

4th International Congress of the Iranian Society of Oral & Maxillofacial Surgeons



3D comparison of swelling after orthognatic surgery by using Hilotherm®

Majeed Rana • Wolfgang Kater

Department for Oral and Maxillofacial Surgery • Bad Homburg • Germany

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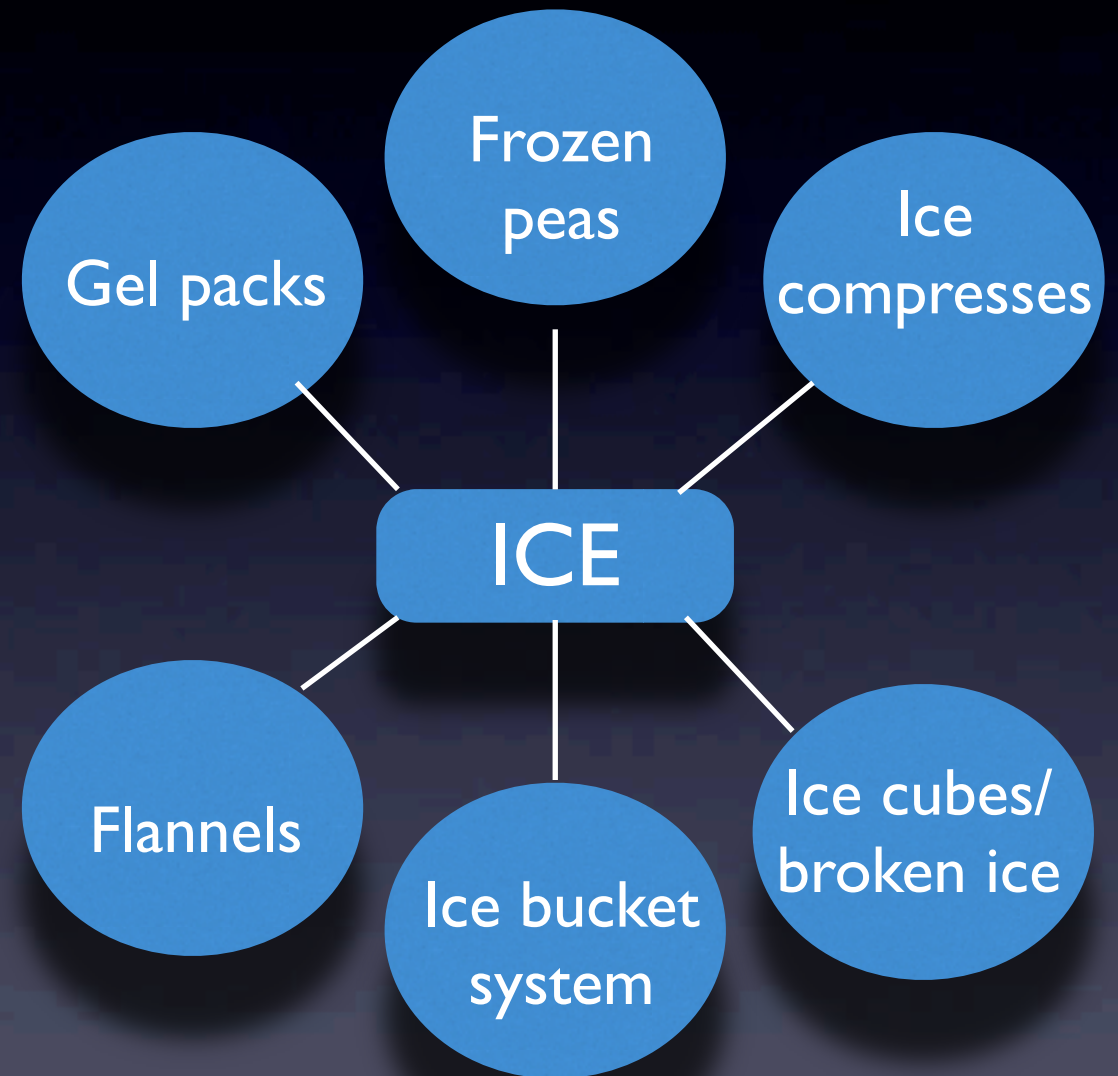
3D comparison of swelling after orthognatic surgery by using Hilotherm®

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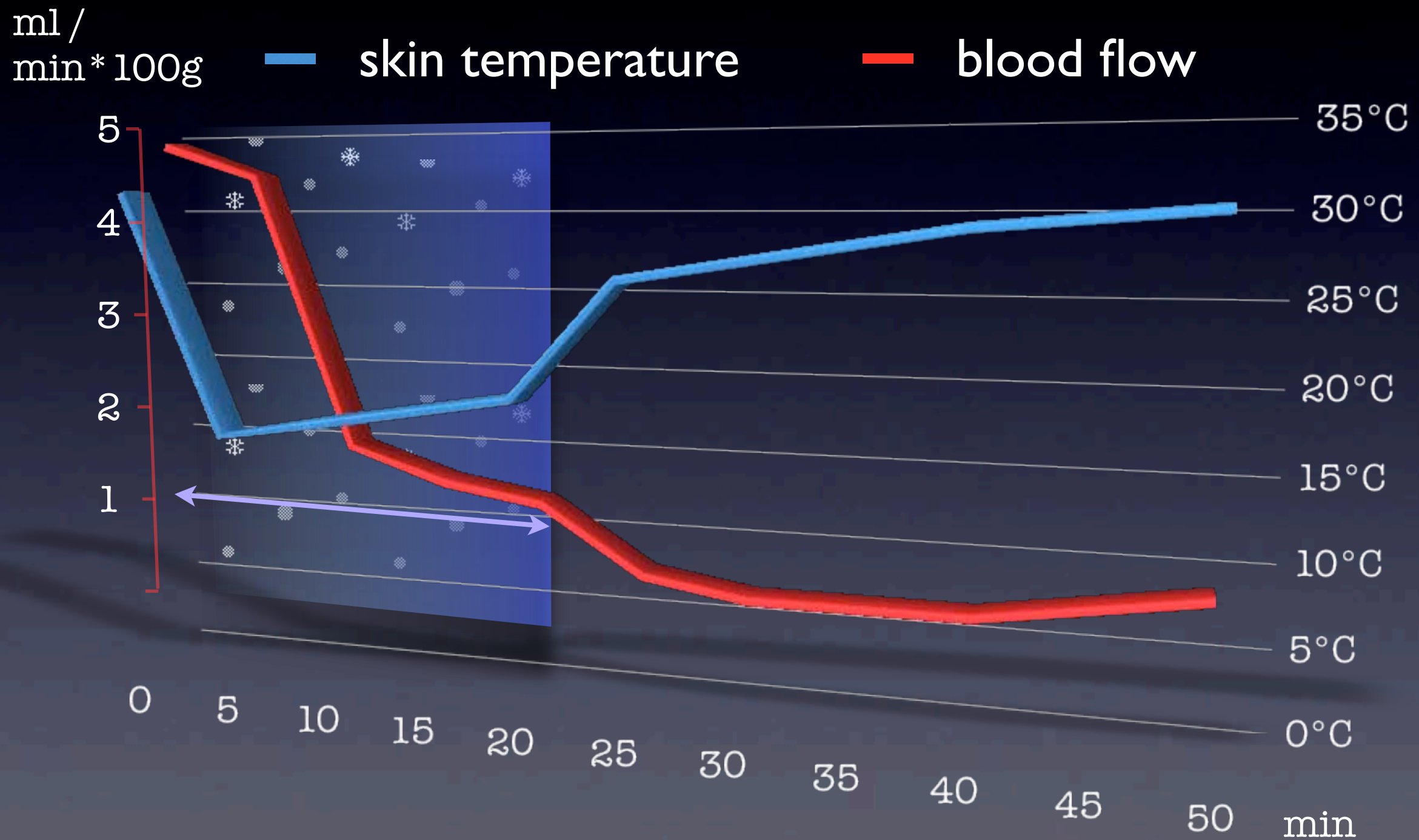
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Problems with traditional coolants

- Aggressive cold treatments
- Temperature regulation
- Coolant replacement
- Increased burden on the nurses and health care workers



