



UNIVERSITÄTSKLINIKUM  
**AACHEN**



**XIX**  
CONGRESS  
OF THE EUROPEAN ASSOCIATION  
FOR CRANIO MAXILLO FACIAL  
SURGERY

# **3D evaluation of postoperative swelling following orthognathic surgery using hilotherapy**

**- A randomised observer blind prospective Pilot trial -**



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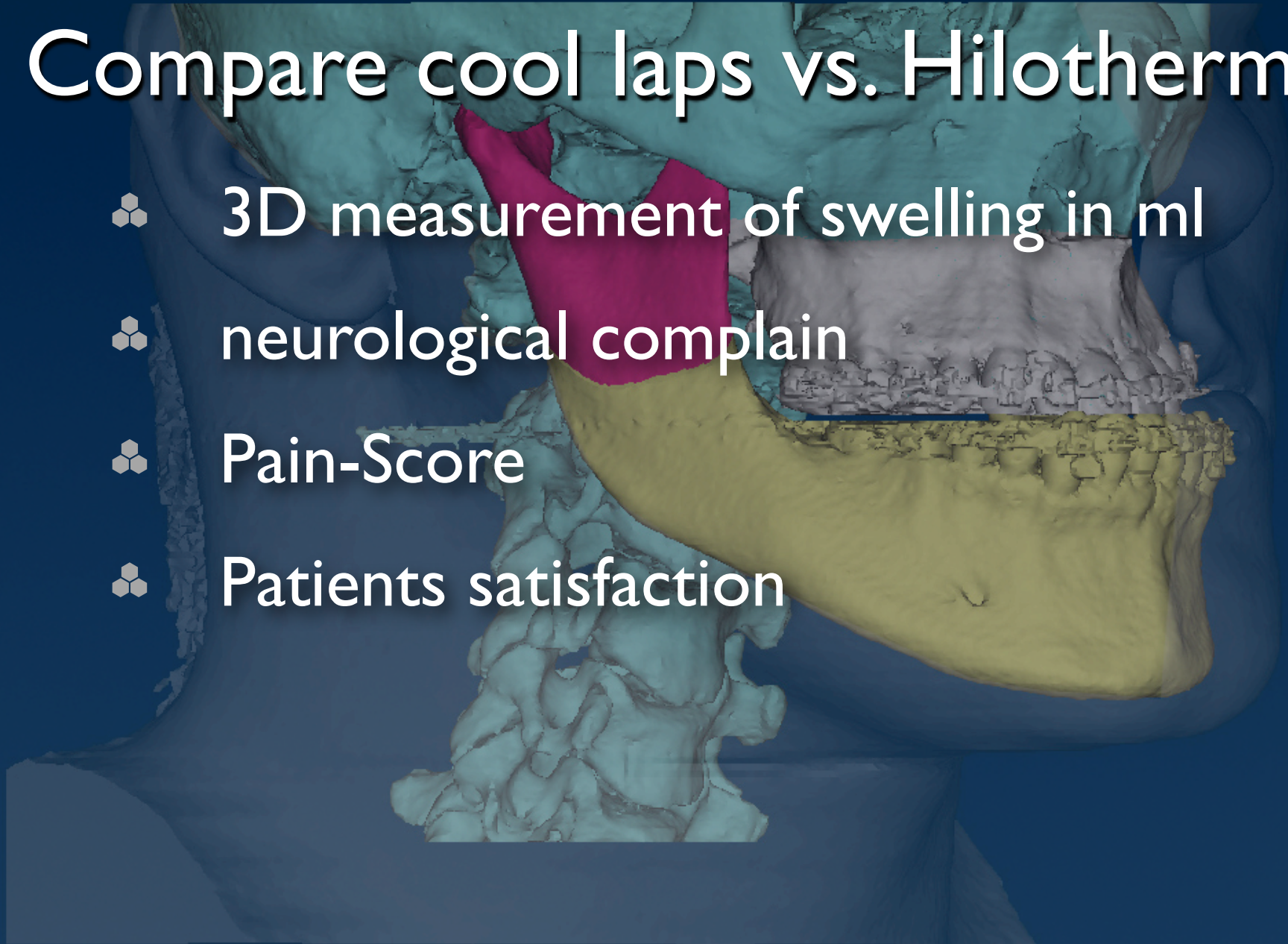
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# Aim of the study

