

# Frontobasilar fractures

Le Fort IV

R.Rizzo- CMF Units



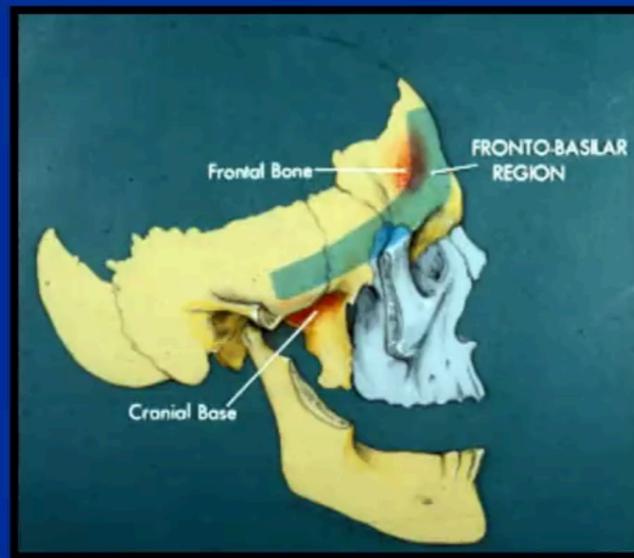
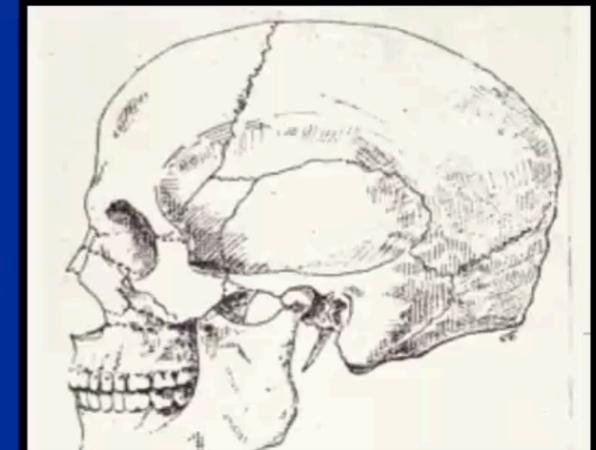
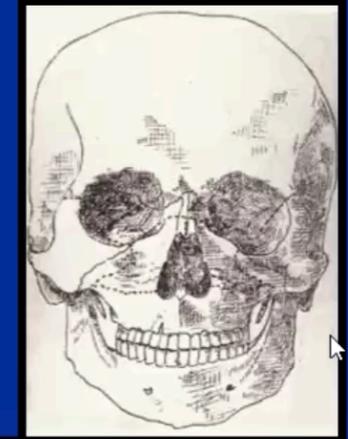
UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

# LEFORT FRACTURES

## Classification:

But a greater number of weak points (or better said, linear Minoris Resistenlae) cause the facial bones to break up into fragments so that the stress is exhausted by the effect produced, preserving the integrity of the bony envelope of the brain.

- Rene LeFort, 1901

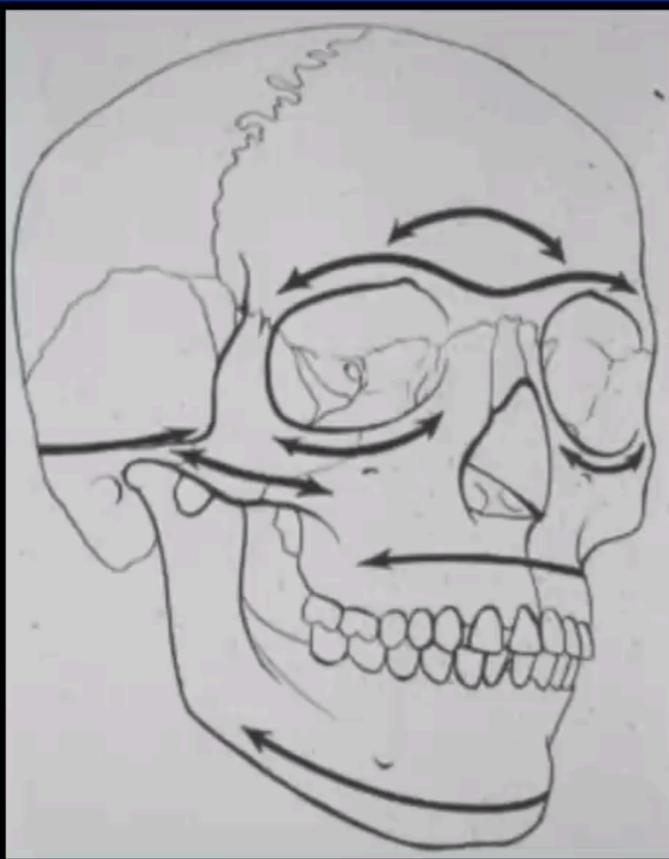
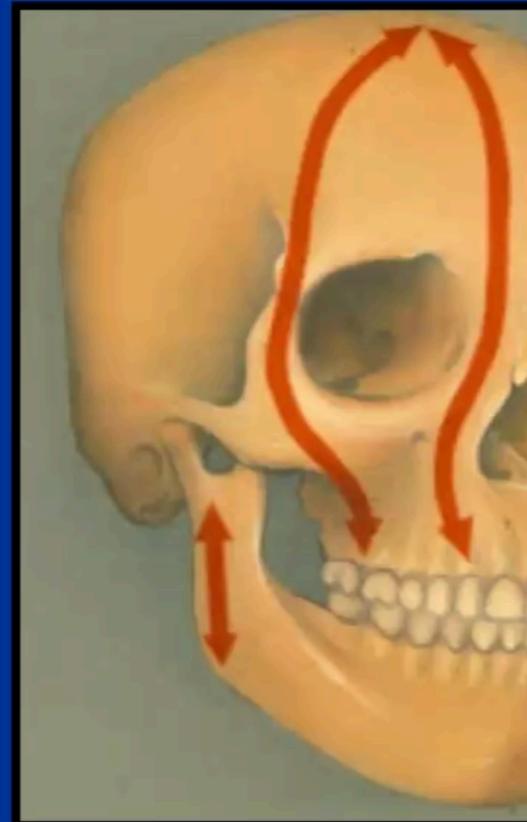


