

3D Printing In Orbital Reconstruction

Advances and clinical applications

**Mahmoud Deif
Occuloplastic fellow , RIO**

What is 3D printing ?

- Additive manufacturing.
- Creating three dimensional object from a digital design.



Basic workflow :

- 3D digital model
- Slicing software
- 3D printer

Materials used :

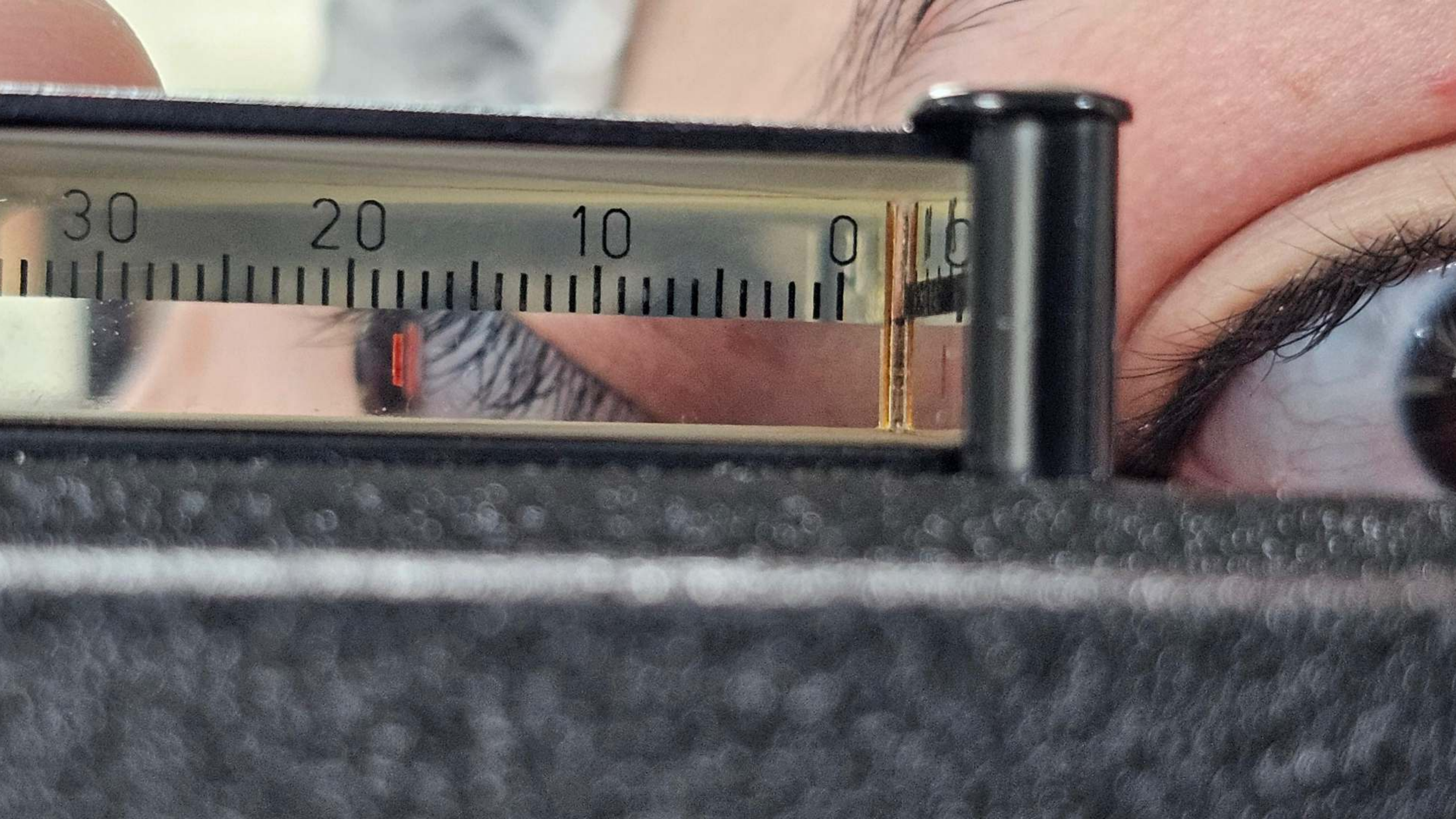
- Polymers and plastics
- Metals (e.g., Titanium)
- Photopolymer resins
- Biocompatible and biodegradable materials.