## Compare cool laps vs. Hilootherm

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





# Hilotherm cooling mask



# patients and methods

## patients

- 42 healthy patients, 27 f and 15 m
- bimaxillary osteotomy
- 1 surgeon, standardised pain medication and antibiotic
- group 1: cool laps vs. group 2: hilotherapy
- direkt post OP, cooling : 4 days á 16 h



cool laps



Hilotherapy

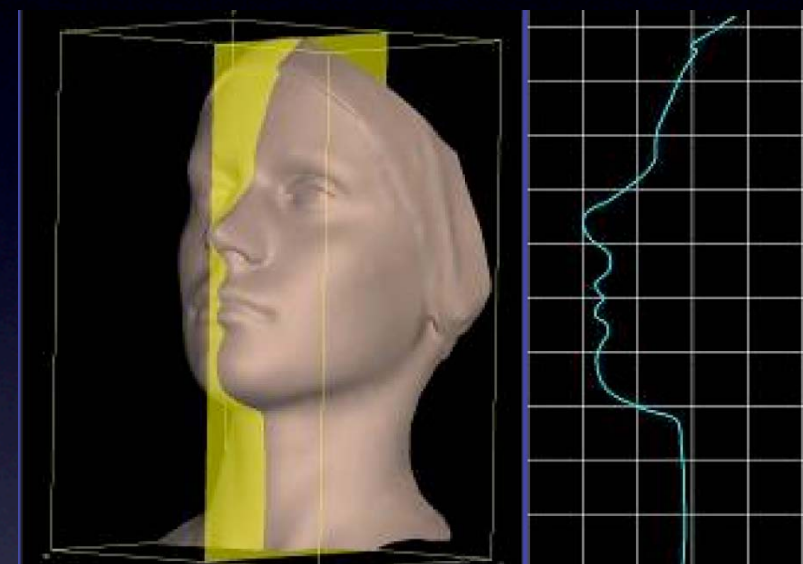
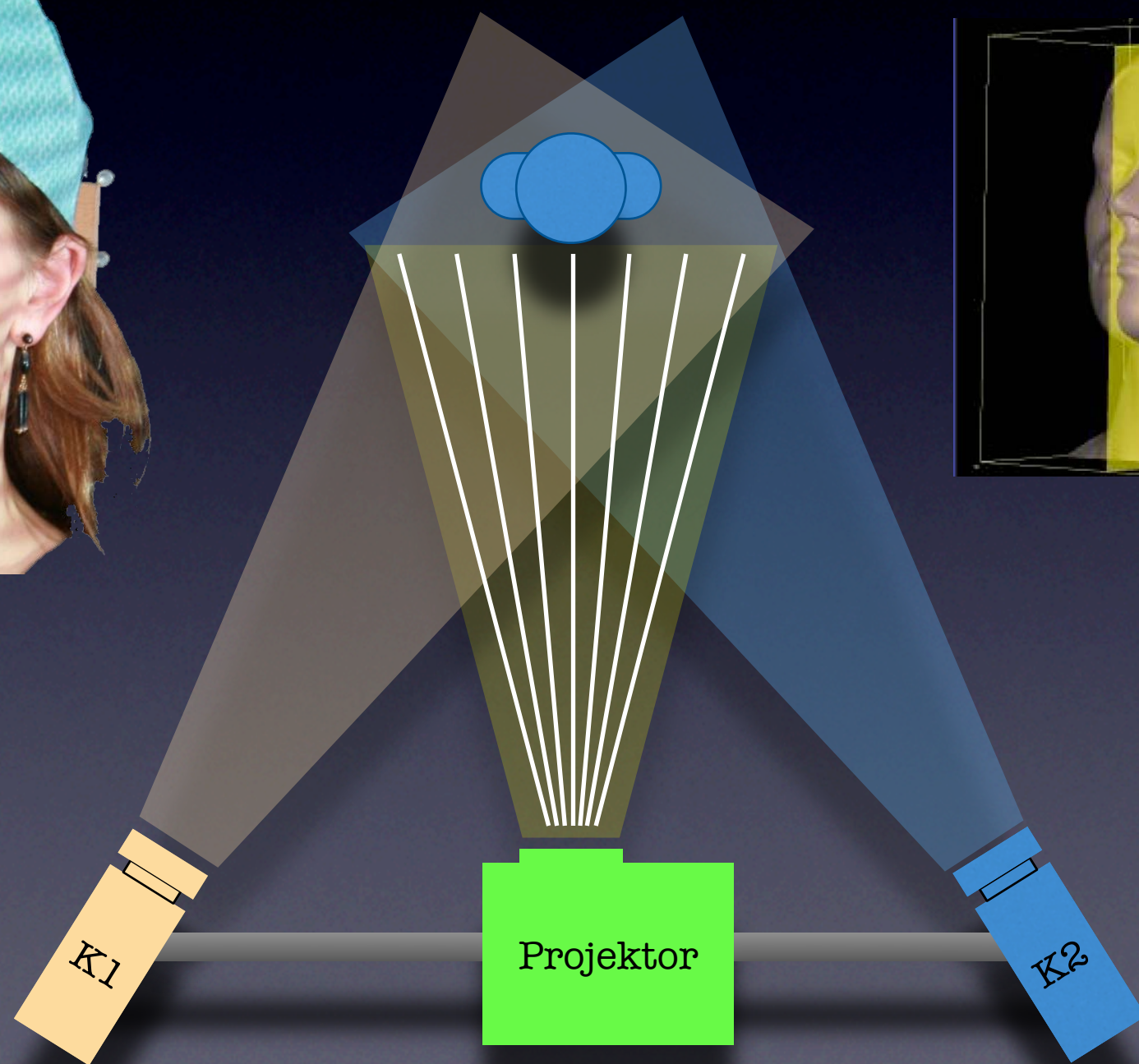
# patients and methods