FRONTOBASILAR  
FRACTURES

(LeFort IV)

THE UPPER JAW INCLUDES THE GREATER PART OF THE BONES OF THE CRANIUM AND THE FACE

- MALGAINNE, 1774

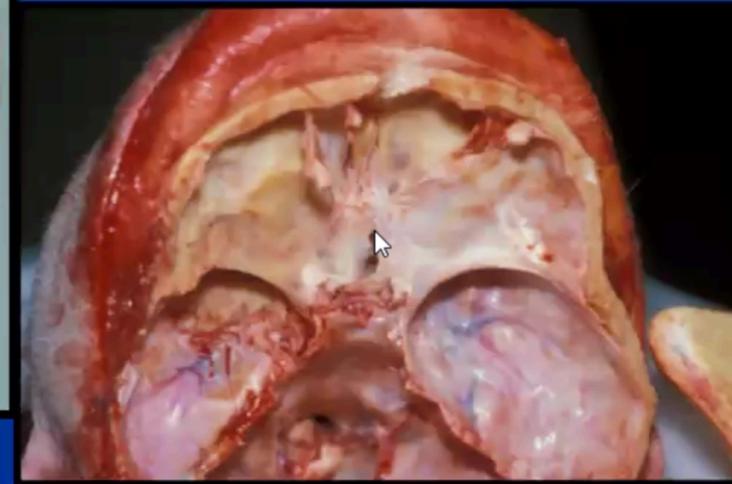
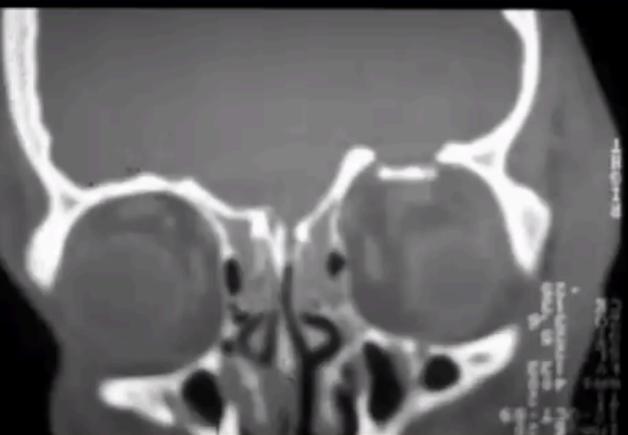
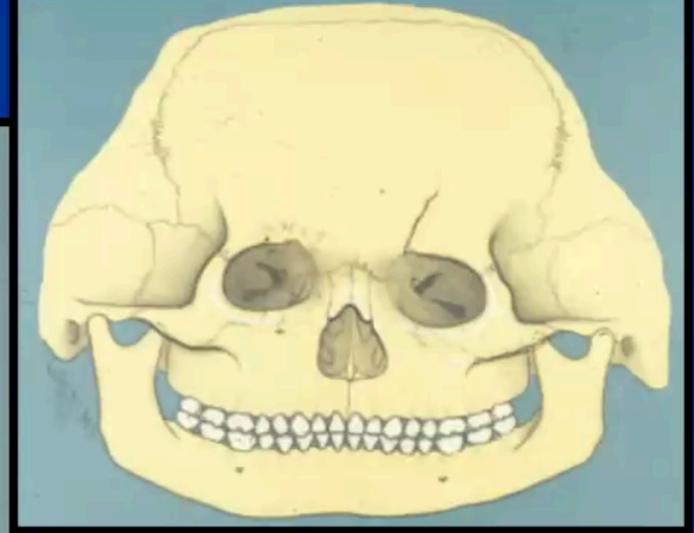
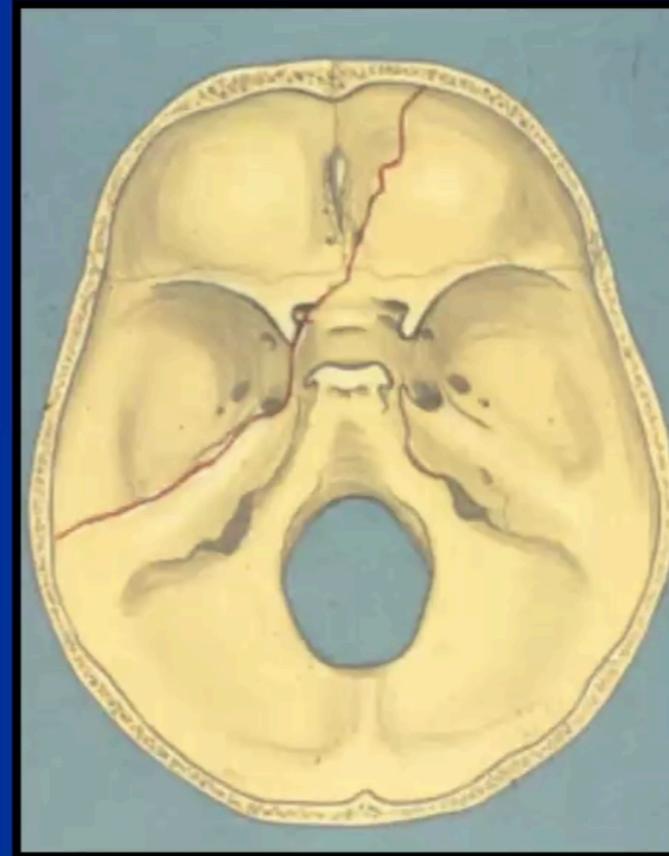
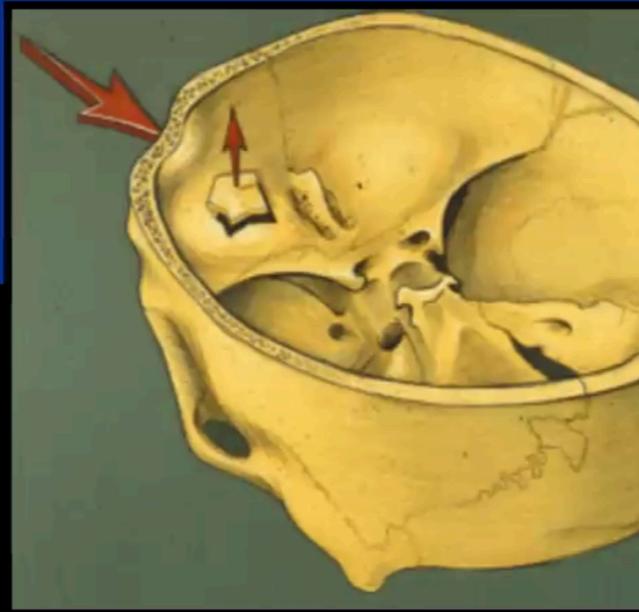