Skin temperature and blood flow after cold application



Hilotherm cooling mask



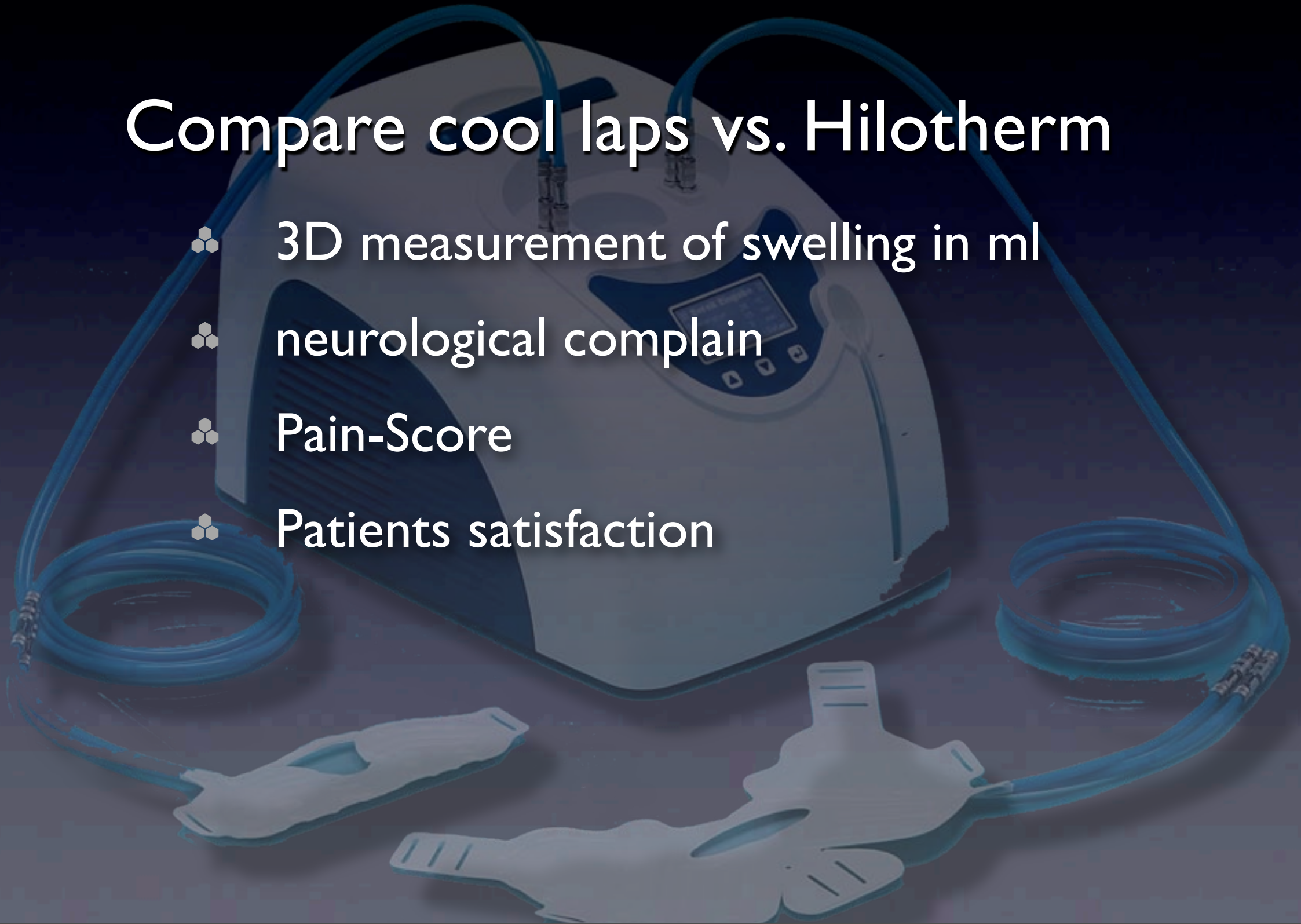
Prospective randomised clinical trial

- Aim of the study
- Operation technique
- Patients and method
- Results
- Conclusion

Aim of the study

Compare cool laps vs. Hilotherm

- ❖ 3D measurement of swelling in ml
- ❖ neurological complain
- ❖ Pain-Score
- ❖ Patients satisfaction