## methods

TEST/ rating	Pre OP	2nd day post OP	3rd day post OP	4th day post OP	6th month post OP
3D Scan	+	+	+	+	+
NRS/MCP Painscore		+	+	+	
neurological disturbance score Trismus	+			+	+
questionare				+	+



# 3D-SHAPE Facescan®



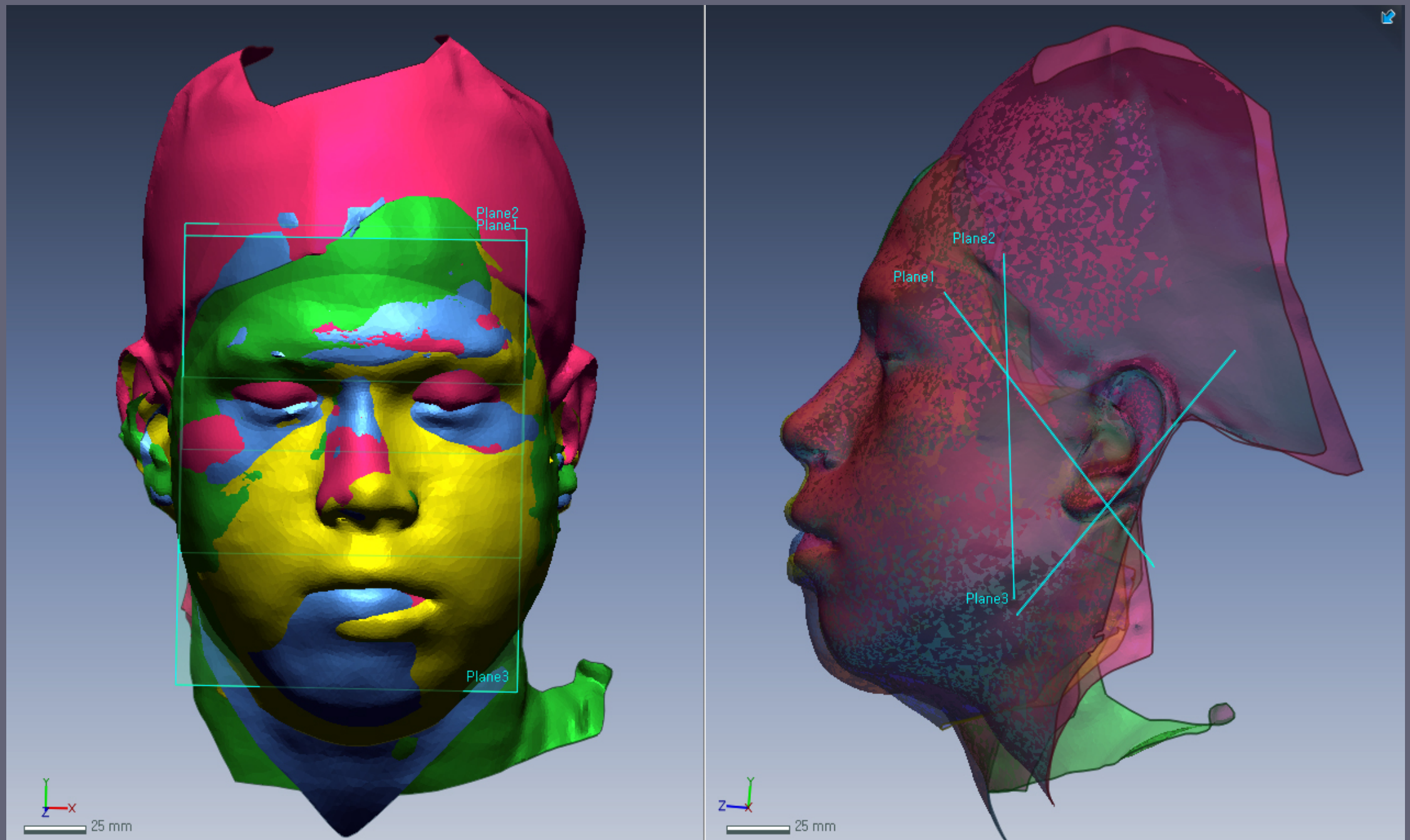


# 3D-Measuring solution from ear to ear by using a mirror construction and digital texture