# MECHANISMS OF FRACTURE

Inbending – Contact

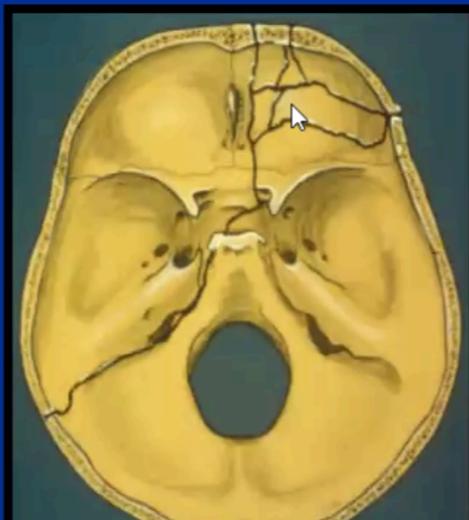
Outbending – Weakness

“Buckling” Fracture – Weak Area



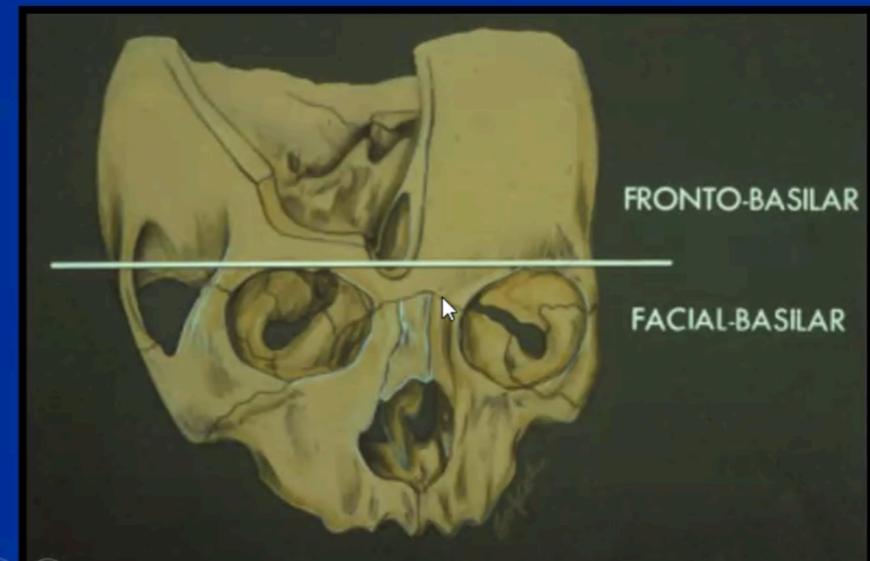
## Type III Fronto Basilar Fracture

- Comminuted Fracture Vault (3 Areas)
- Comminuted Fracture Anterior Cranial Base
- Linear Fracture Middle Cranial Base