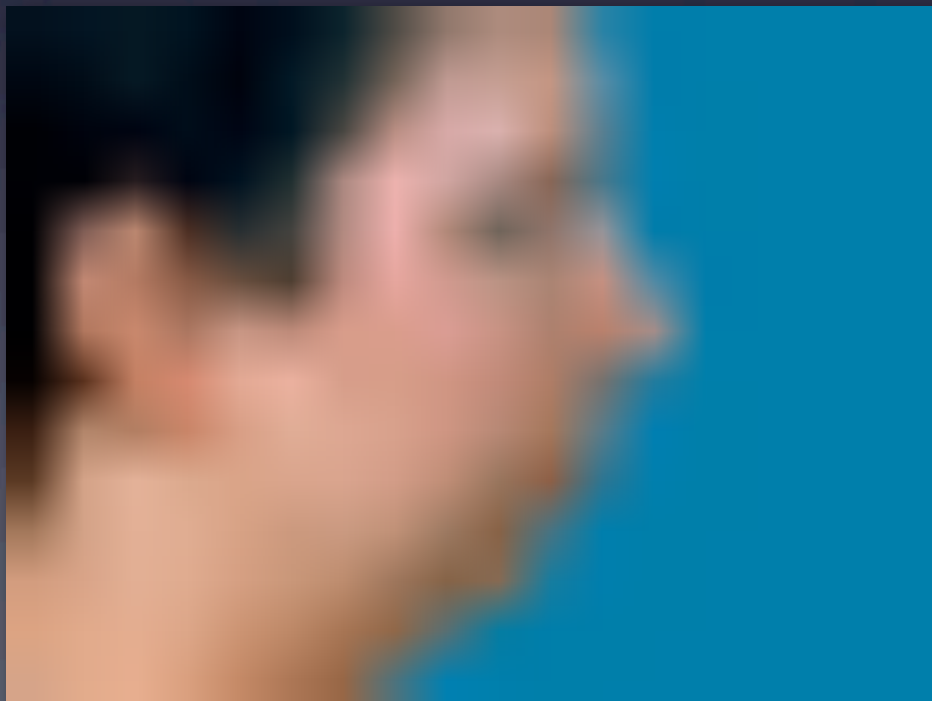
Operation techniques



bimaxillar osteotomy



Advancement of maxilla



Advancement of mandible

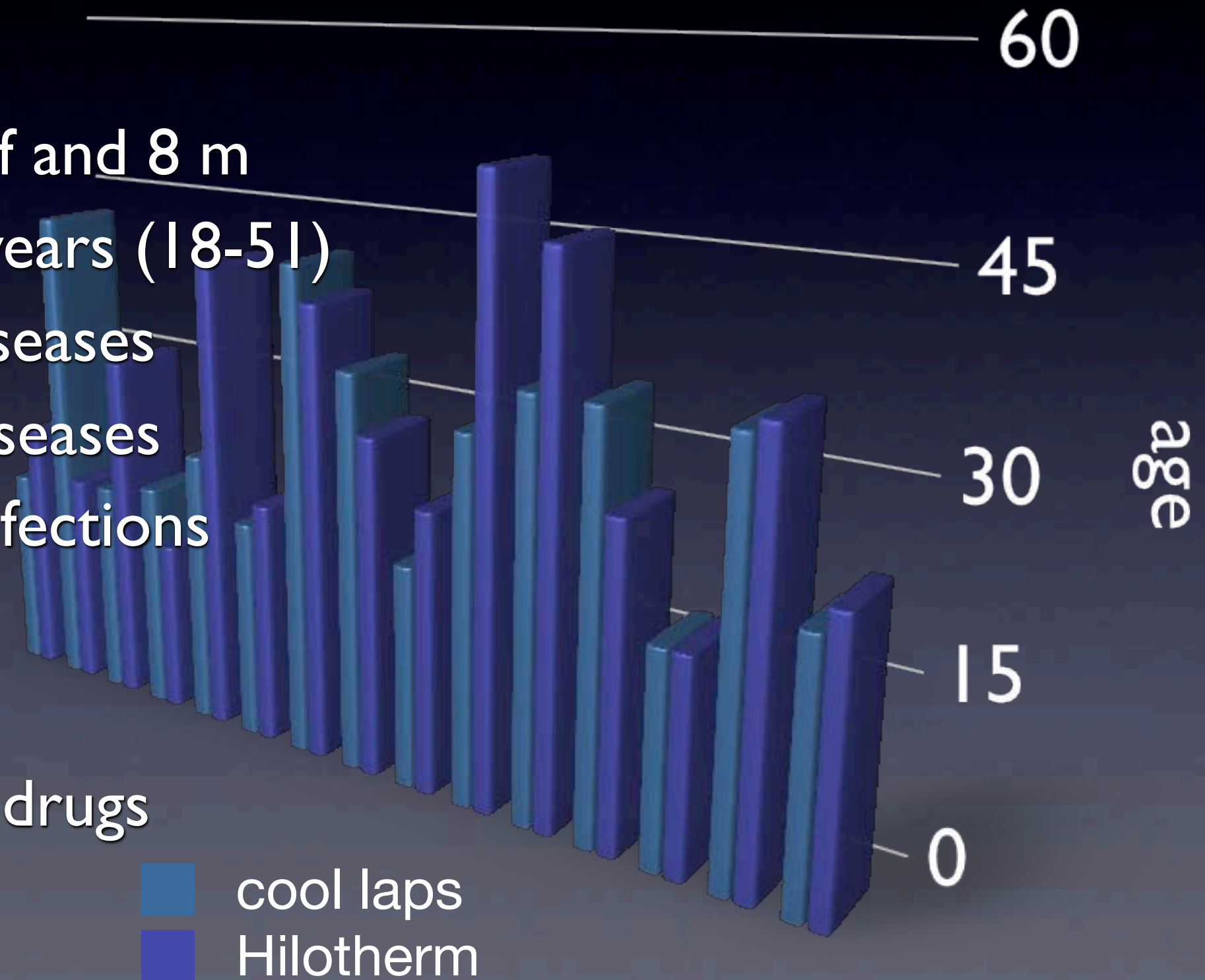


mandibular set -back

Patients and Method

Patients

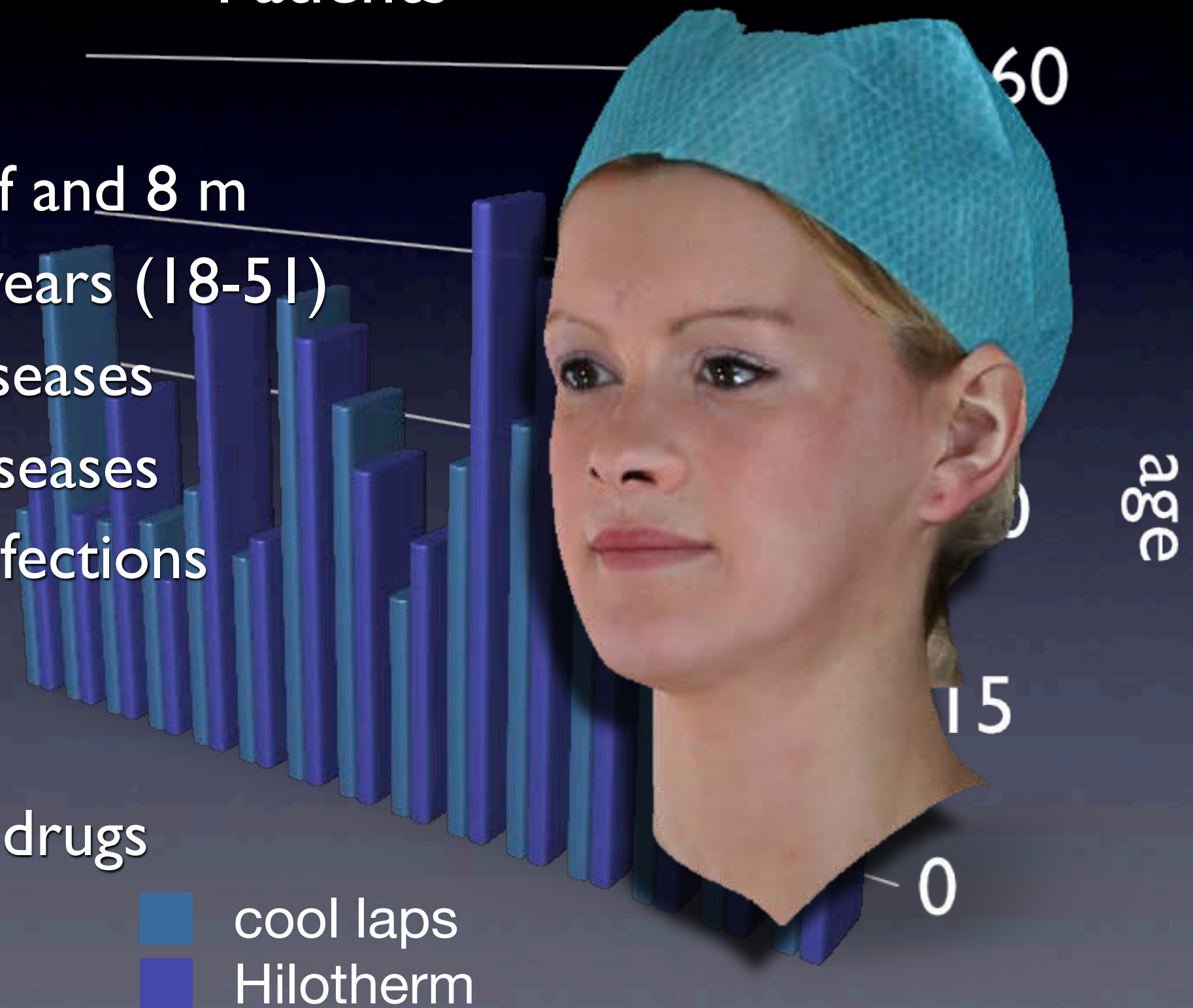
- 30 patients, 22 f and 8 m
- average 28,26 years (18-51)
- orthognatic deseases
- no systemic deseases
- no allergy or infections
- no syndroms
- no cleft patient
- no coagulation drugs



Patients and Method

Patients

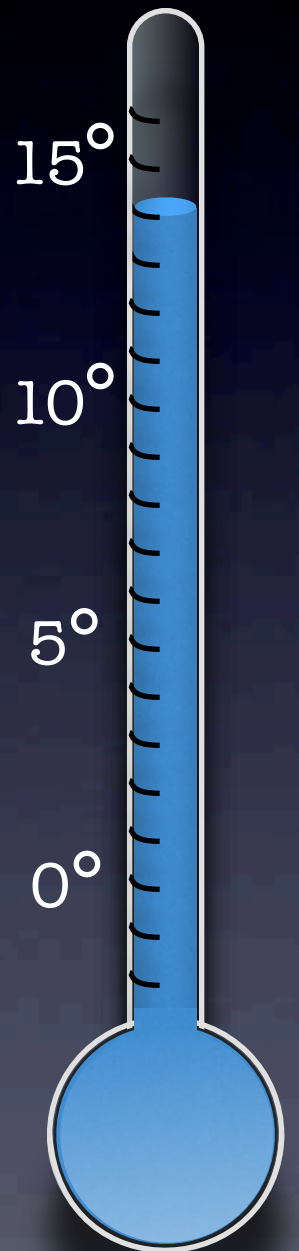
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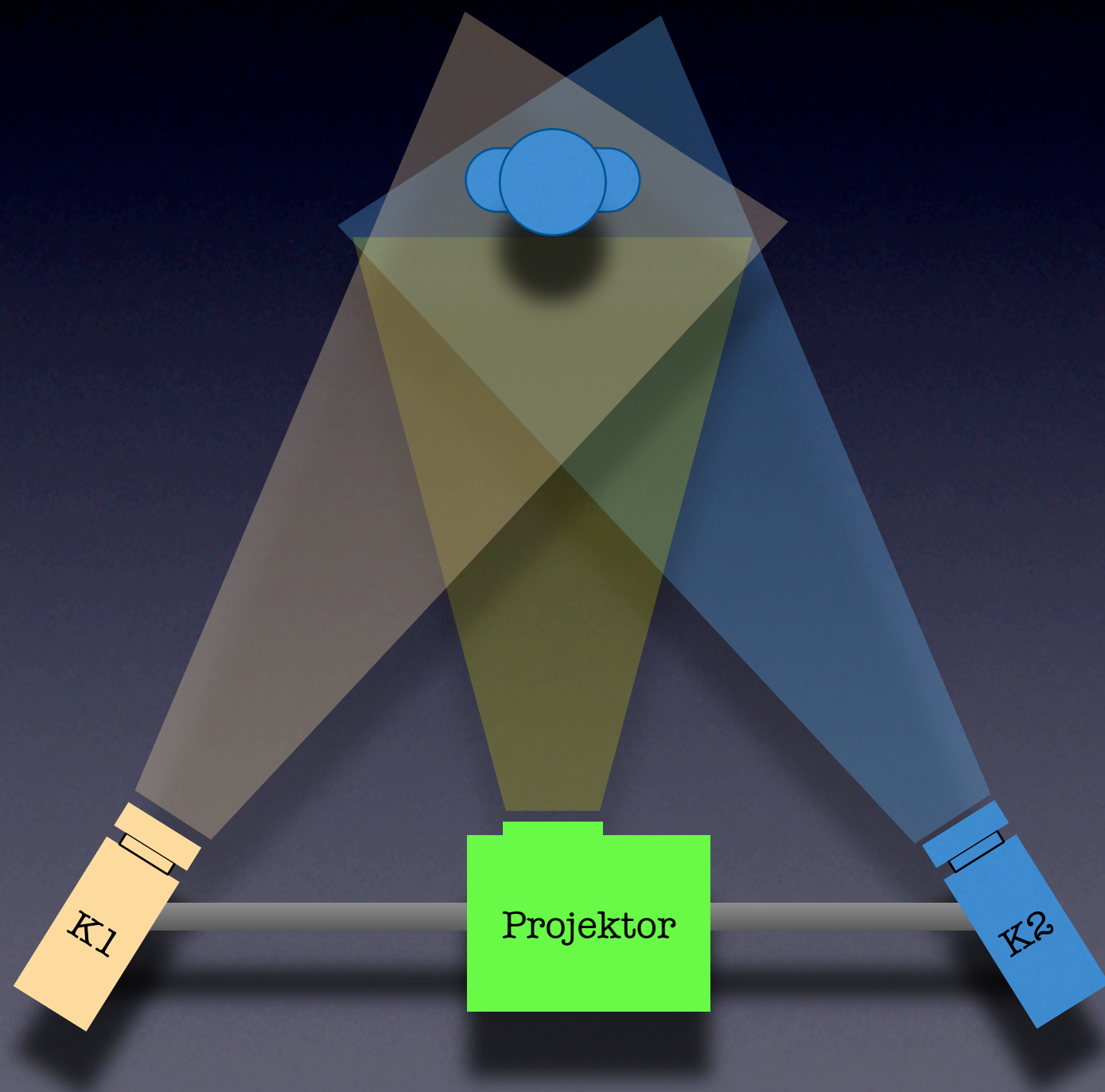
Patients and Method