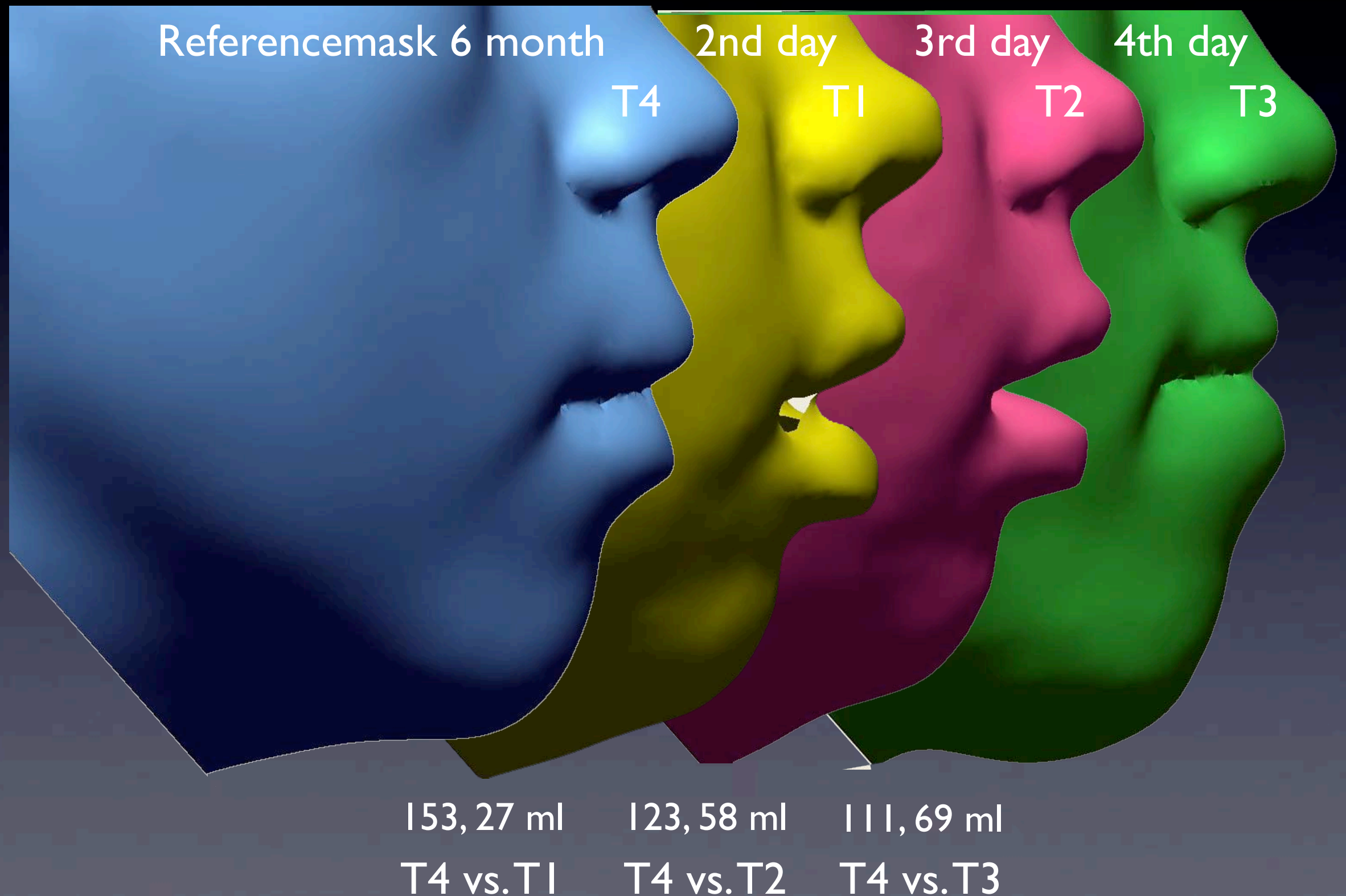
# Aligned shell deviation



Create panel for cut off

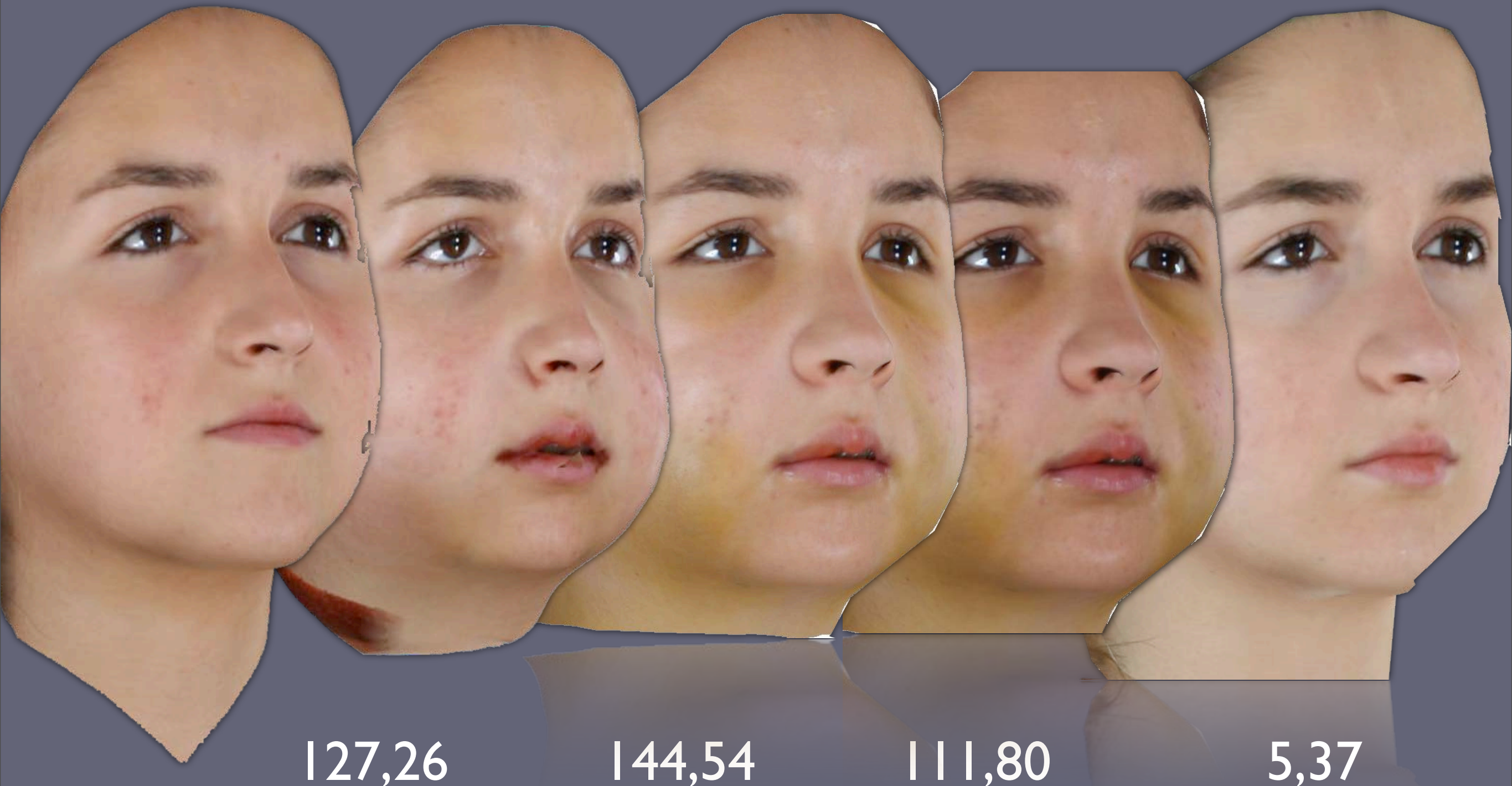


# Volumetric measurement





# Profil digital