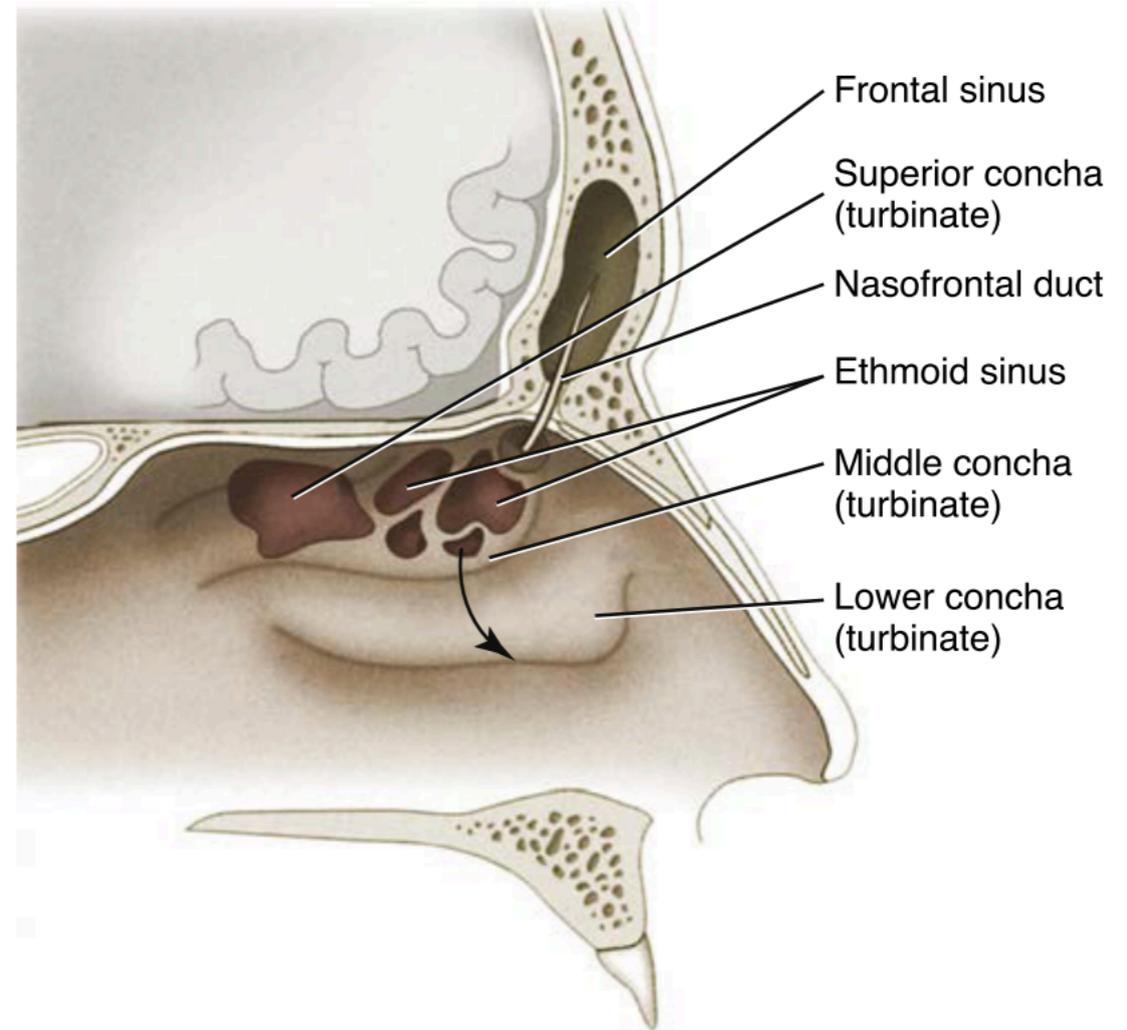
## Classification Of Frontobasilar Fractures

Types  
Areas



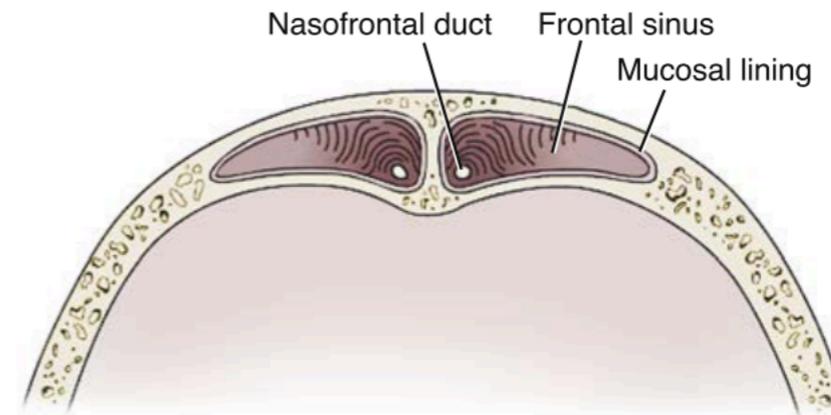
- 5-15% di tutte le fratture facciali dell'adulto
- complicanze gravi a breve-medio termine sia a livello di seni frontali che encefalici

# Fratture Frontobasilari Anatomia Chirurgica

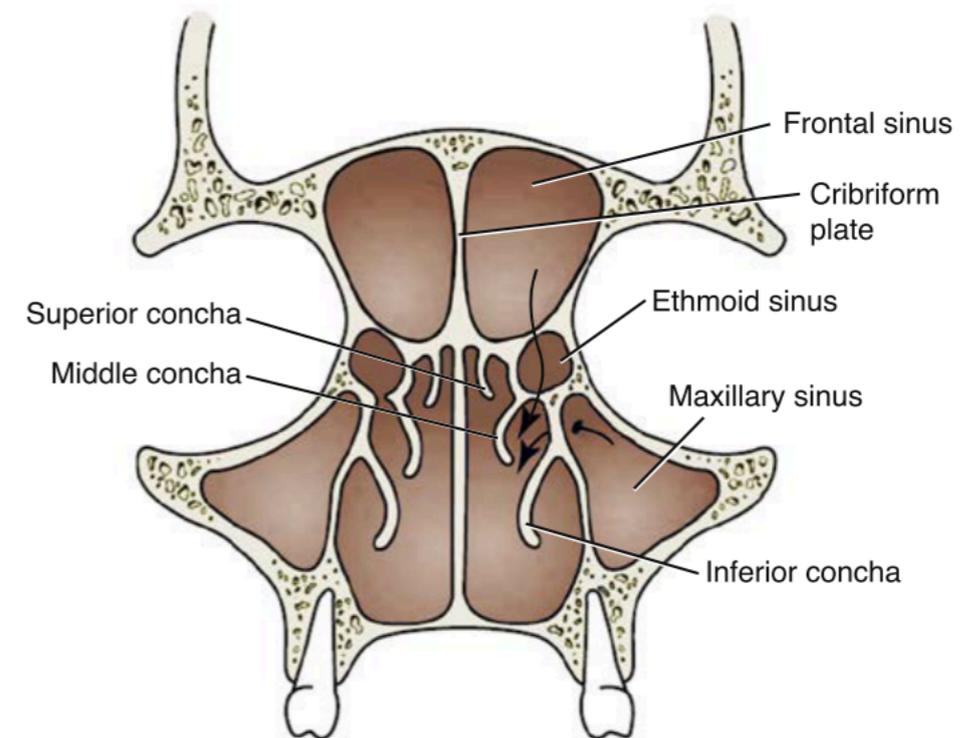


• **Figure 11-1** Sagittal view of the frontal sinus with the drainage pathway of the nasofrontal ducts.