Method

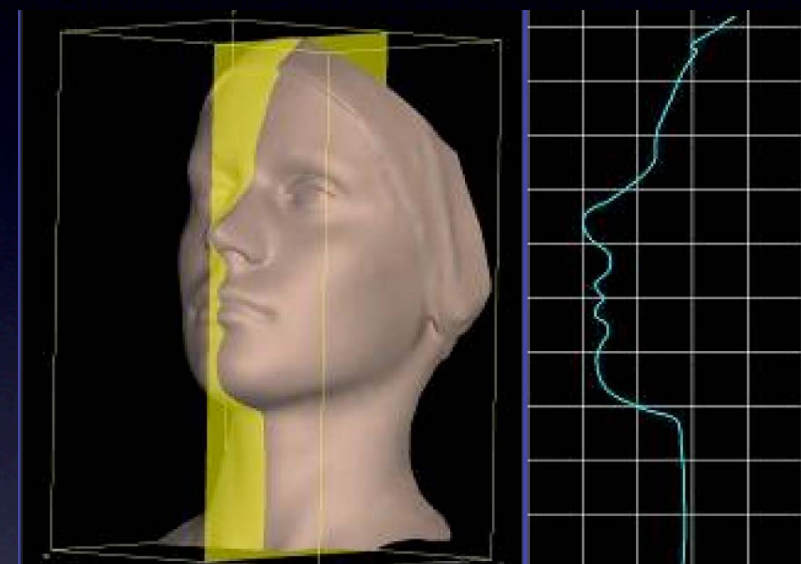
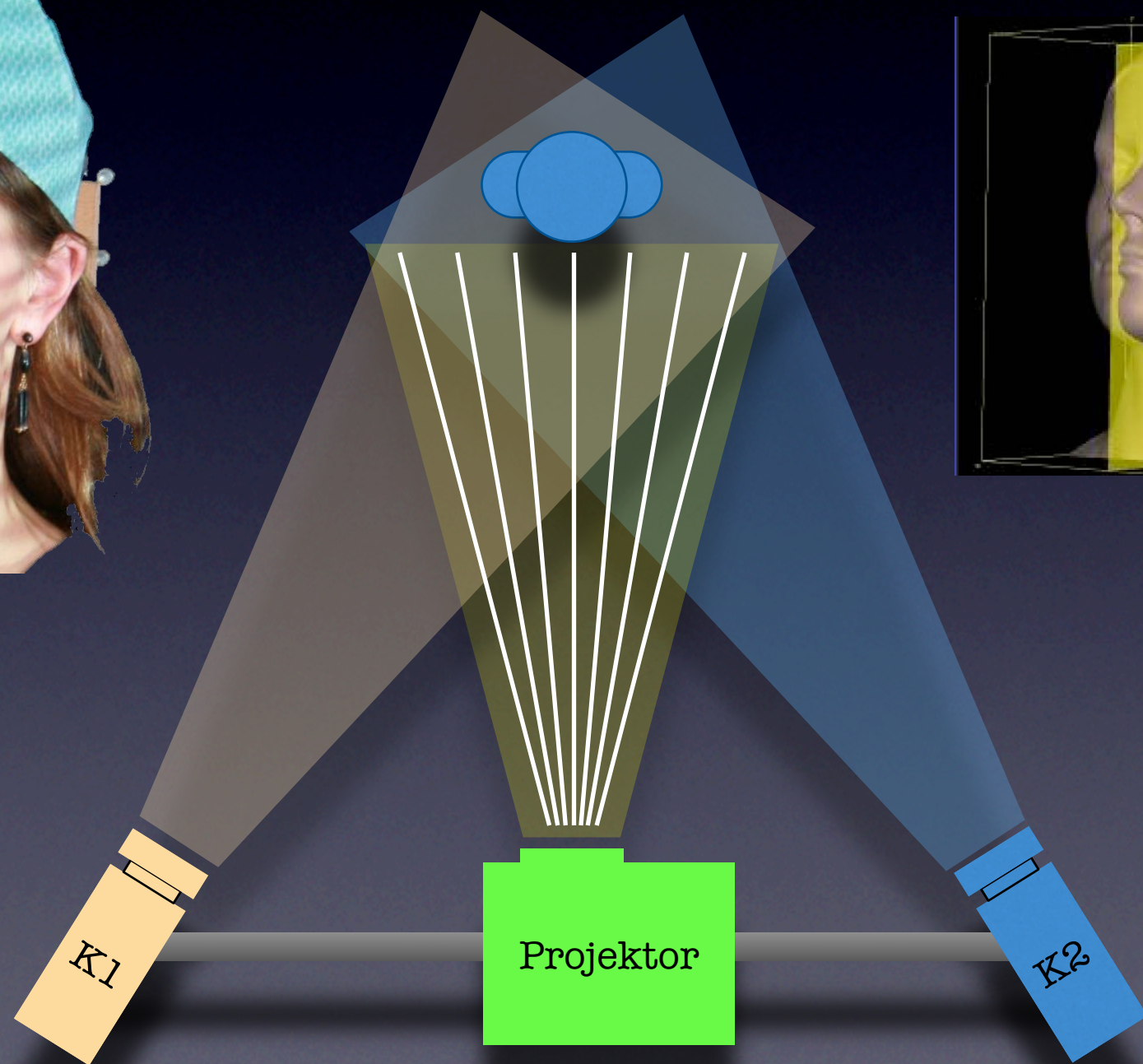
- 15 patients were treated daily 16 h for 3 days with hilotherm
- 15 patients were treated daily 16 h for 3 days with cool laps
- 3D optical Scan :
 - {pre Op (T0), 2nd (T1), 3rd (T2), 4th day (T3)}
- Pain score {2nd, 3rd, 4th day}
- neurological score {4th day and after 6 month}
- standard painkillers
- after 6 month 3D scan (T4) and questionnaire



3D-SHAPE Facescan®



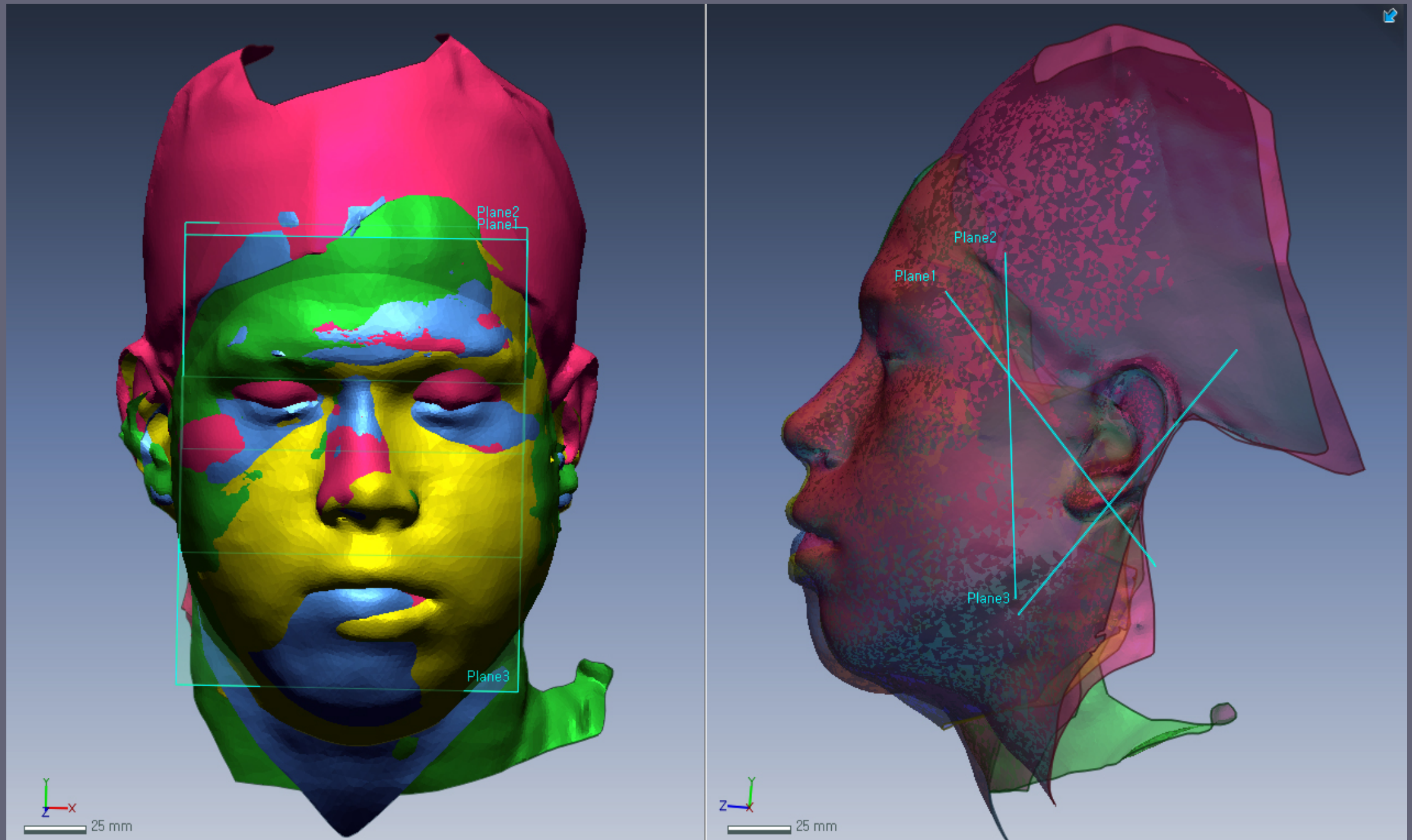
3D-SHAPE Facescan®



3D-Measuring solution from ear to ear by using a mirror construction and digital texture