texture with volumetric measurement (ml) by using cool laps





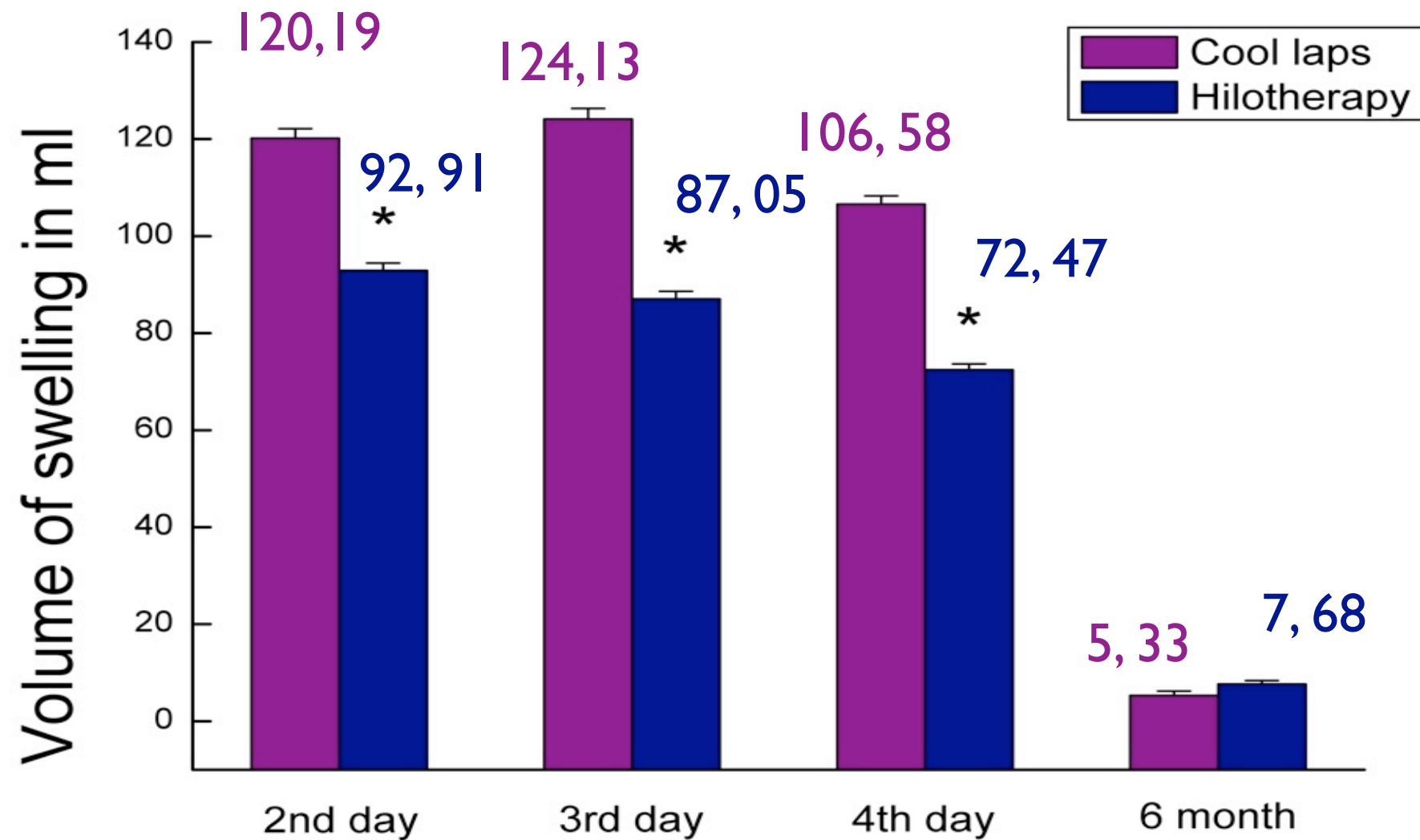
# Profil digital texture with volumetric measurement (ml) by using hilootherapy