# Fratture Frontobasilari Anatomia Chirurgica



• **Figure 11-2** Axial view of the frontal sinus; note medial and posterior location of the nasofrontal ducts.



• **Figure 11-3** Coronal view of the frontal sinus.

# Fratture Frontobasilari

## Anatomia Chirurgica

### Anatomia Chirurgica

il pavimento del seno forma parte del tetto dell'orbita

la parete posteriore separa dalla f.c. anteriore

il dotto nasofrontale comunica con il meato medio

# Fratture Frontobasilari

## Clinica

- Flc cute fronte
- deformazione
- fistola liquorale (beta2transferrina **con elettroforesi**)
- ecchimosi periorbitaria
- ipoparestesia V1
- tumefazione
- crepitio

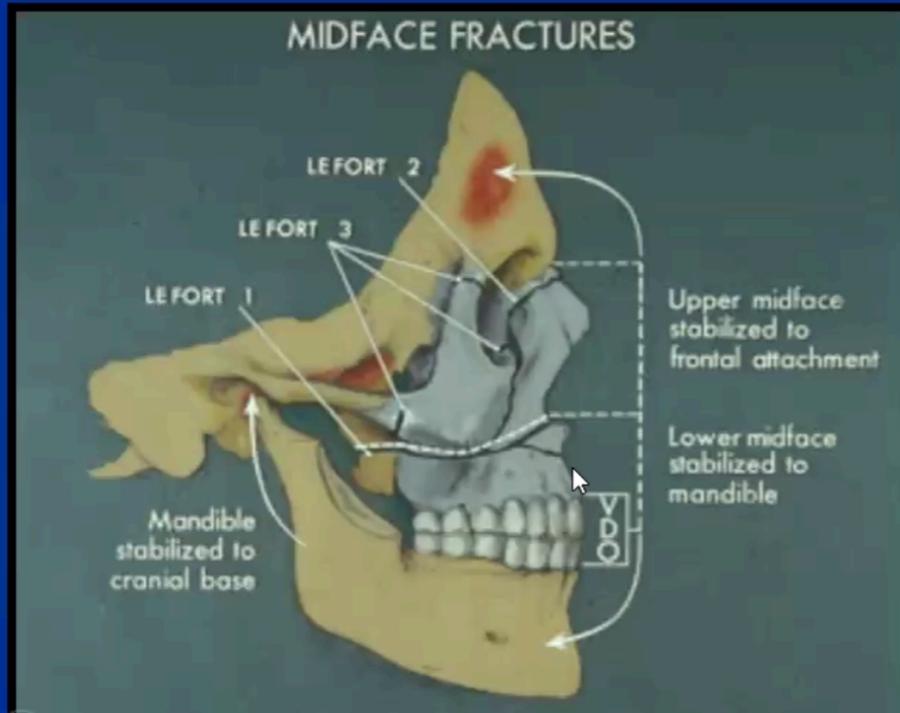


- **Figure 11-8** Cerebrospinal fluid (CSF) halo test; blood in the middle and CSF along the periphery.

- **TC ASSIALE:** valutazione teca esterna ed interna, lesioni cerebrali (TC con mdc)
- **TC CORONALE:** valutazione dotto frontonasale