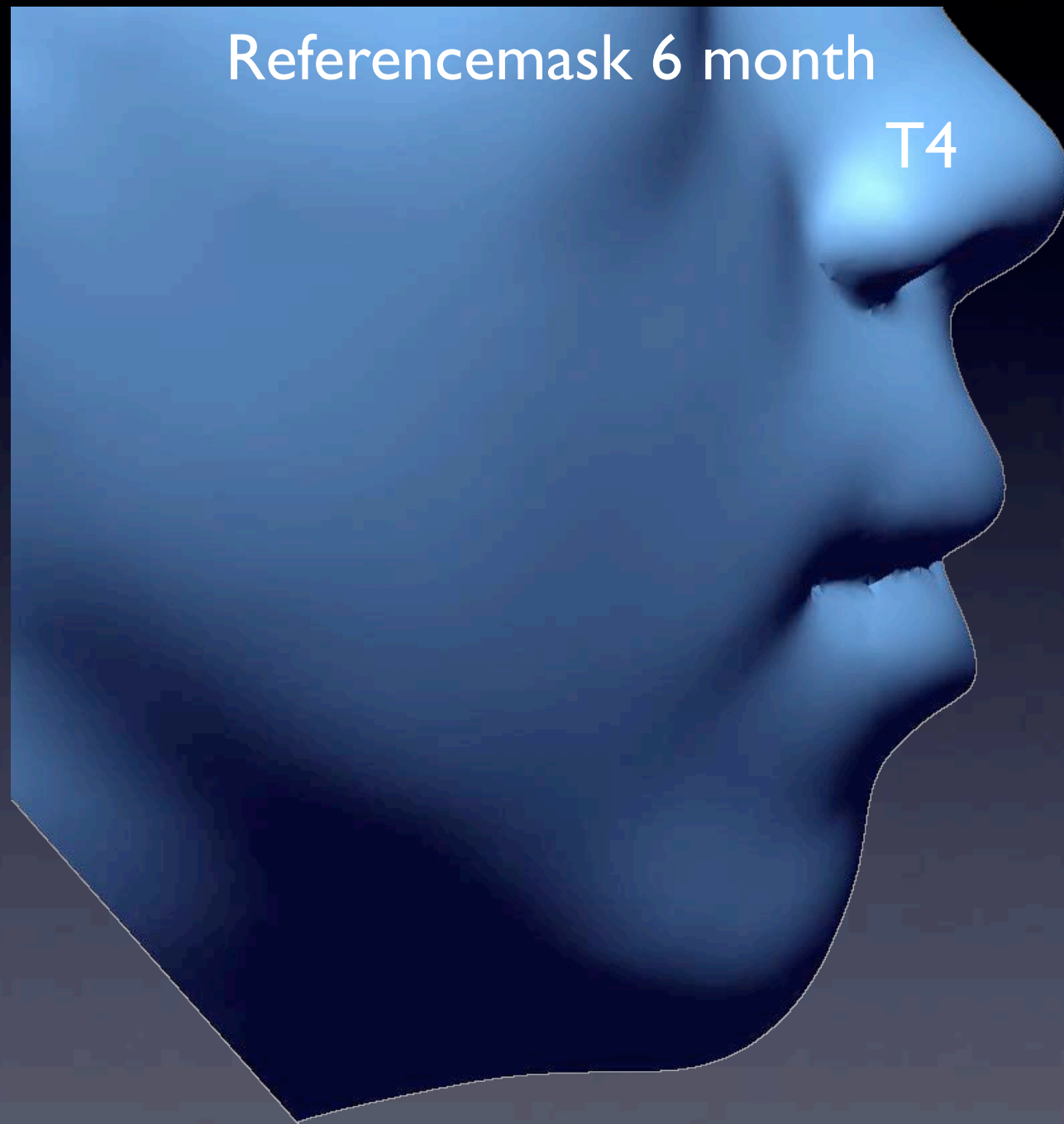


Aligned shell deviation

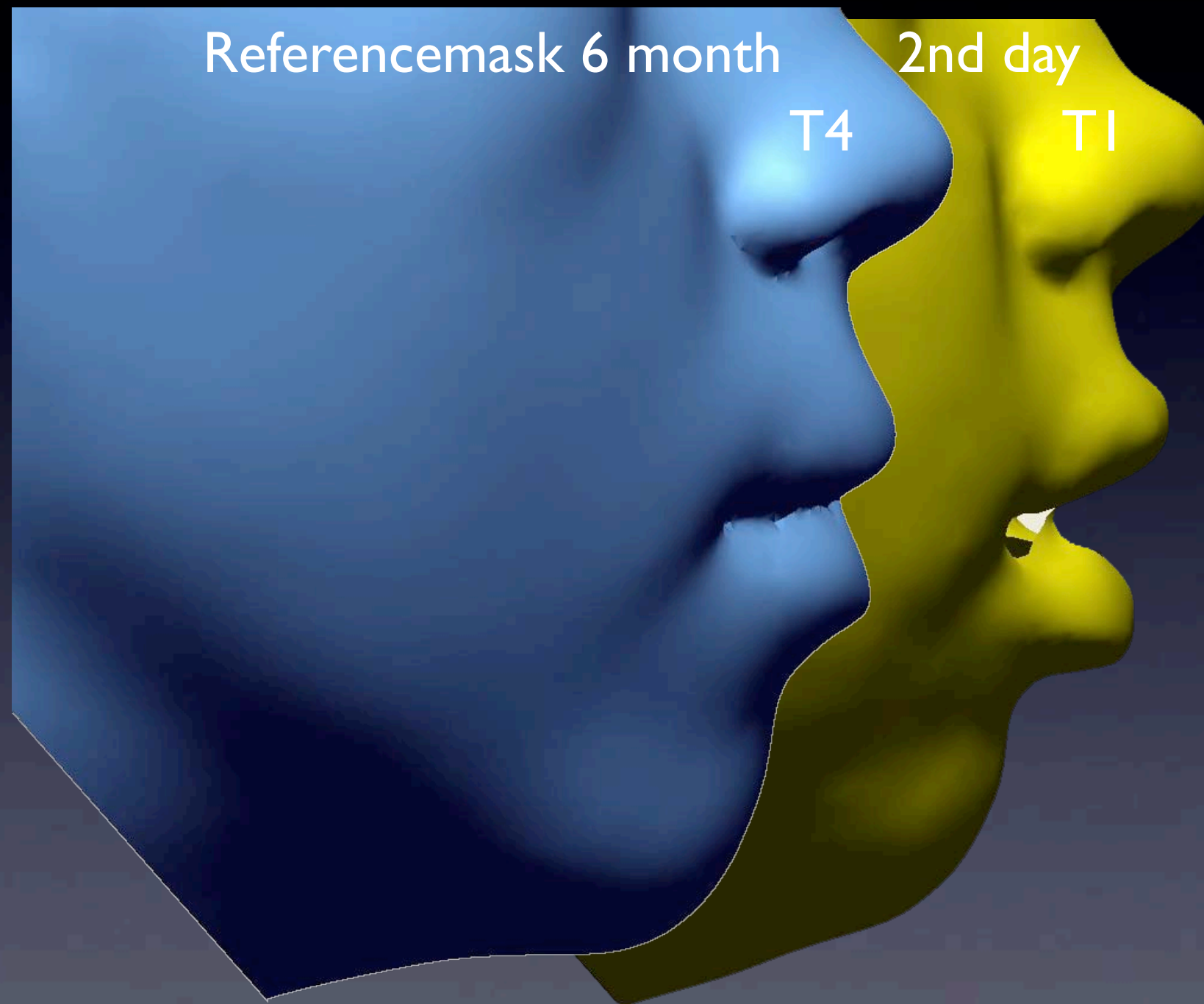


Create panel for cut off

Volumetric measurement



Volumetric measurement



153,27 ml
T4 vs. T1

Volumetric measurement



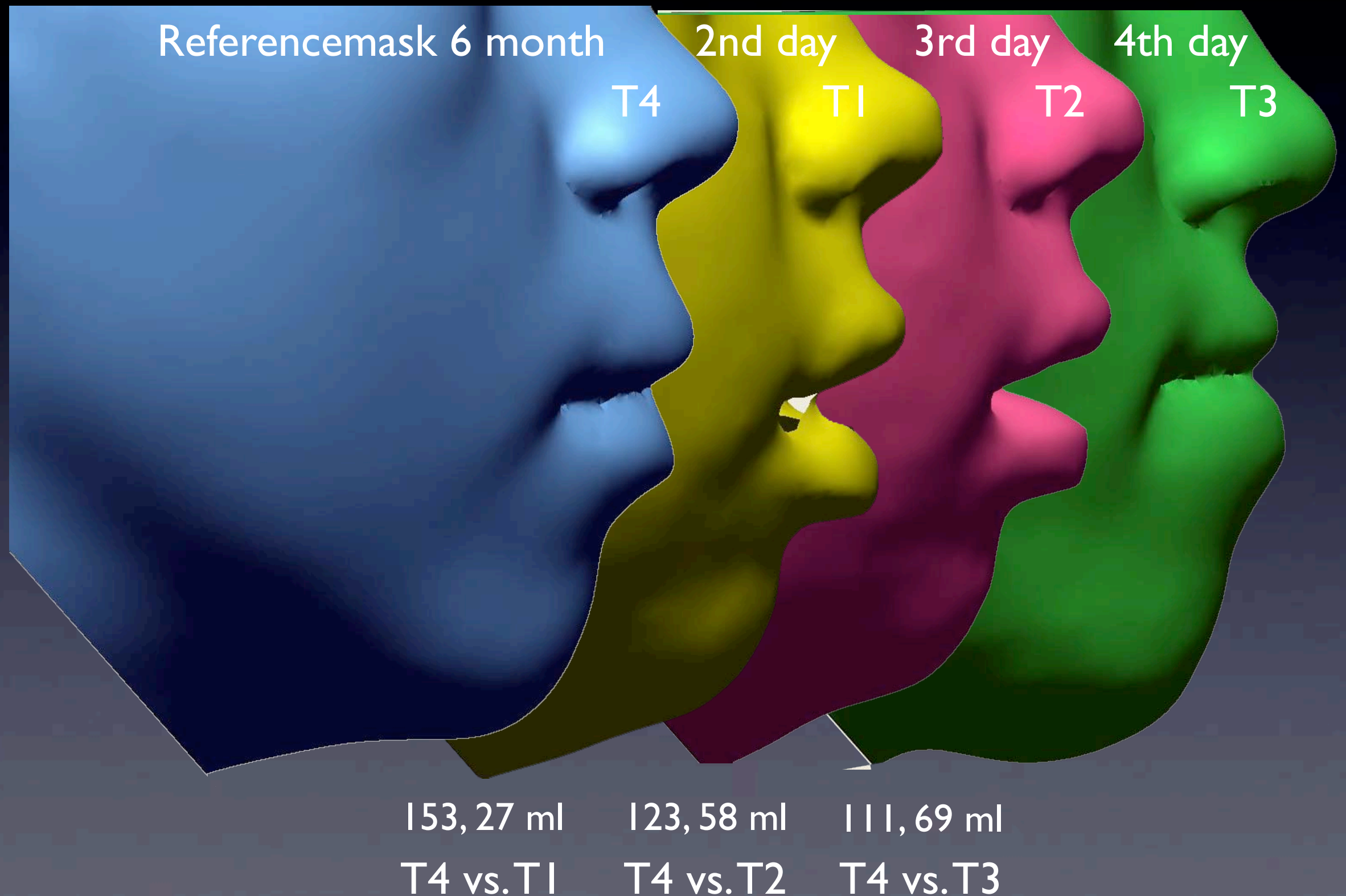
153, 27 ml

T4 vs. T1

123, 58 ml

T4 vs. T2

Volumetric measurement