- Complex geometries
- Customised and patient specific
- Rapid prototyping
- Reduces material waste

An example of clinical application :

- 16 years F
- Free medical & ophthalmic history
- Proptosis
- Orbital pain and swelling







1.860mm/5.62 0.56231 AVERAGE

1.05 /HE 06:27:24 PM/00.00

P 29

1.860mm/5.62 0.56231 AVERAGE

P 29

1.860mm/5.62 0.56231 AVERAGE

Optima CT520 Series SYSNCT99 A 102
DOKKI SCAN AL HAWAMDI
ACC Num:240129349
EX: 3481
NADA MOHAMED AHMED
F 17 638570
EM 16.54 AX
Im: 12
DFOV 25.0cm
STND/+E/SS40
MF:1.9
29 Jan 2024

S I R

KV 120
MA 295

1.860mm/5.62 0.56231 AVERAGE

1.05 /HE 06:27:24 PM/00.00

P 29

Optima CT520 Series SYSNCT99 A 102

DOKKI SCAN AL HAWAMDI

ACC Num:240129349
EX: 3481
NADA MOHAMED AHMED
F 17 638570
EM 14.36 AX
Im: 13

29 Jan 2024
512
DFOV 25.0cm
STND/+E/SS40
MF:1.9

S I R

KV 120
MA 295

1.860mm/5.62 0.56231 AVERAGE

1.05 /HE 06:27:24 PM/00.00

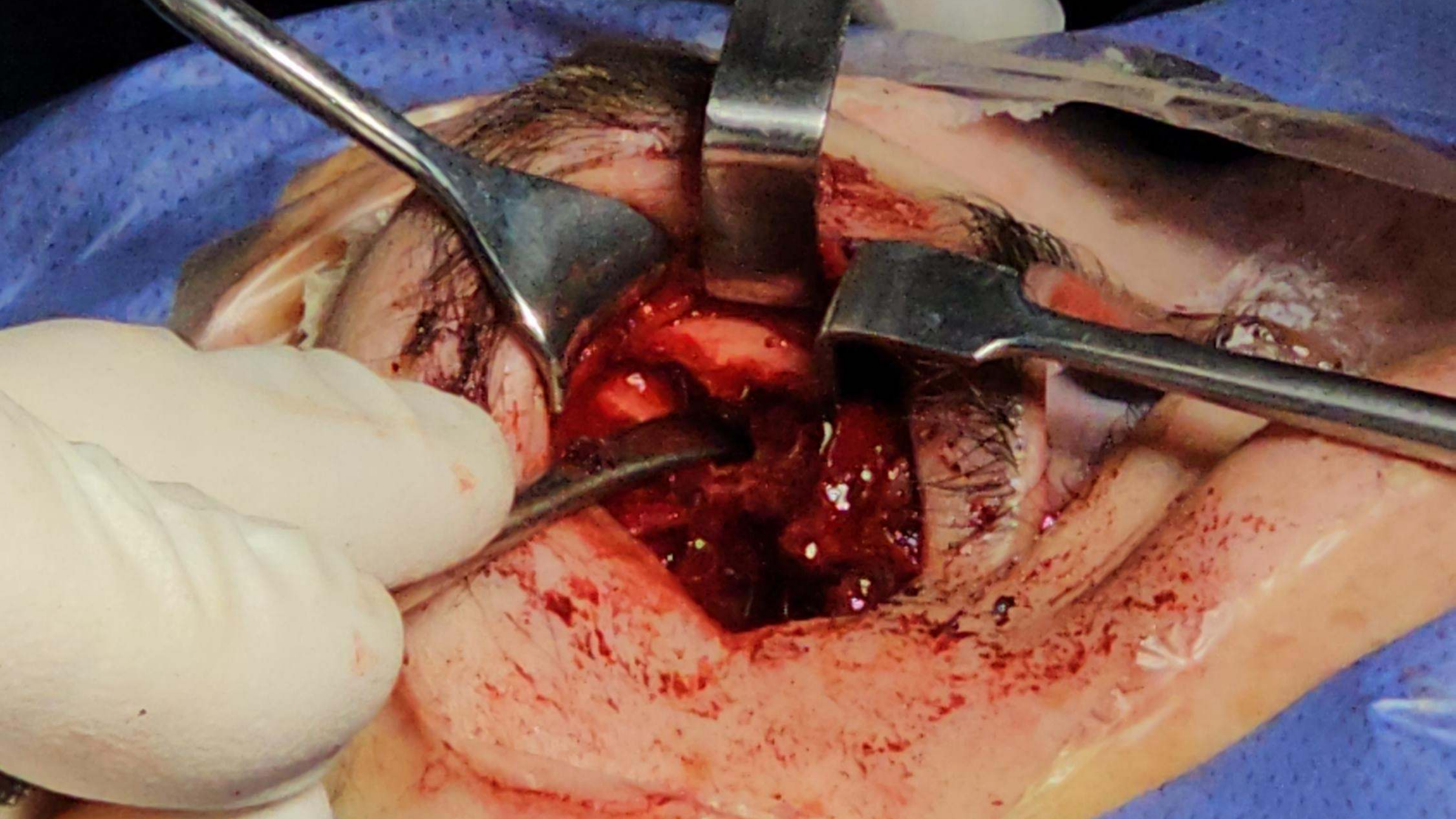
1.860mm/5.62 0.56231 AVERAGE

1.05 /HE 06:27:24 PM/00.00

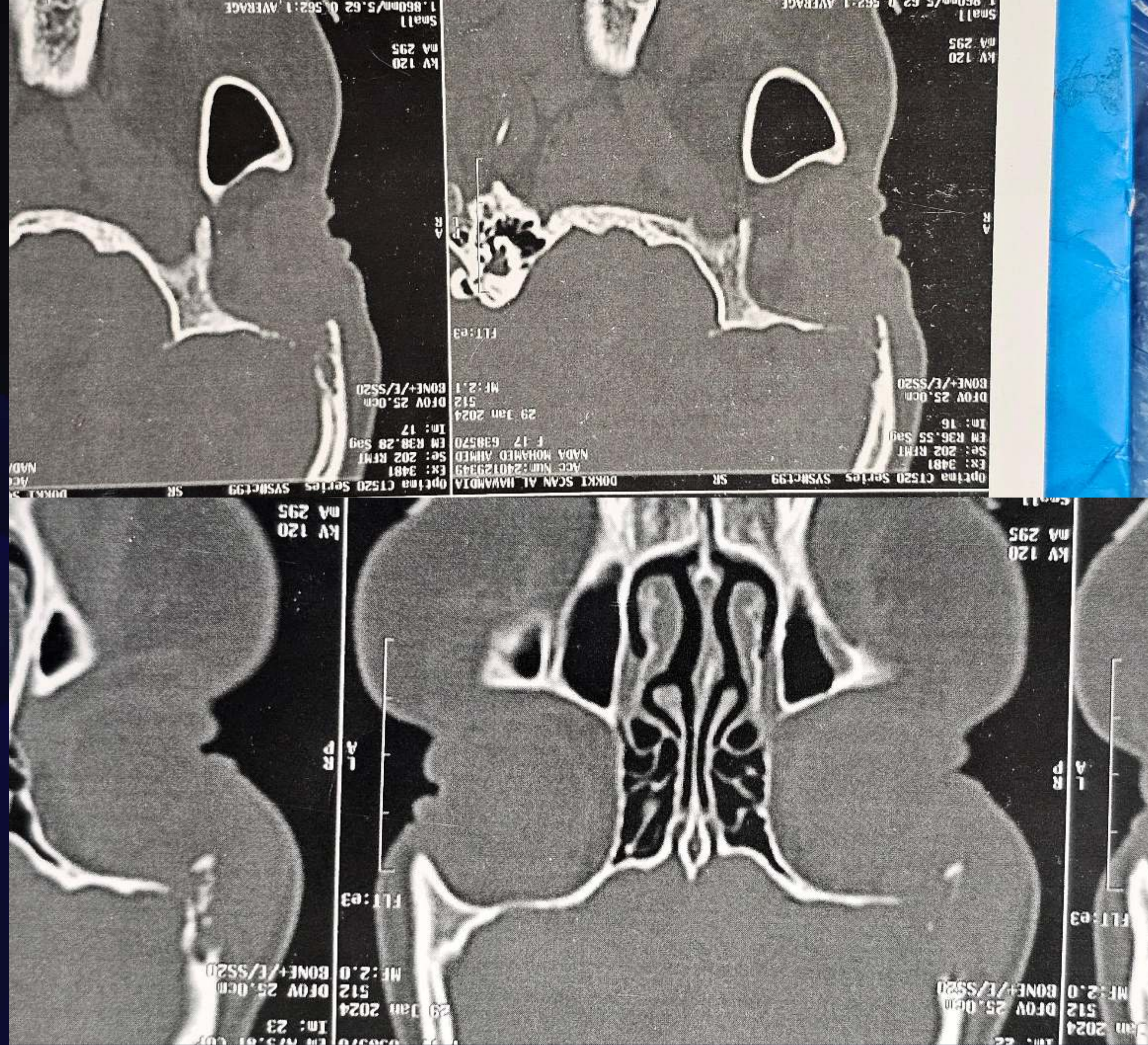
Intra-operative plan change !

