

**Naso-orbito-ethmoidal fracture,
Markowitz Type II
Frontal Sinus fracture (bilateral anterior
table, posterior table left)**

Inter-hospital Grand Rounds

July 4, 2019

EAMC

Surgeon: Carlo Victorio L. Garcia, MD

Presenter: Jose Pedrito M. Magno, MD

Philippine General Hospital

CASE HISTORY



History of Present Illness

MM, 26/M

- DOI: 10/21/2018
TOI: 1 AM
POI: Bicol
MOI: mauling

3 wks PTA:

Patient was attempting to break up a drunken altercation when he was intentionally hit with a rock on the midface, resulting in brief loss of consciousness and epistaxis

When he regained consciousness in a local hospital, there was note of bilateral nasal obstruction. Watery rhinorrhea was not apparent at that time. There were significant deformities of the nasal bridge and glabellar area.

(-) BOV or diplopia

Past Medical History

- No known comorbidities
- No previous surgeries/trauma
- No known allergies

Family Medical History

- Diabetes mellitus – father
- Hypertension - mother

Personal/Social History

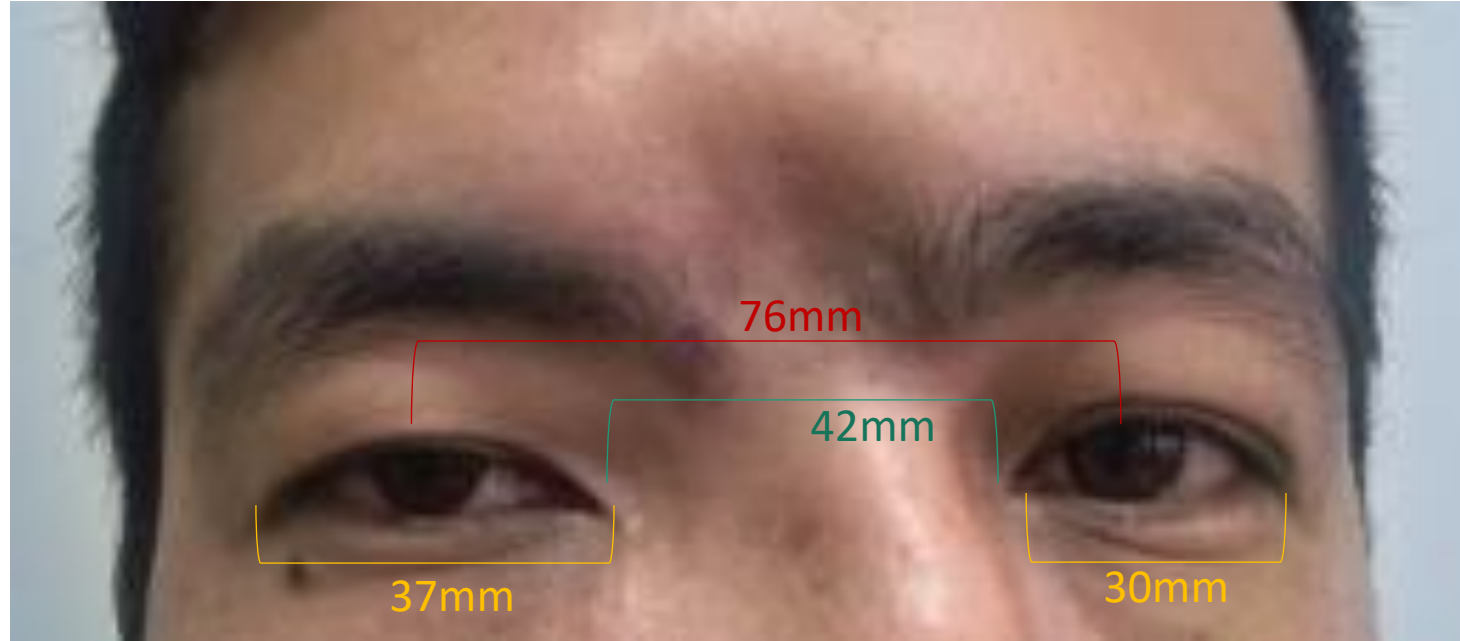
- 0.5 pack year smoker
- Occasional alcohol drinker
- Denies illicit drug use

Relevant PE

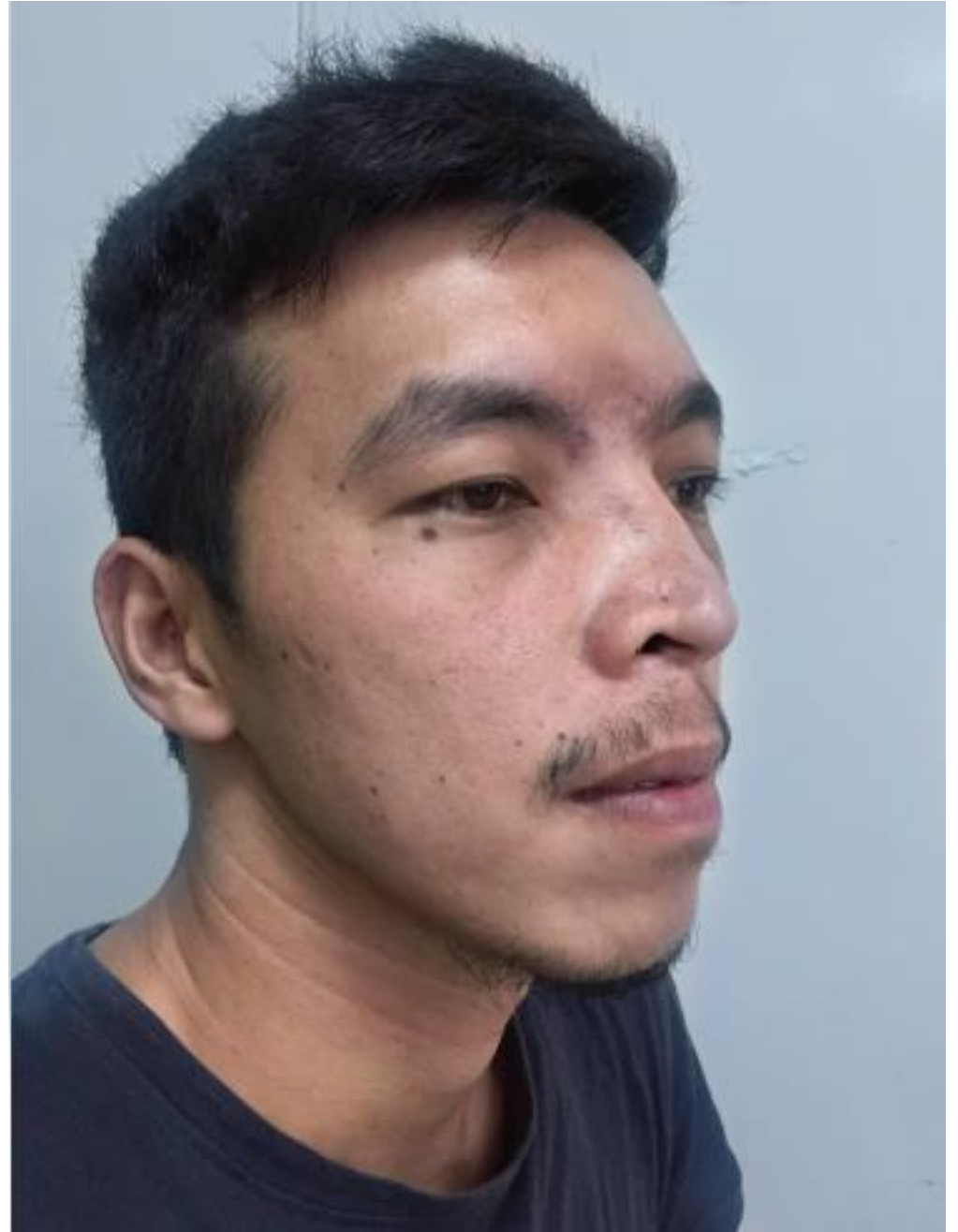
- Depression at the glabellar area up to the nasion
- Markedly deviated nasal dorsum
- Anterior rhinoscopy shows severe septal deviation to the left. Both nasal cavities cannot be visualized
- No septal hematoma
- No apparent CSF leak