Volumetric measurement cool laps



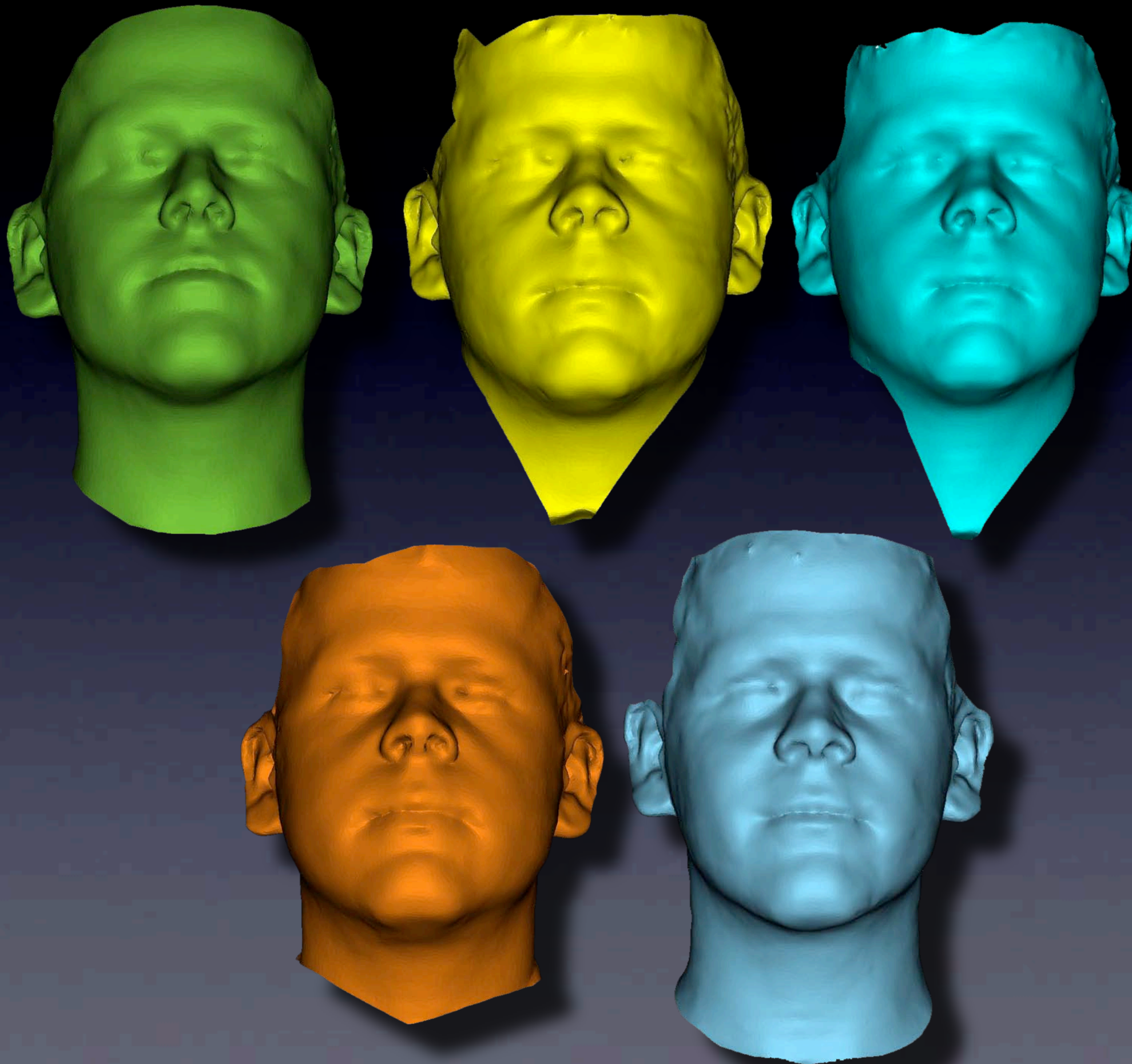
Volumetric measurement cool laps



Profil digital texture with volumetric measurement (ml)



Volumetric measurement Hilotherm



Volumetric measurement Hilotherm



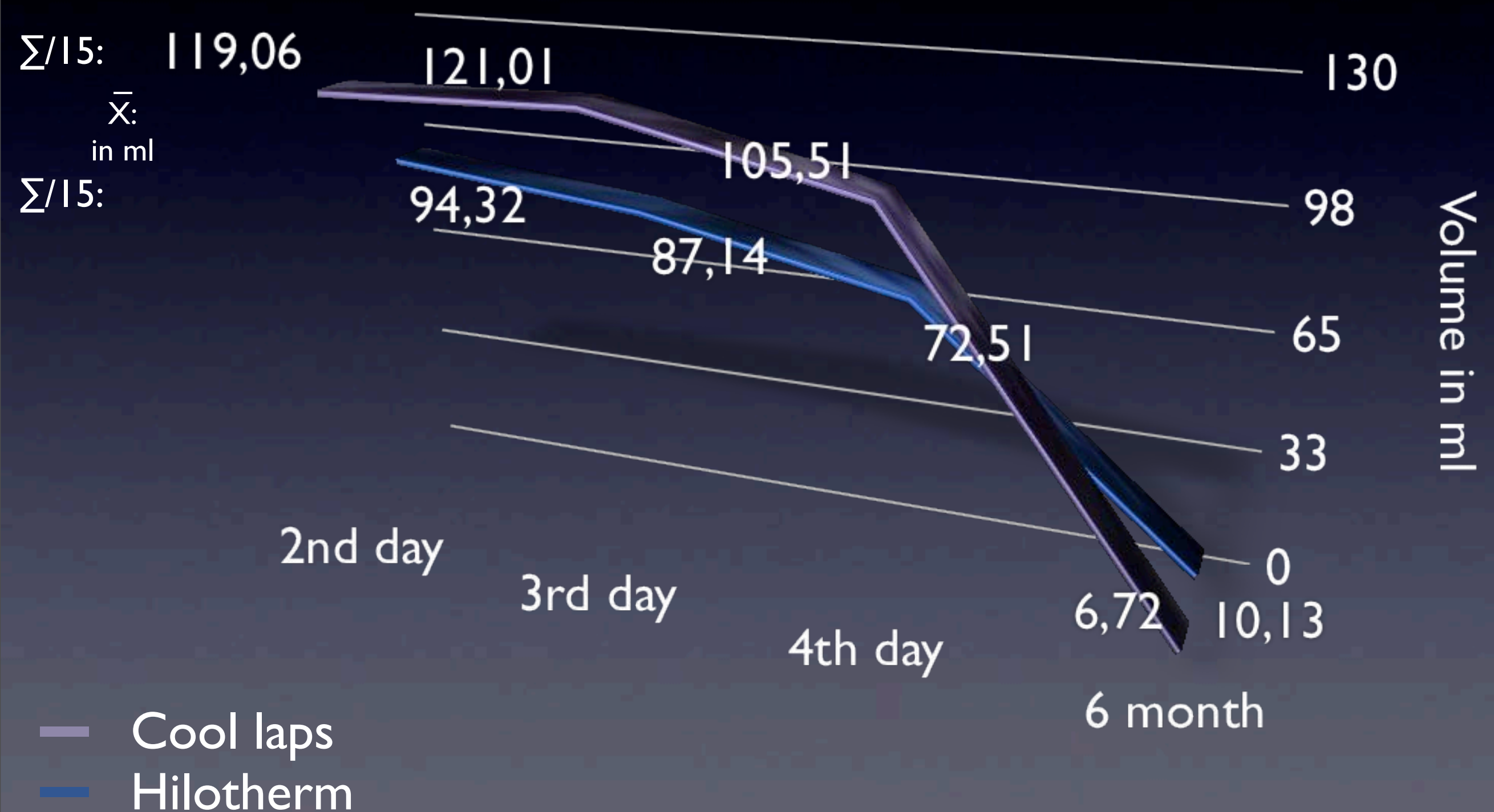
Profil digital texture with volumetric measurement (ml)