- Osteomyelitis and necrotic bone

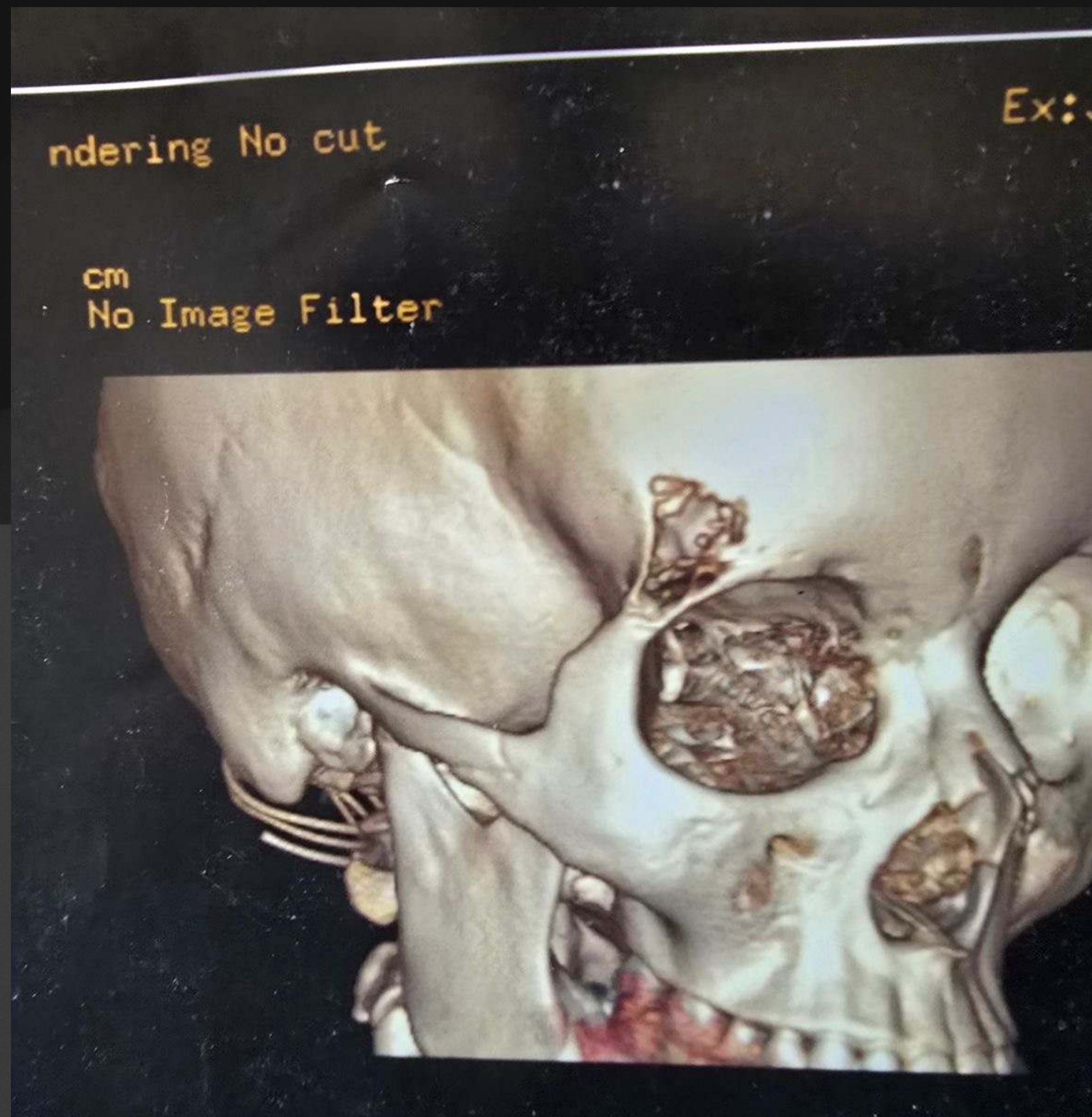