Relevant PE



- Widened palpebral opening OD (37mm vs 30 mm OS)
- Intercanthal distance 42 mm
- Interpupillary distance 76mm
- **VA 20/20 OU**
- **Full EOMs; no diplopia in all cardinal directions of gaze**

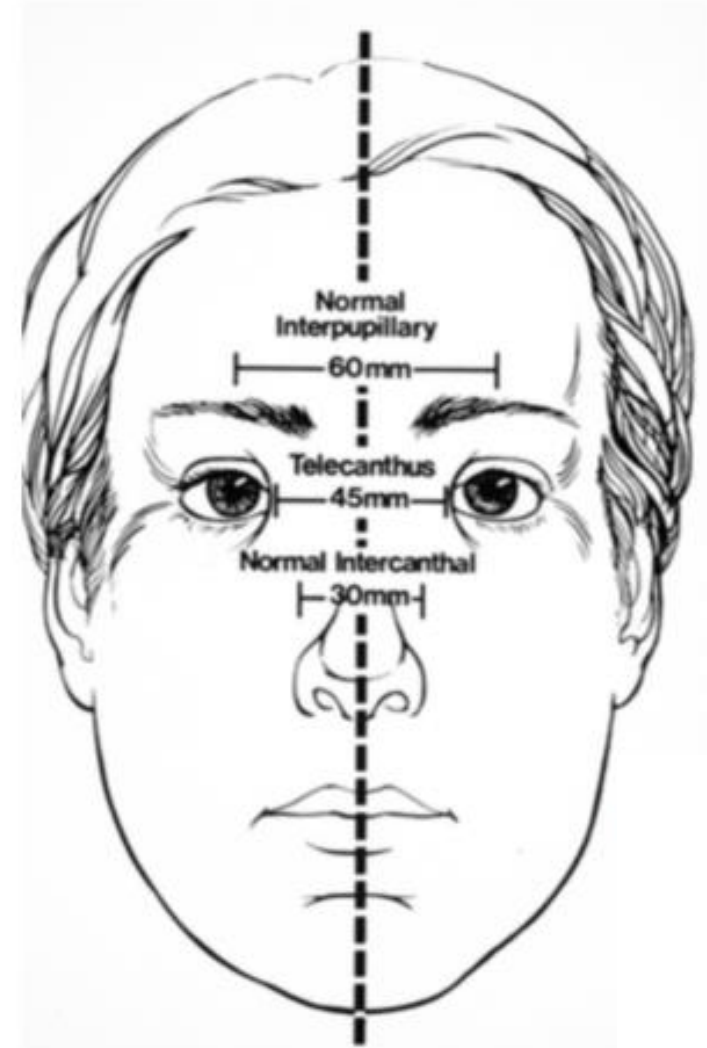




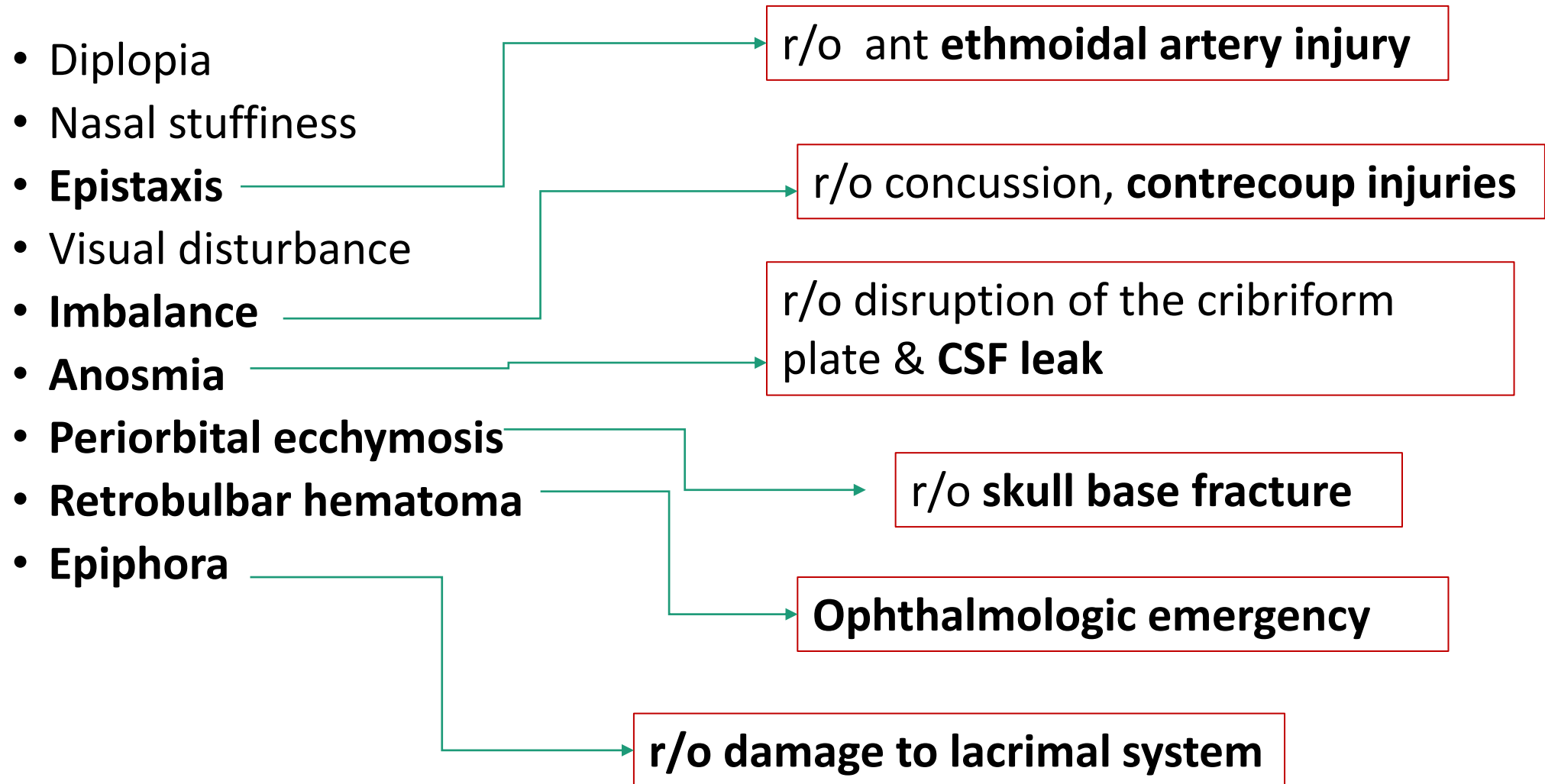


NOE: Naso-orbito-ethmoidal fractures

- **Telecanthus** occurs when medial canthal tendon is pulled laterally and inferiorly, anteriorly and inferiorly
- May take place gradually
- Ave. intercanthal distance: 30-31mm