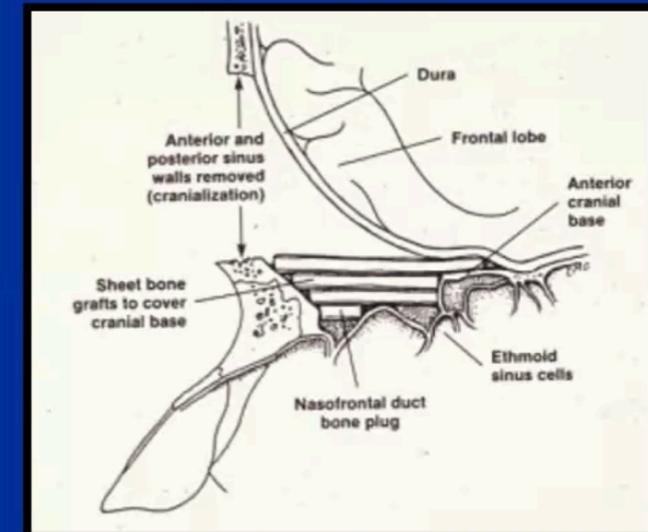
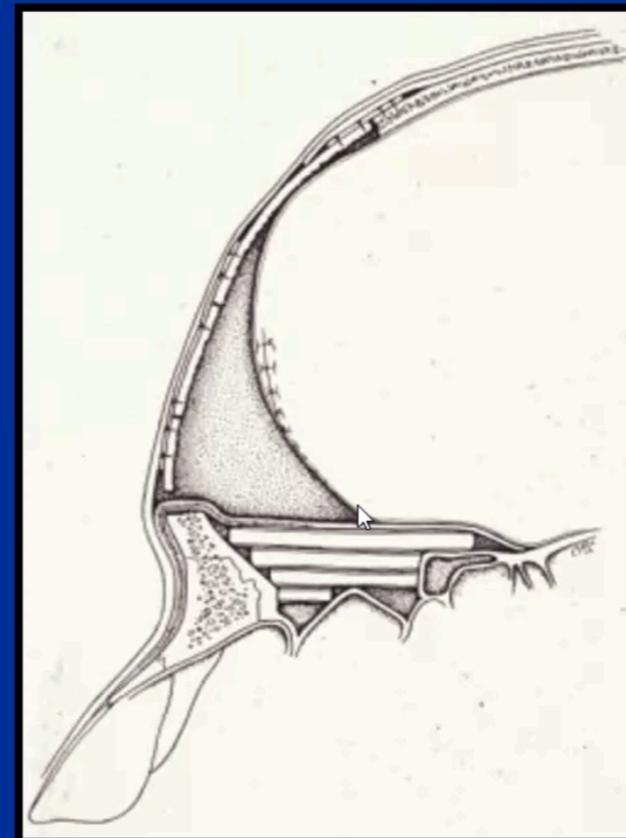
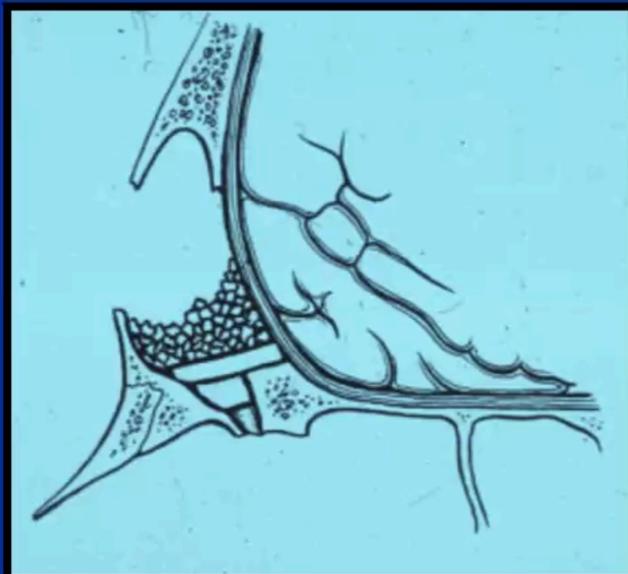
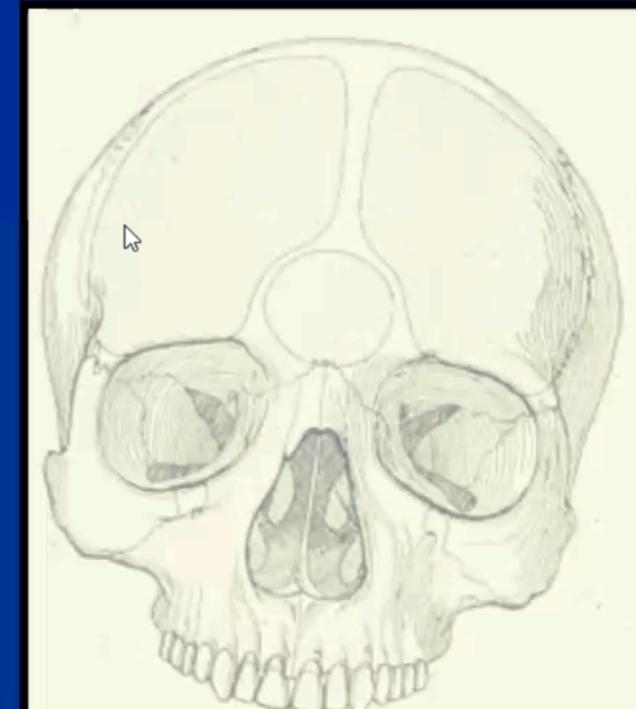
# Midface Fractures

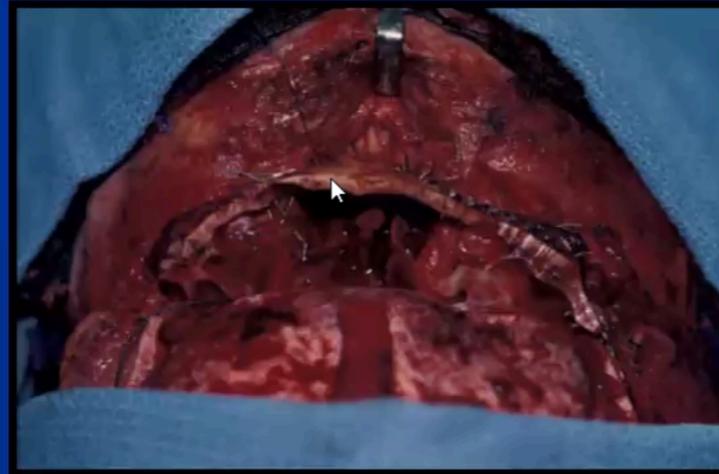
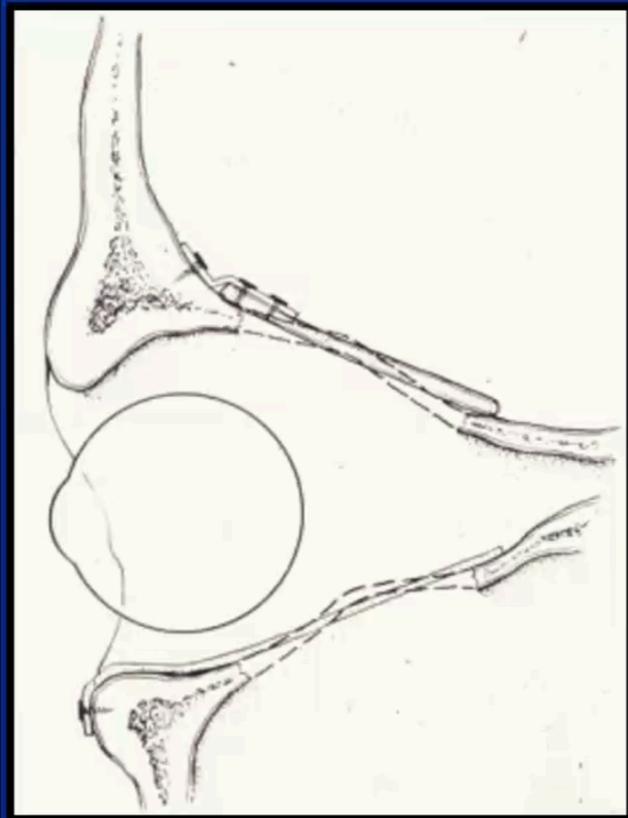
Areas of Strength  
Lines of Weakness