Results

Average swelling rate

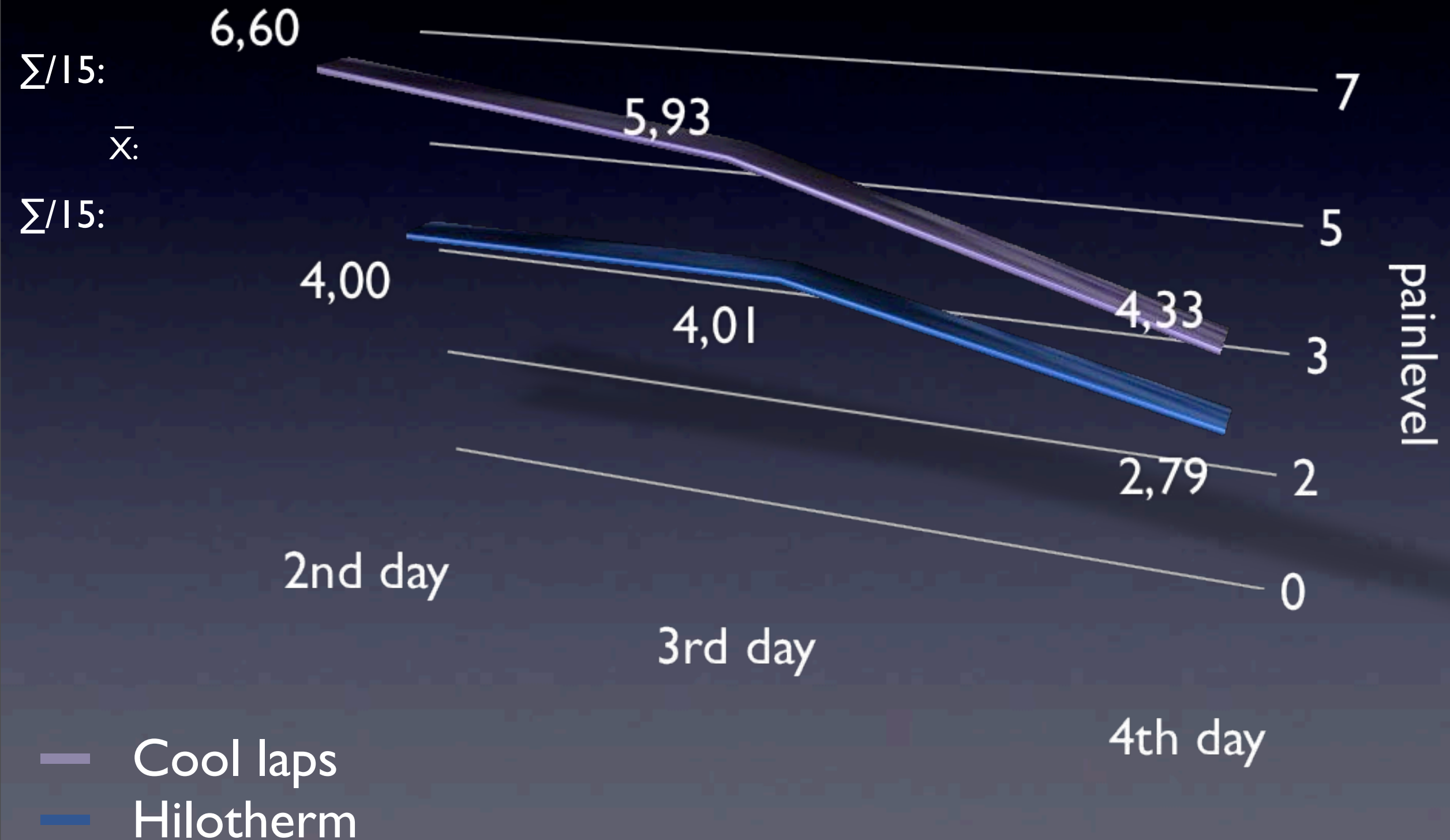
cool laps vs. Hilotherm



Results

Average painscore

cool laps vs. Hilotherm

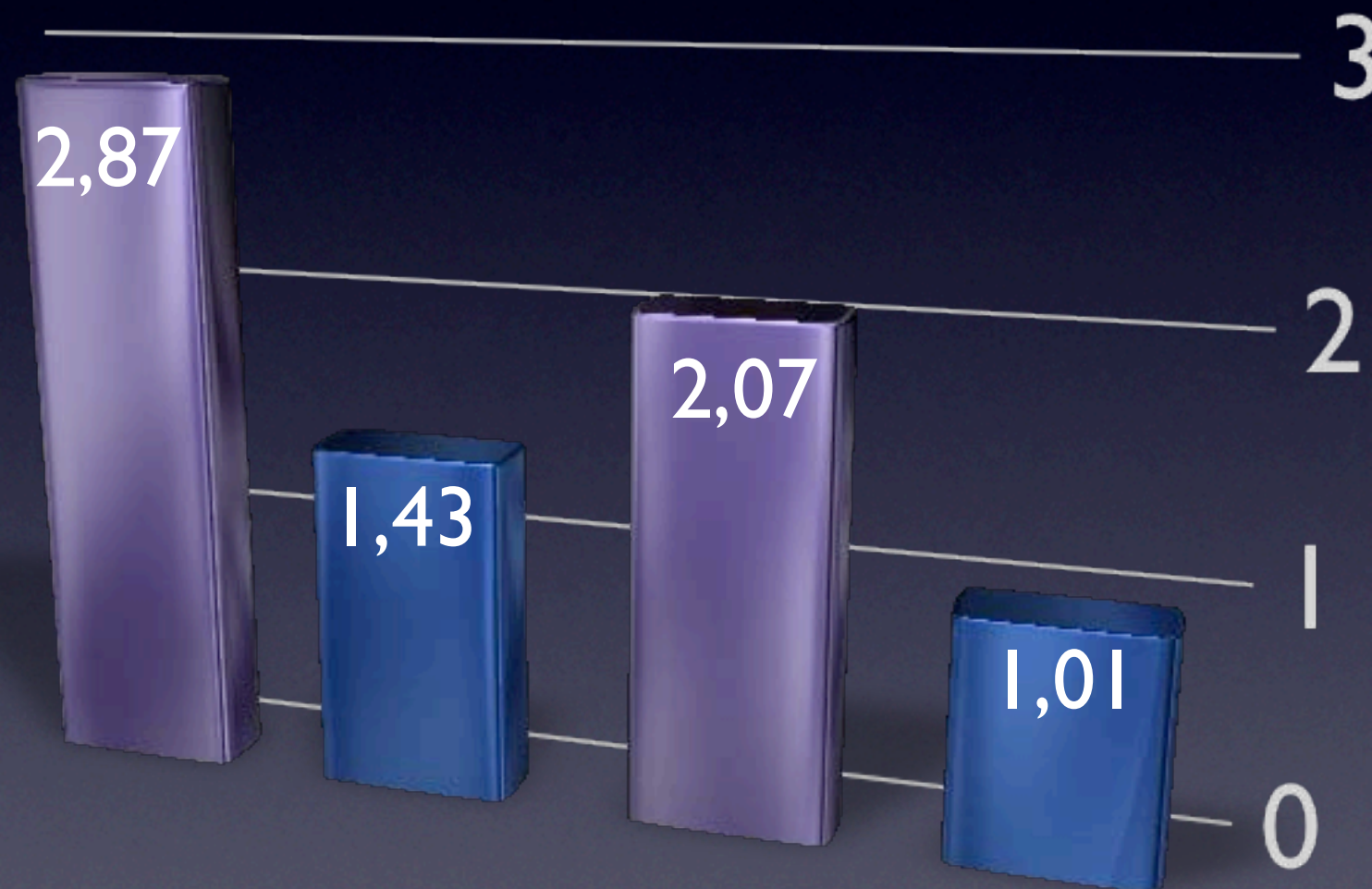


Results

Neurological Score

4th day

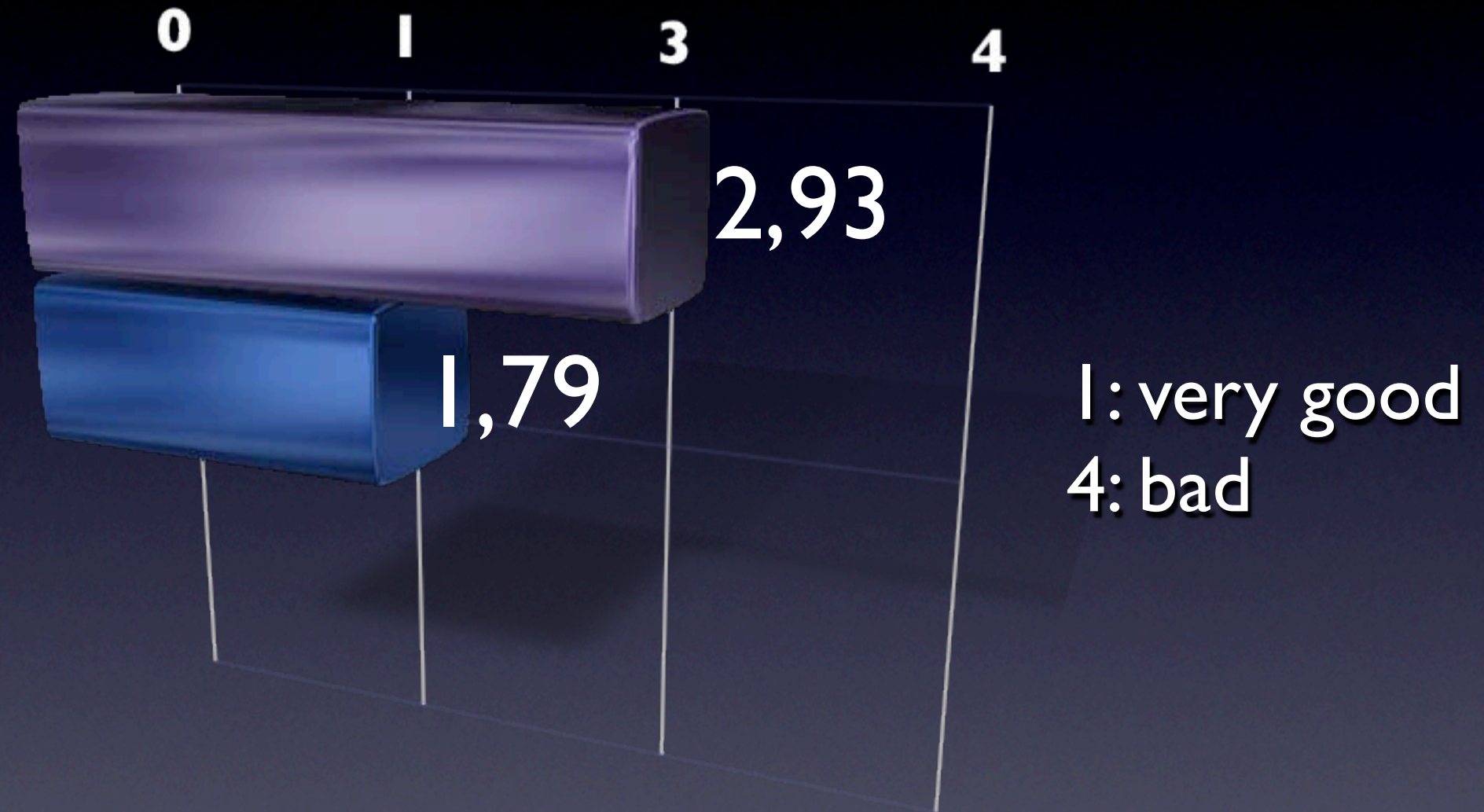
6th month



 Cool laps
 Hilotherm

Results

Satisfaction



 Cool laps
 Hilotherm

State of the art 6 month after surgery