NOE: other signs and symptoms



NOE: Classification

- Among classification systems, **Markowitz** has been most widely utilized



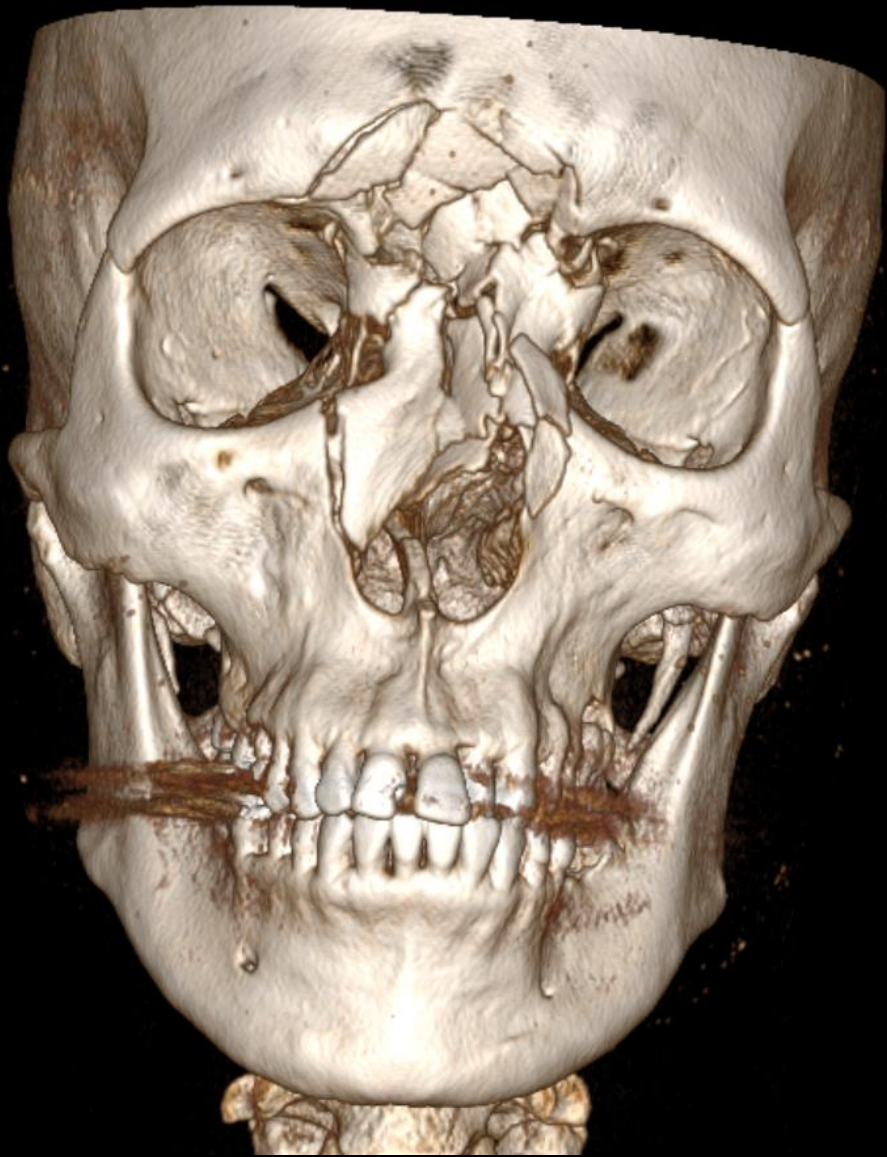
Type I



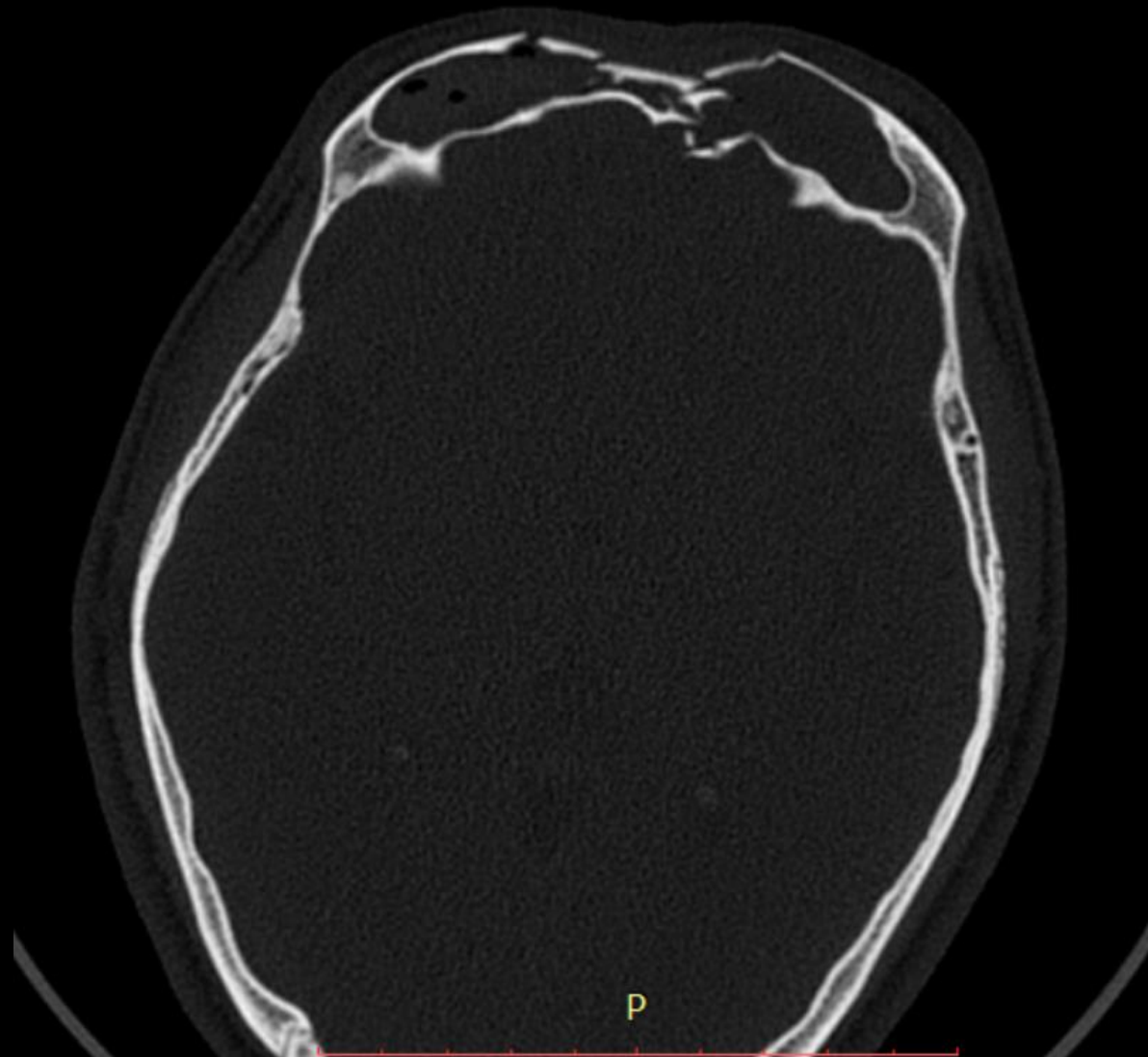
Type II



Type III



3D RECONSTRUCTION

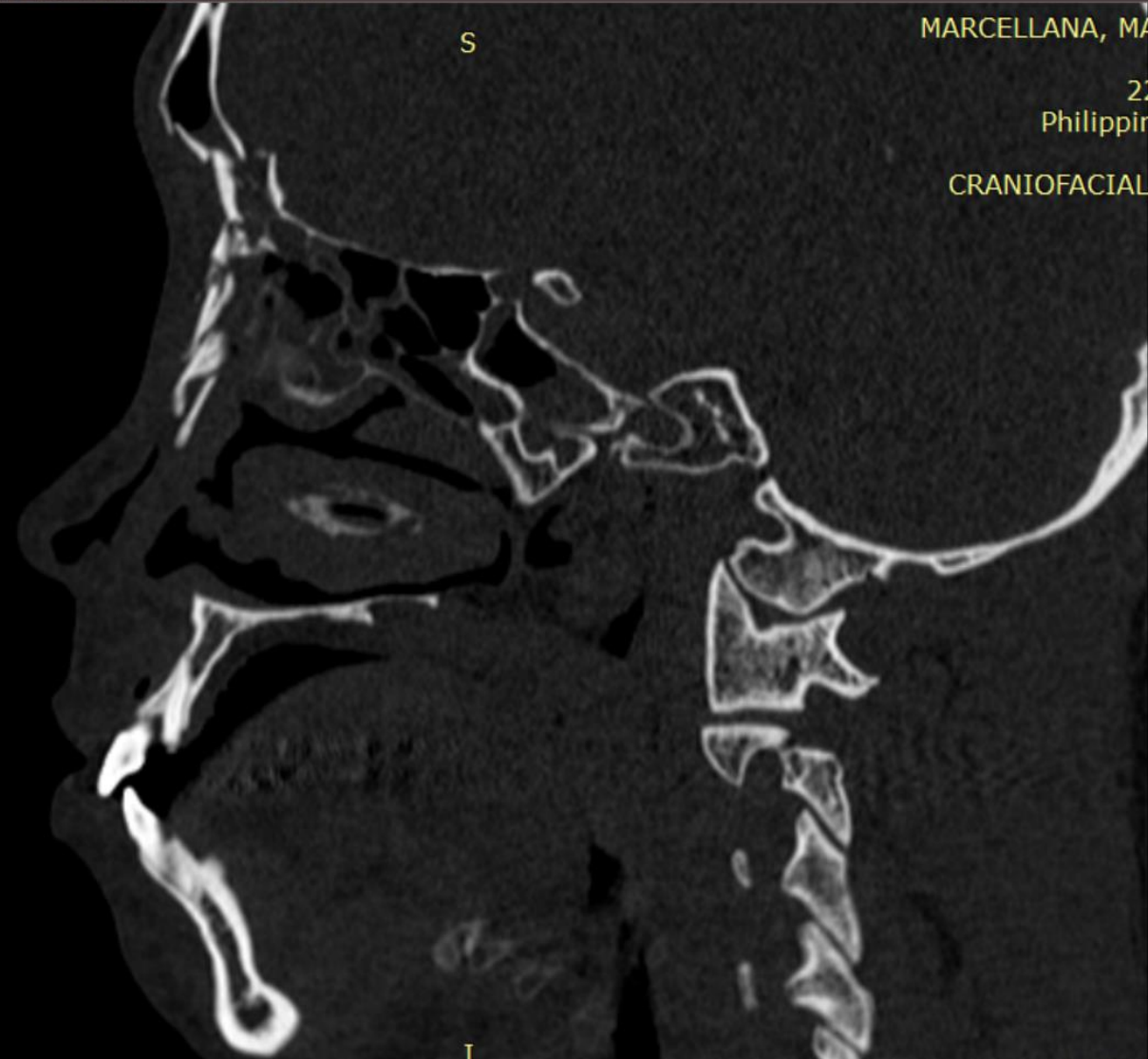


CT (AXIAL BW)

04/11/2018 12:39:29 - FACIAL BW



FACIAL CT (AXIAL BW)



MARCELLANA, MA
22,
Philippine
CRANIOFACIAL,

FACIAL CT (SAGGITAL BW)

NOE: Indications for Surgery

- [?] Compressed NOE complex.
- [?] Traumatic telecanthus (widened NOE complex), unilateral or bilateral.
- [?] Persistent epistaxis, despite local hemostatic measures.
- [?] Medial orbital fracture with entrapment demonstrated on forced duction testing.
