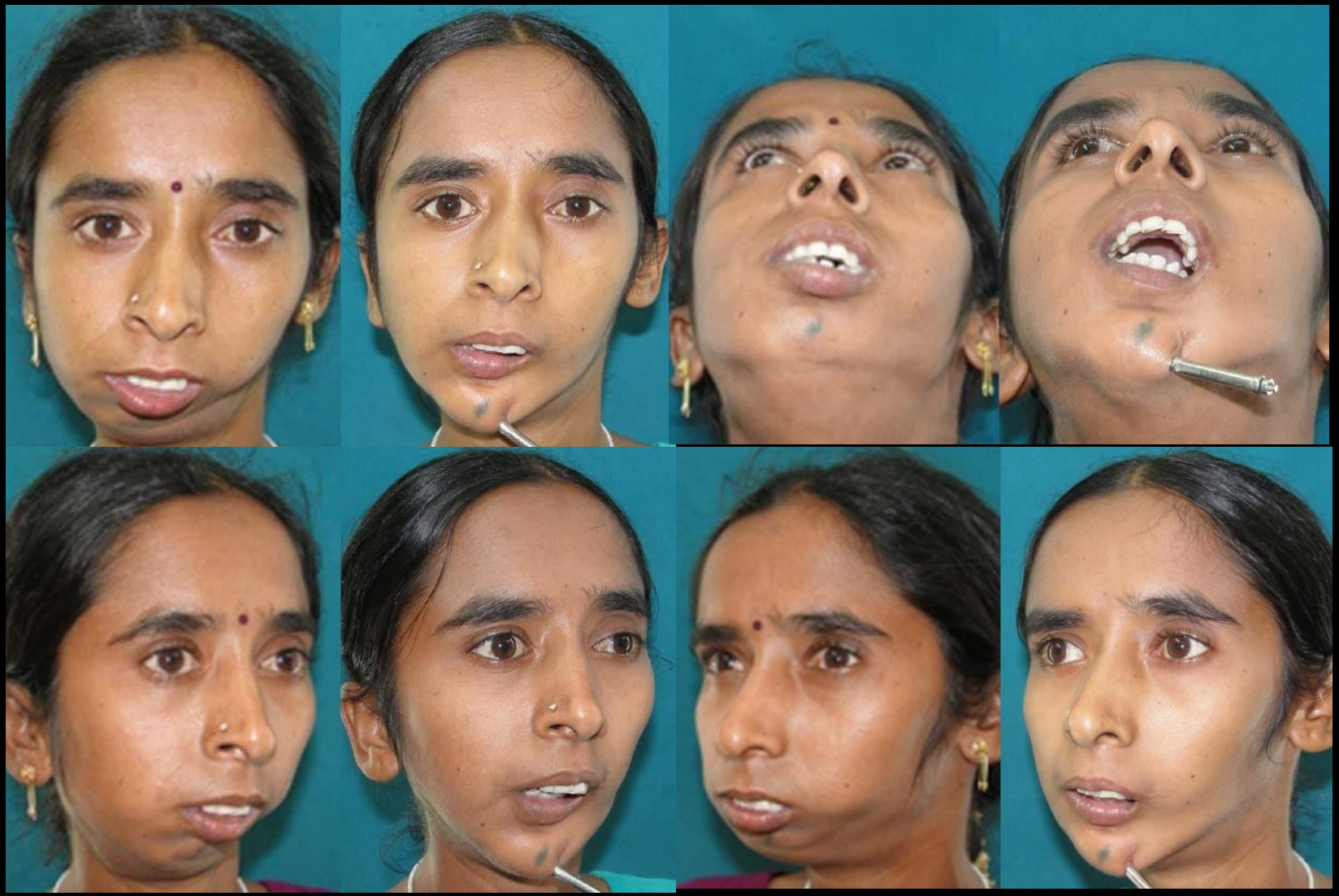
Orthomorphic Distraction Osteogenesis

Orthomorphic Distraction Osteogenesis



Orthomorphic Distraction Osteogenesis

Orthomorphic Distraction Osteogenesis



Bring the Smile Back

Thank You