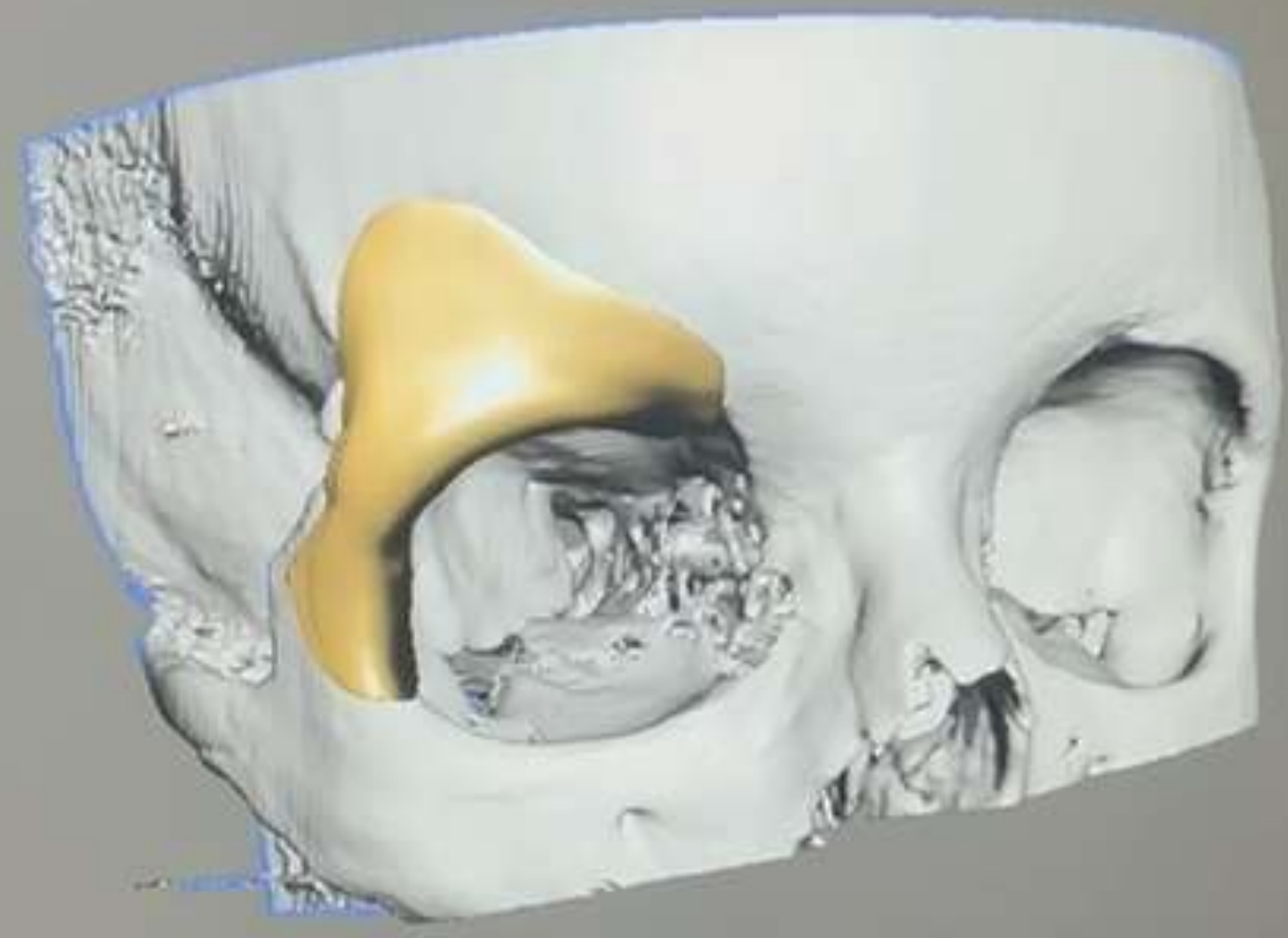
Postoperative challenge ;