- [?] Fracture(s) seen on imaging studies of the floor of the frontal sinus, which could block outflow.
- [?] Fractures of the NOE involving the medial canthal tendons.
- [?] Disruption of the lacrimal fossa and superior nasolacrimal duct.
- [?] Obvious injury to the region of the lacrimal canaliculi.
- [?] Evidence of a developing retrobulbar hematoma, which requires urgent ophthalmologic intervention.
- [?] CSF rhinorrhea due to a fracture of the cribriform plate or posterior wall of the inferior frontal sinus seen on imaging studies.

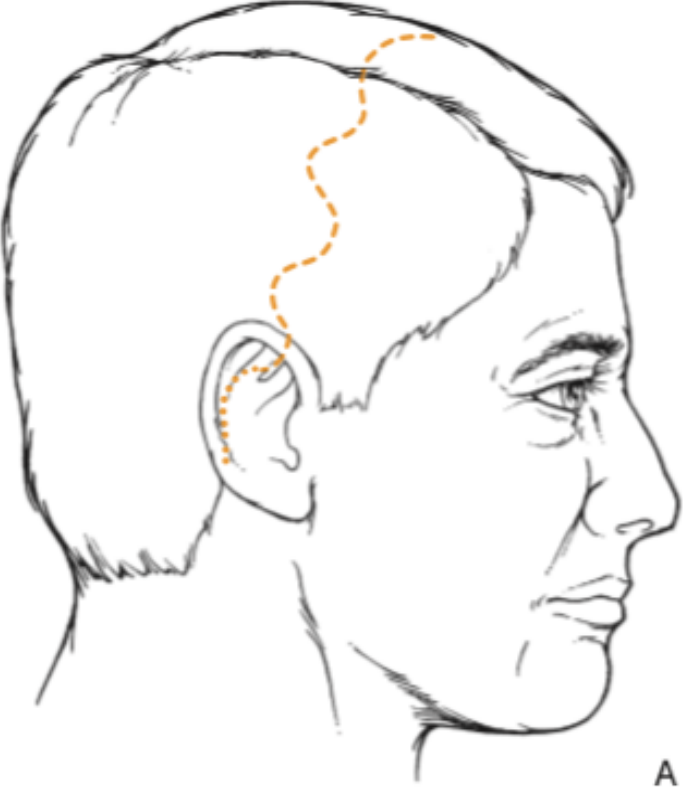
- Obvious deformity
- Involvement of the frontal sinus (anterior and posterior tables)