# LeFort IV or Frontal Bone Fractures

Areas of Weakness  
Lines of Strength



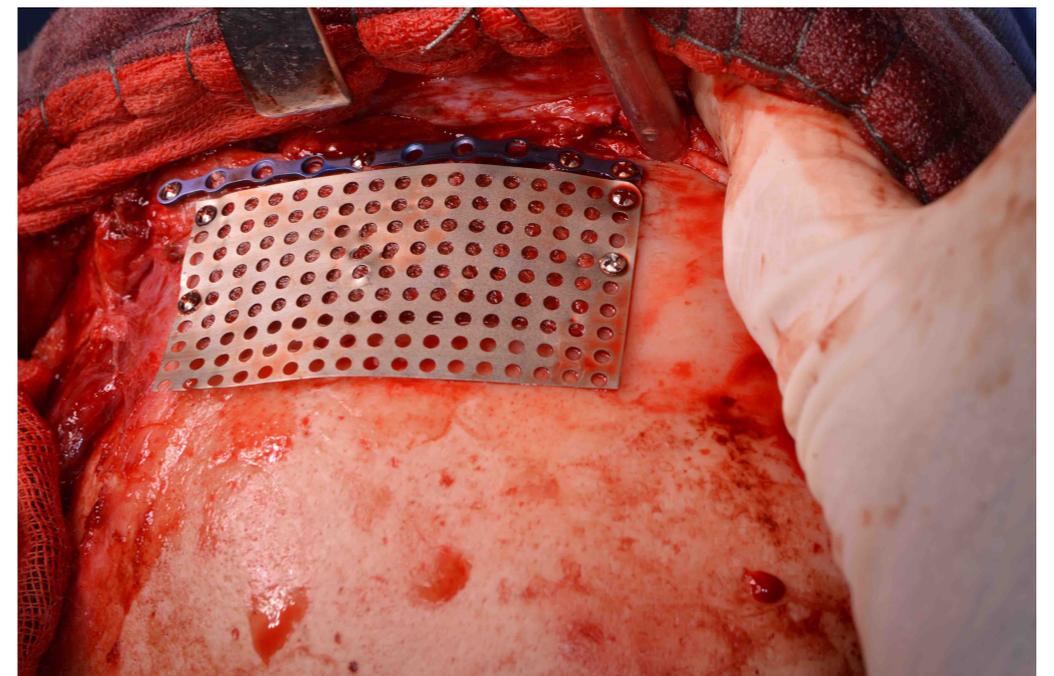
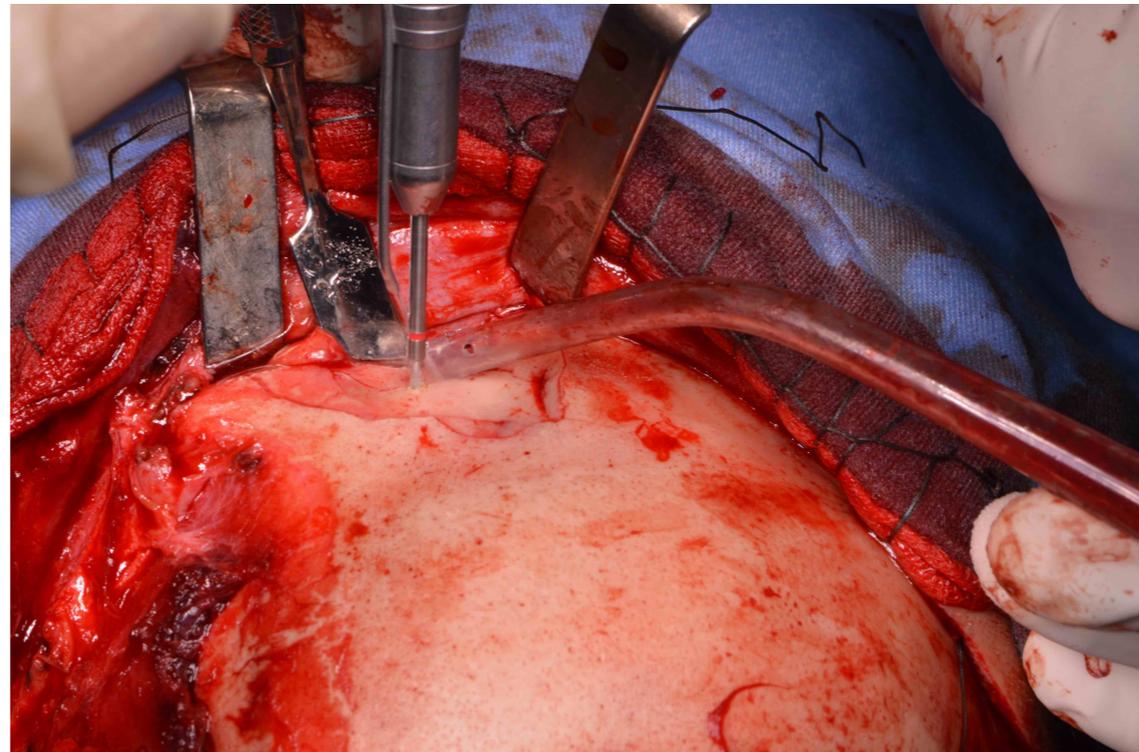