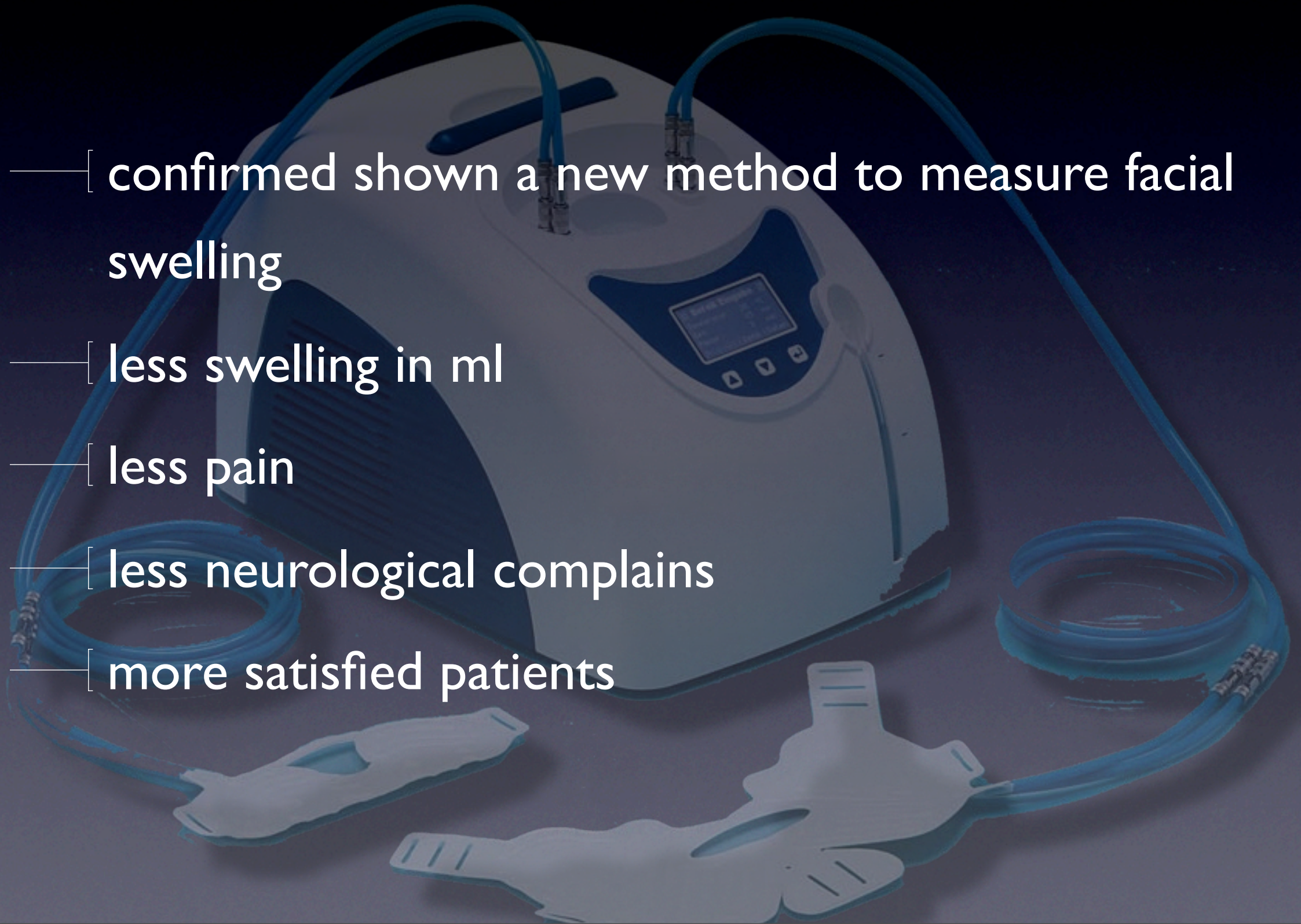


State of the art 6 month after surgery



Conclusion

- confirmed shown a new method to measure facial swelling
- less swelling in ml
- less pain
- less neurological complains
- more satisfied patients



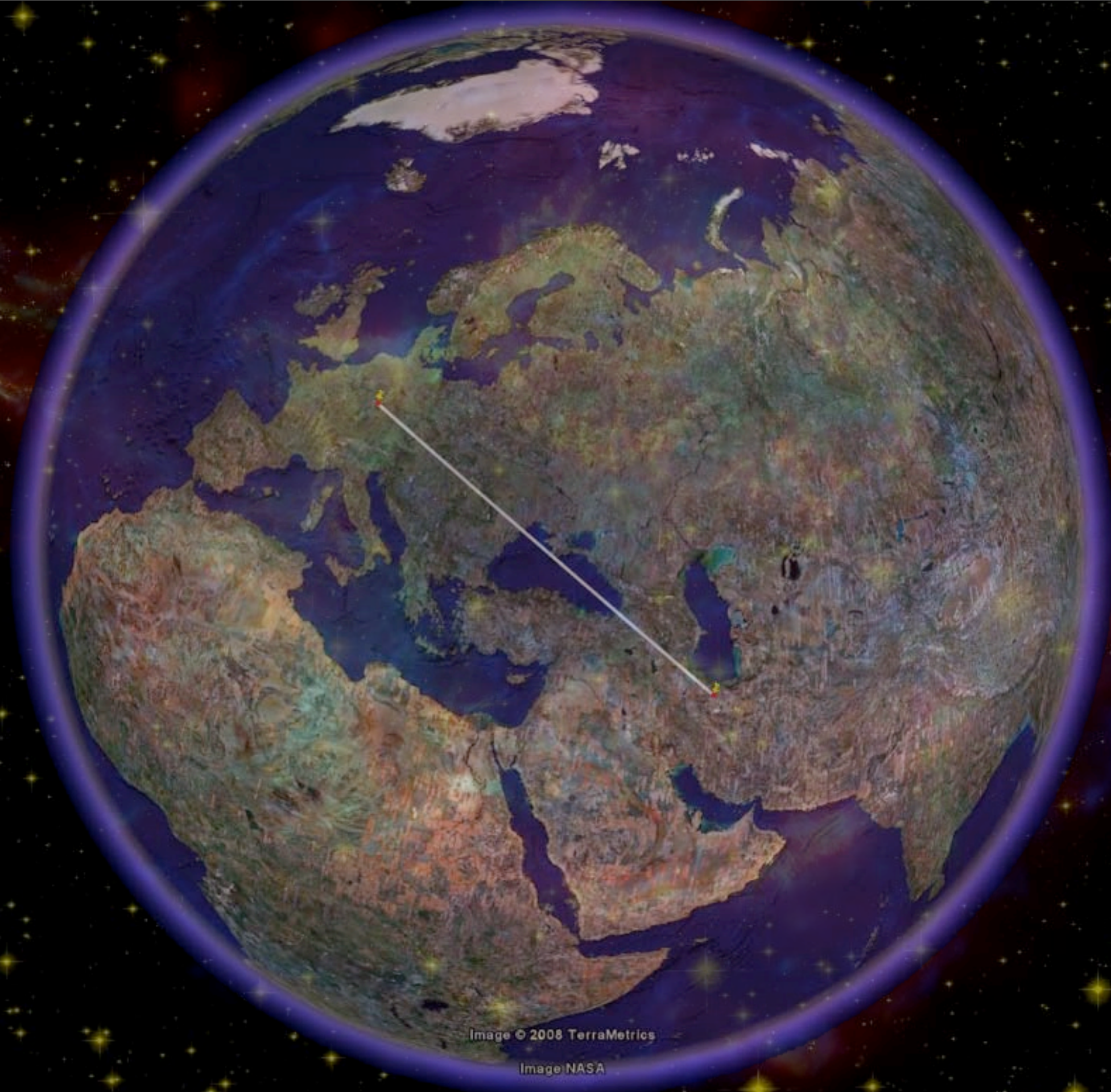


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Image NASA



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