NOE: Goals of Surgery

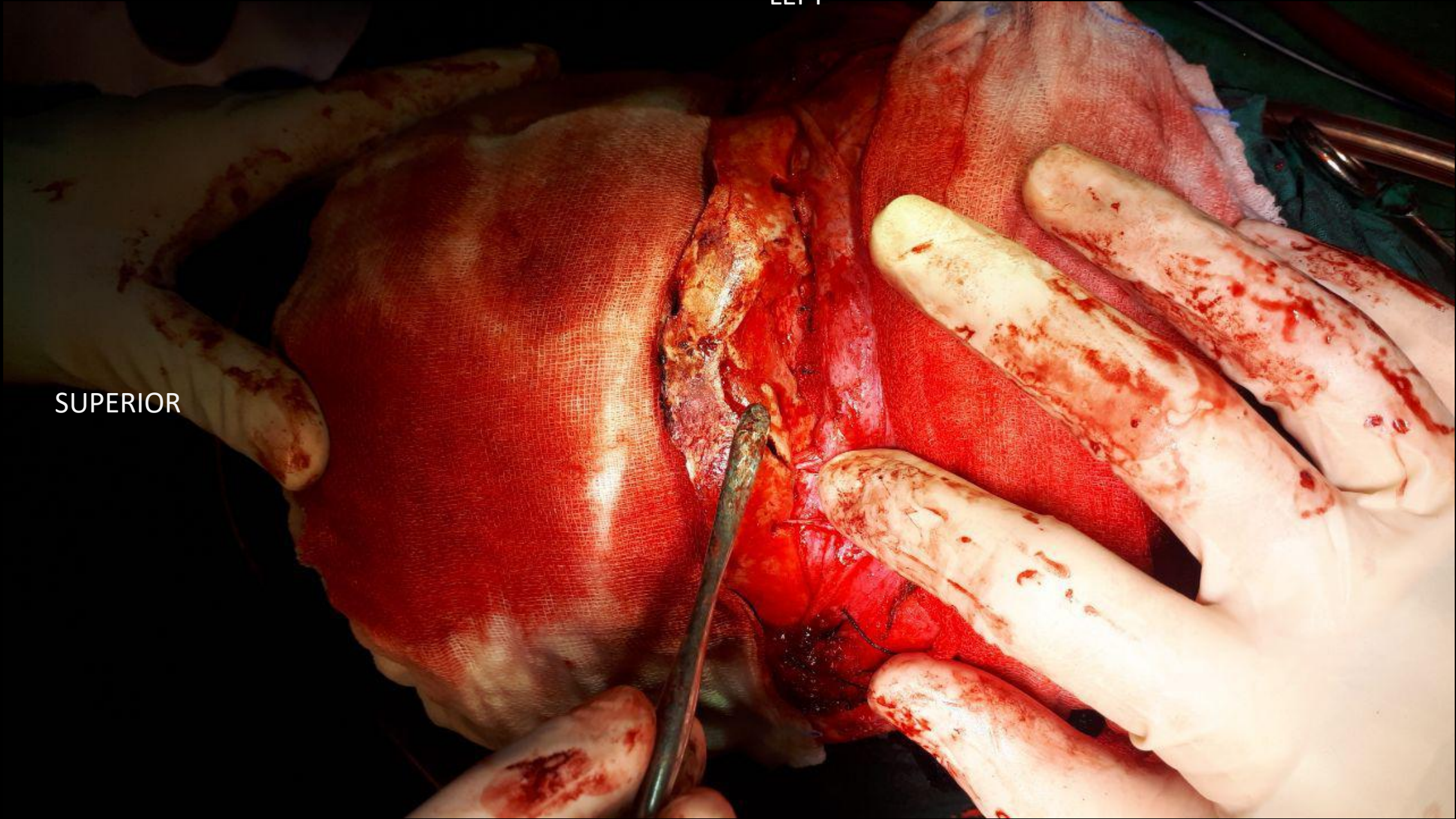
1. Reduce and fixate the widened NOE complex
 - re-establish normal frontal profile and appearance
 - re-establish normal inter-canthal distance
 - correct the grossly-deviated dorsum
2. Exploration of the frontal sinus & cranialization