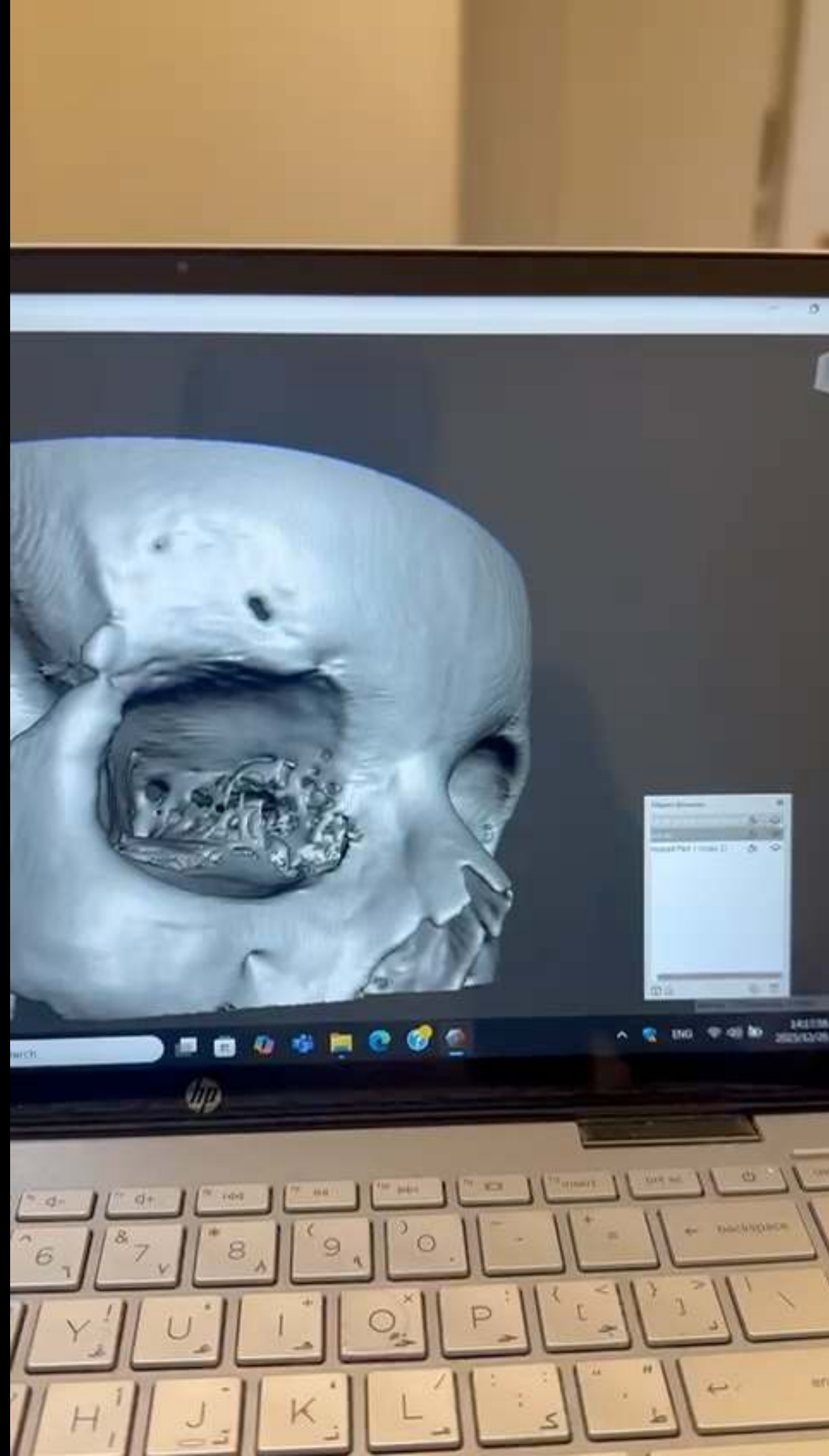


Post operative:

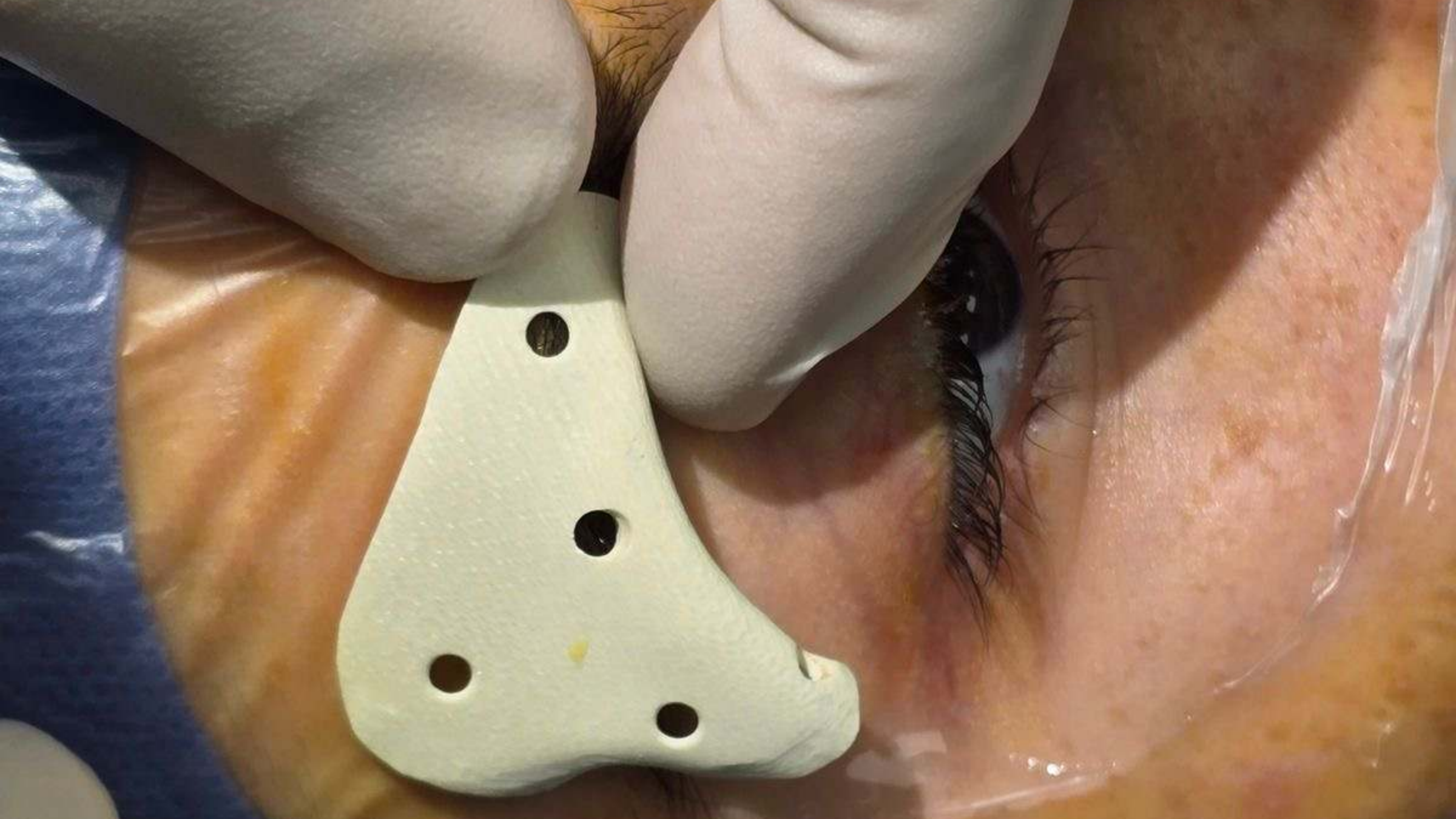


How we utilised 3D printing to address the Issue !









Post operative :



Without 3D printing would we
ever reach a better result ?!

Take home message :

- Whatever your sub-speciality , start innovation now , start using 3D printing to make better customised prothesis , surgical consumables and even instruments.



Thank you !