**Cranialization Better Than  
Obliteration**

# FRATTURE FRONTOBASILARI

Gestione

Accesso coronale



# Fratture frontobasilari

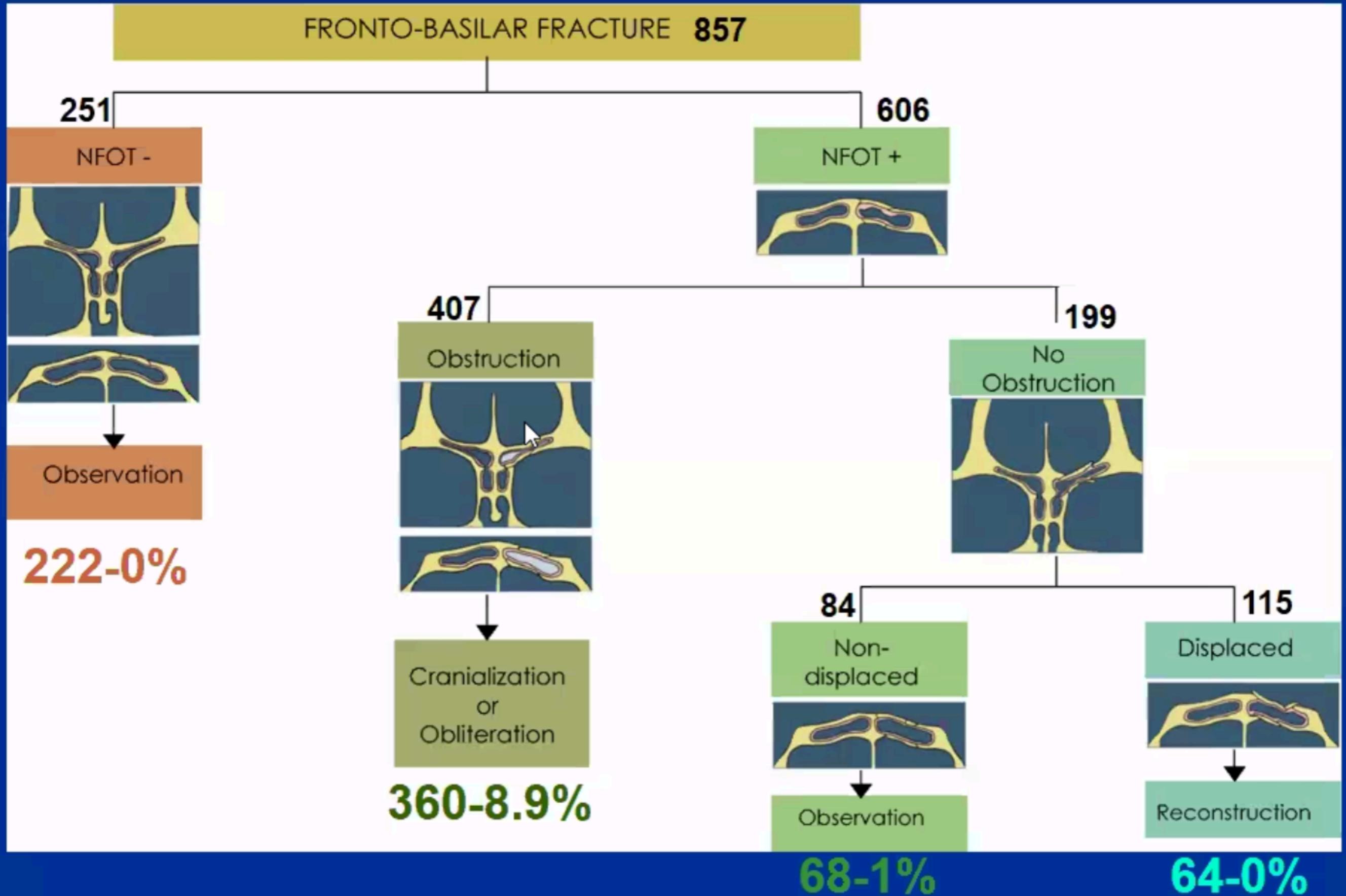
Gestione in funzione di tre fattori: tavolato anteriore, tavolato posteriore, dotto frontonasale:

- solo anteriore, dotto drenante: osservazione o riduzione
- anteriore e dotto non drenante: obliterazione (grasso, bone chips, lembo di galea) e riduzione
- anteriore, posteriore senza liquorrea: vedi precedenti
- anteriore, posteriore con liquorrea: cranializzazione (rimozione di tutti i frammenti e riparazione della dura) e obliterazione.

# Fratture frontobasilari

La pervietà del dotto si valuta iniettando nel seno fluorescenza o blu di metilene per poi osservarne il drenaggio nel meato medio

# Frontal-Basilar Injury Treatment Algorithm



# Conclusions

- A treatment algorithm of frontal-basilar injury was statistically validated
- Patients without NFOT injury can be safely observed
- Patients with NFOT injury & frank obstruction require obliteration or cranialization
- Obliteration of the sino-nasal cavity with vascularized free tissue holds promise for persistent infections

# Fratture frontobasilarì

## COMPLICANZE ACUTE:

- Infezione della ferita: pulizia, sbrigliamento, drenaggio antibiotici
- Infezione nel seno del suo nuovo contenuto: reintervento di debridement
- Meningite ed ascesso intracranico: reintervento in urgenza
- Persistenza di liquorrea: capo in posizione elevata, drenaggio lombare, reintervento

# Fratture frontobasilari

## COMPLICANZE CRONICHE:

- Mucocele frontale: nel caso siano rimasti frammenti di epitelio, può complicarsi in mucopiocele; necessita di intervento, può diffondere nell'encefalo.
- Deformità cosmetica: necessita di cranioplastica auto (calvaria, costa) o eterologa (PEEK, Titanio)
- Cefalea cronica e/o disturbi neurologici