Approach: Bicoronal scalp flap



LEFT

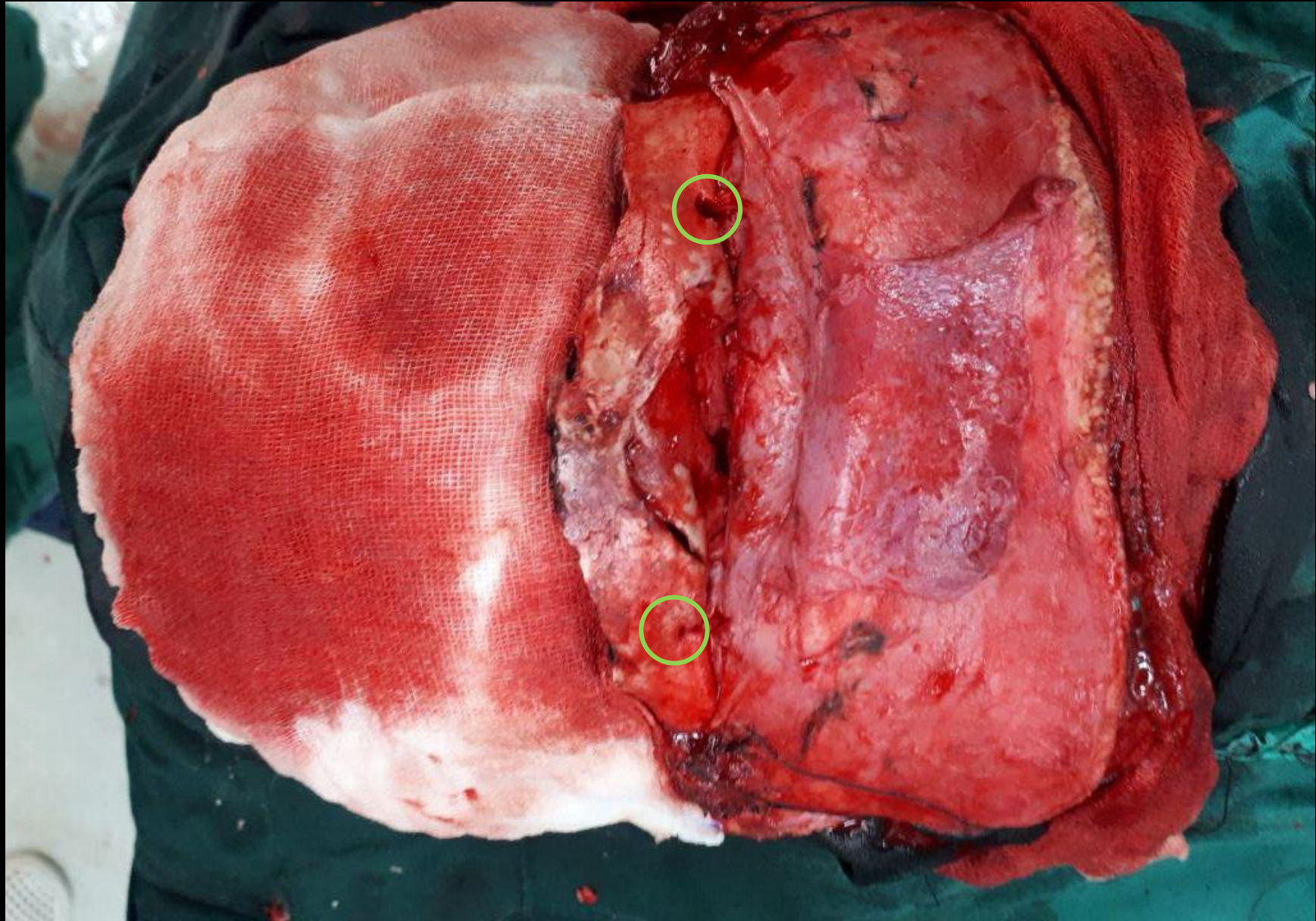


SUPERIOR

INFERIOR

RIGHT

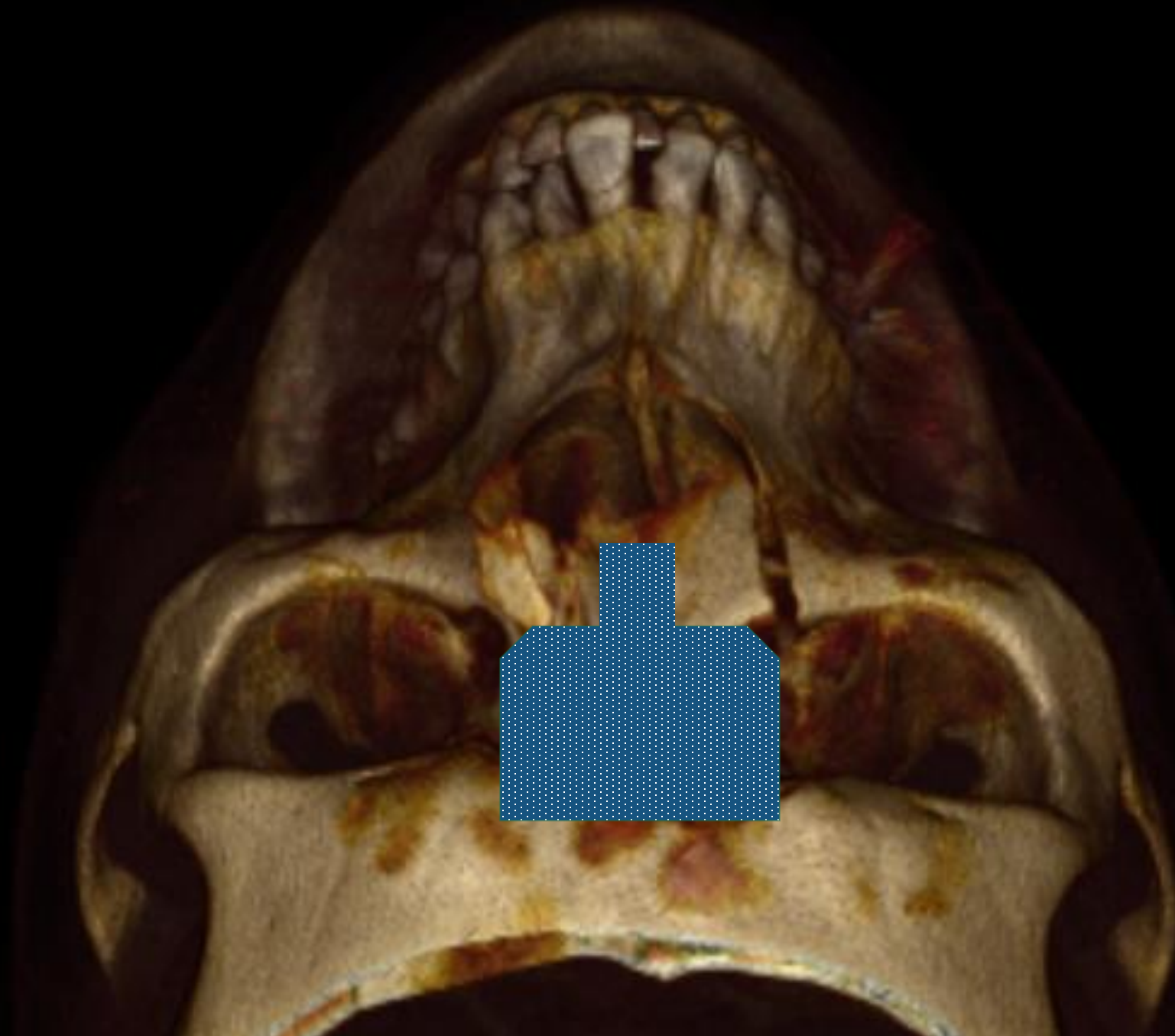
LEFT



SUPERIOR

INFERIOR

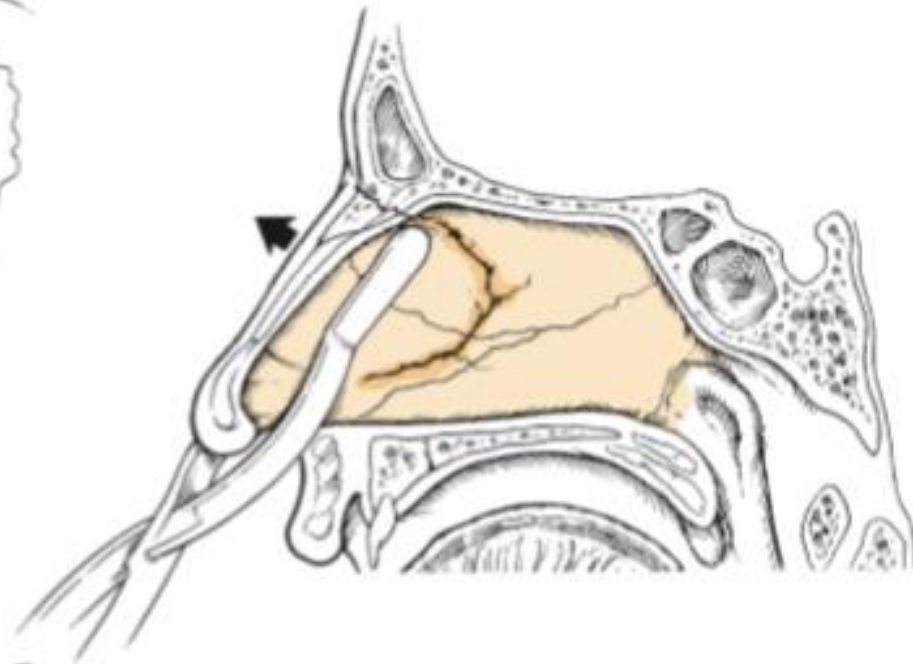
RIGHT



An orbital mesh was used as scaffolding to fix the comminuted bone fragments



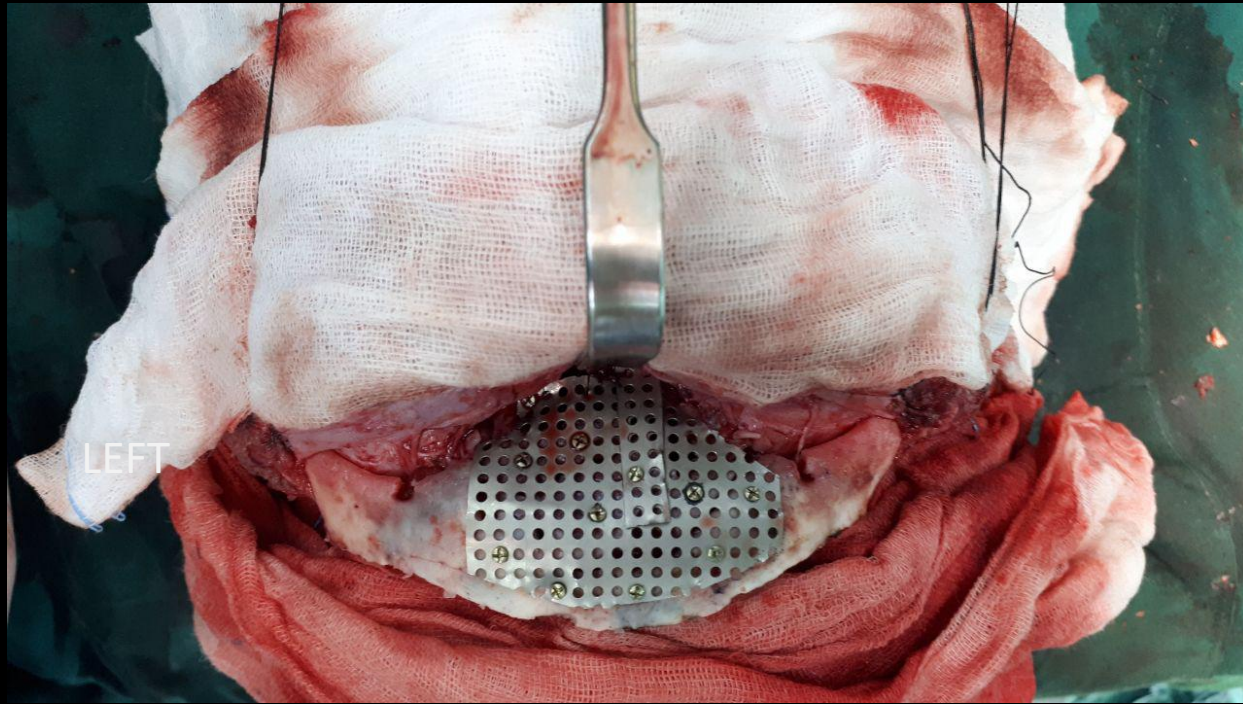
A



B

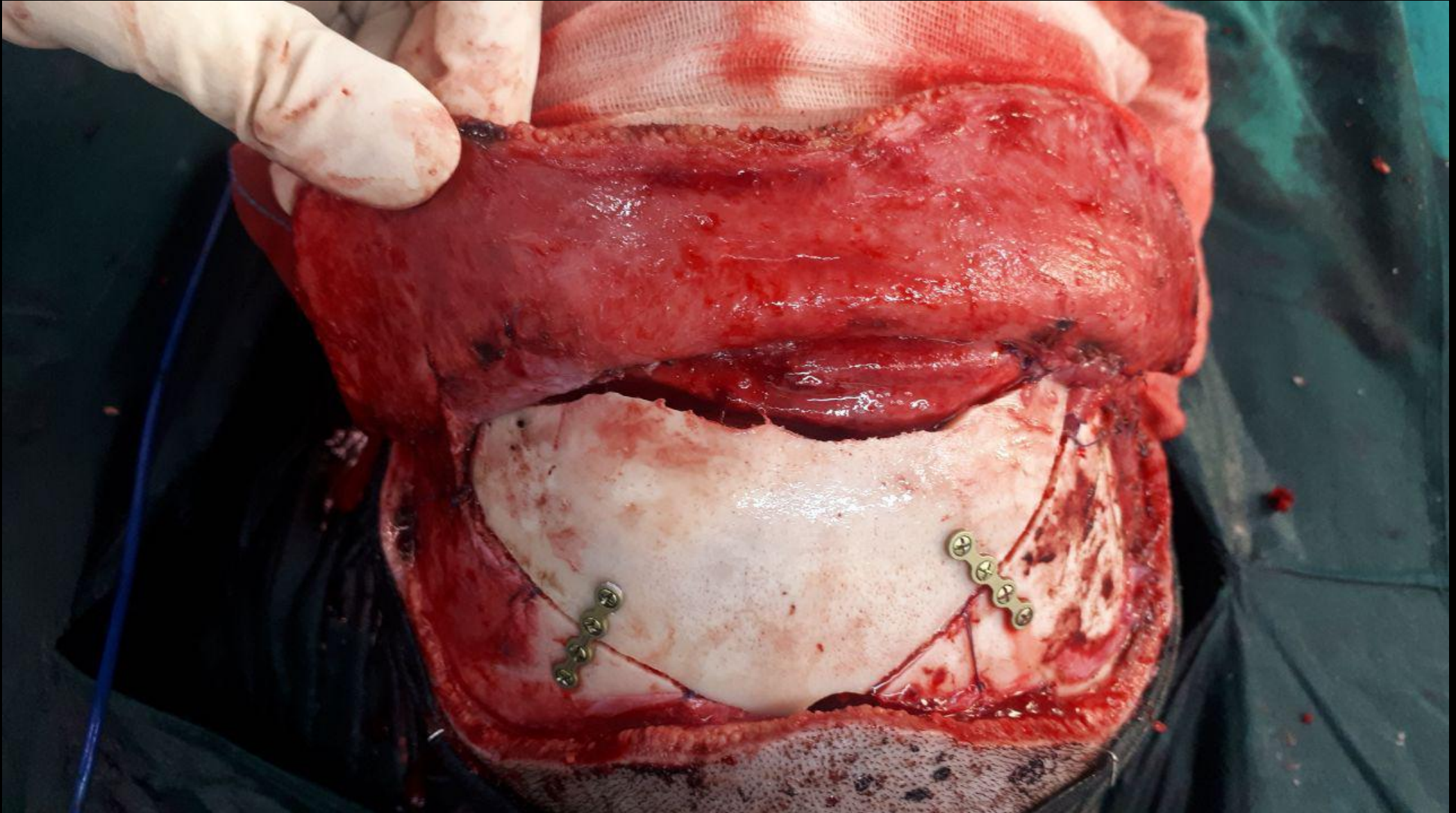
Asch forceps were used to elevate the nasal bone and fix it to the mesh

INFERIOR



SUPERIOR

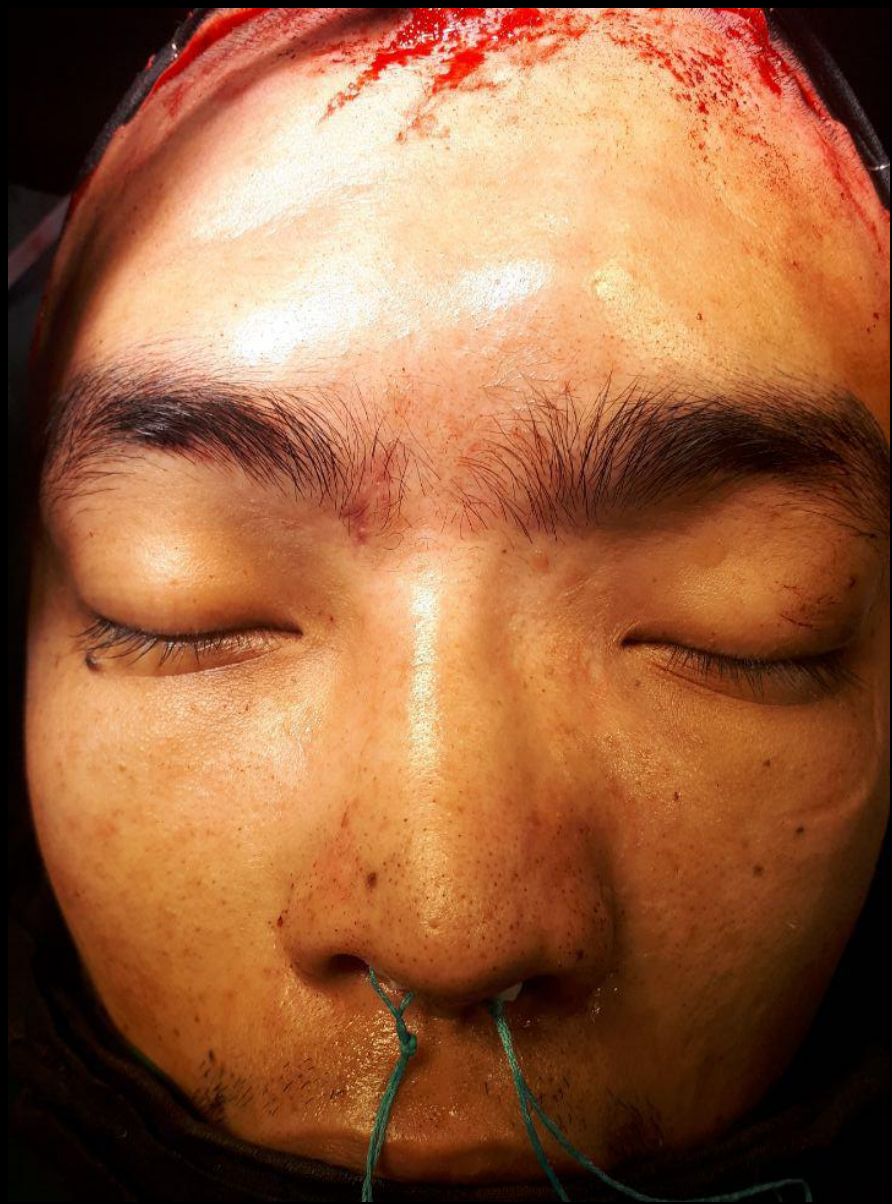
INFERIOR



LEFT

RIGHT

SUPERIOR



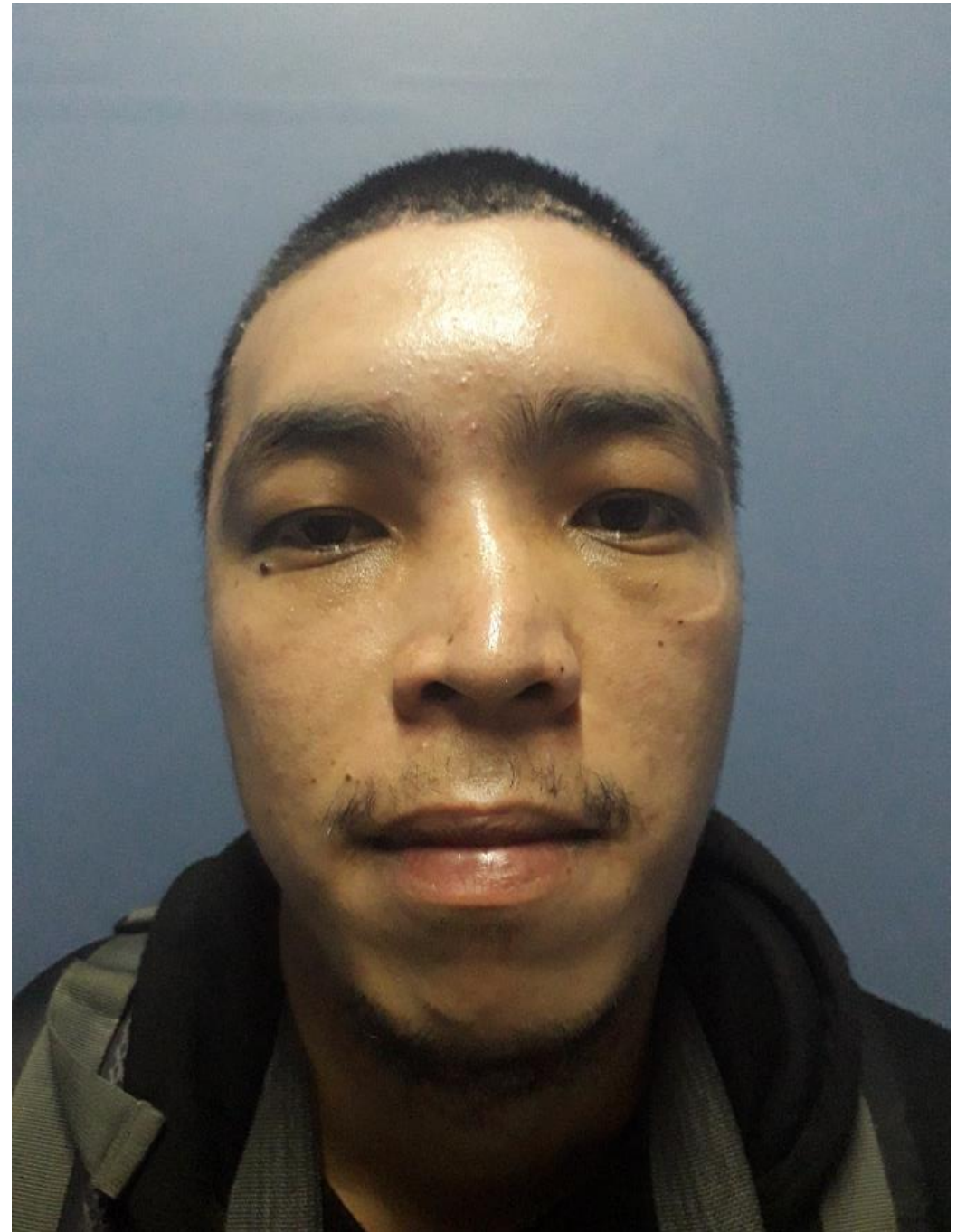
1 wk postop



1 mo postop

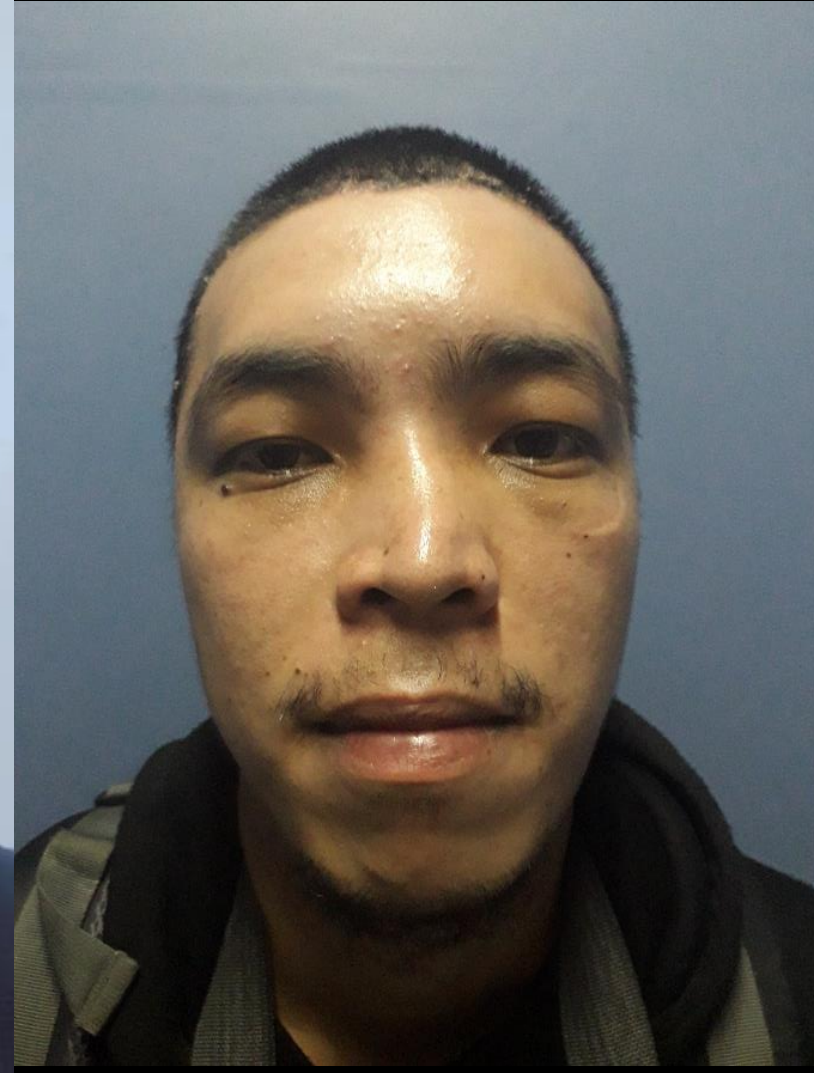
1 month post-op

- Intercanthal distance: 41 mm
- Palpebral width 31 mm
- Full EOMs
- Offered formal septorhinoplasty – patient declined



Thank you.

*“Perfection is
the enemy of
success”*



Sources:

- Flint, P. W., & Cummings, C. W. (2010). *Cummings otolaryngology head & neck surgery*.
- Brennan, JA. G. Holt. M Connor et al. Resident Manual of Trauma to the Face, Head, and Neck. 1st edition. American Academy of Otolaryngology—Head and Neck Surgery Foundation. 2012
- Suleman, YE. Aetiology and mechanism of injury of midfacial fractures: a prospective study of the Johannesburg region