# Results

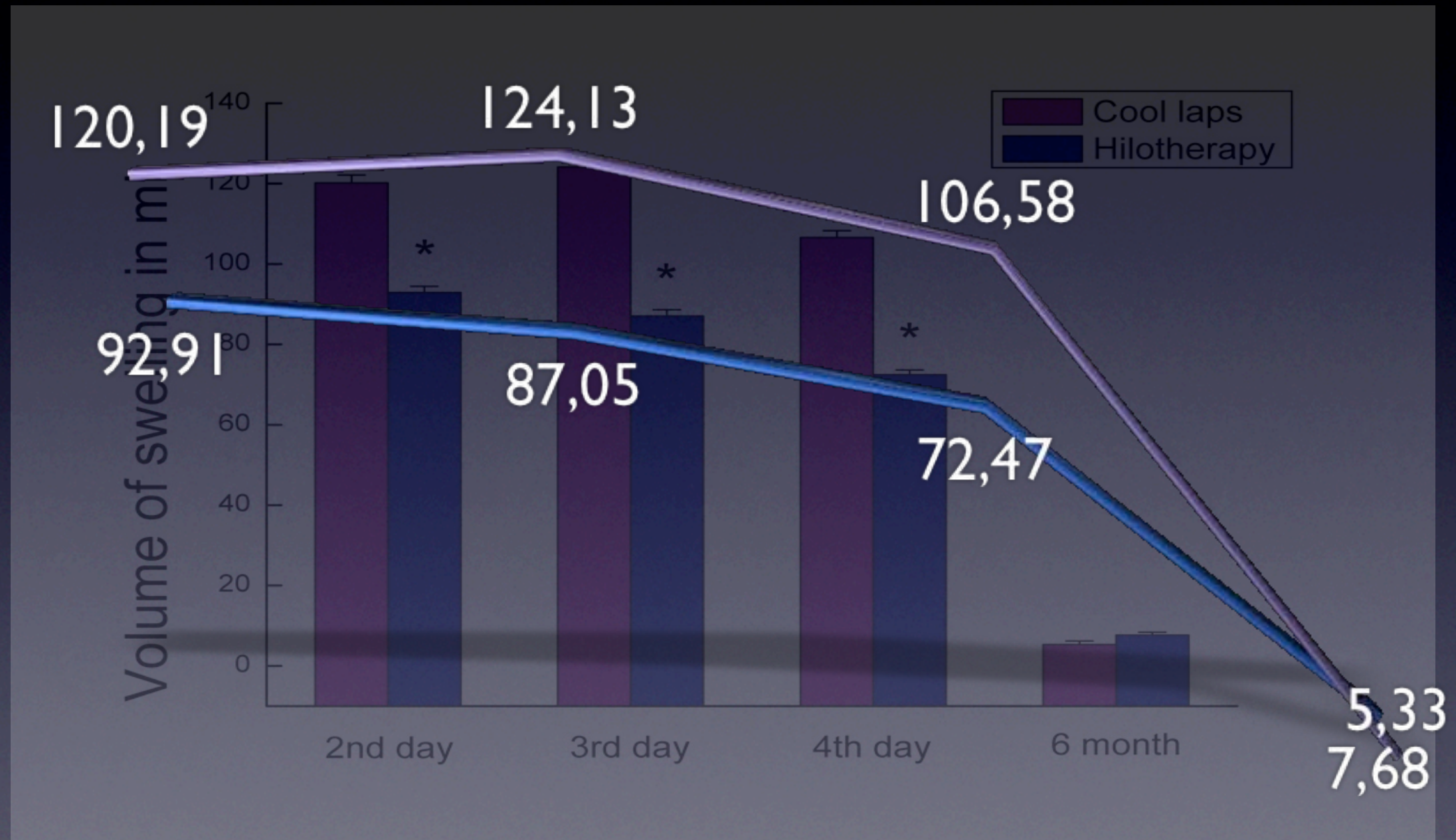
## mean swellingrate





# Results

## mean swellingrate

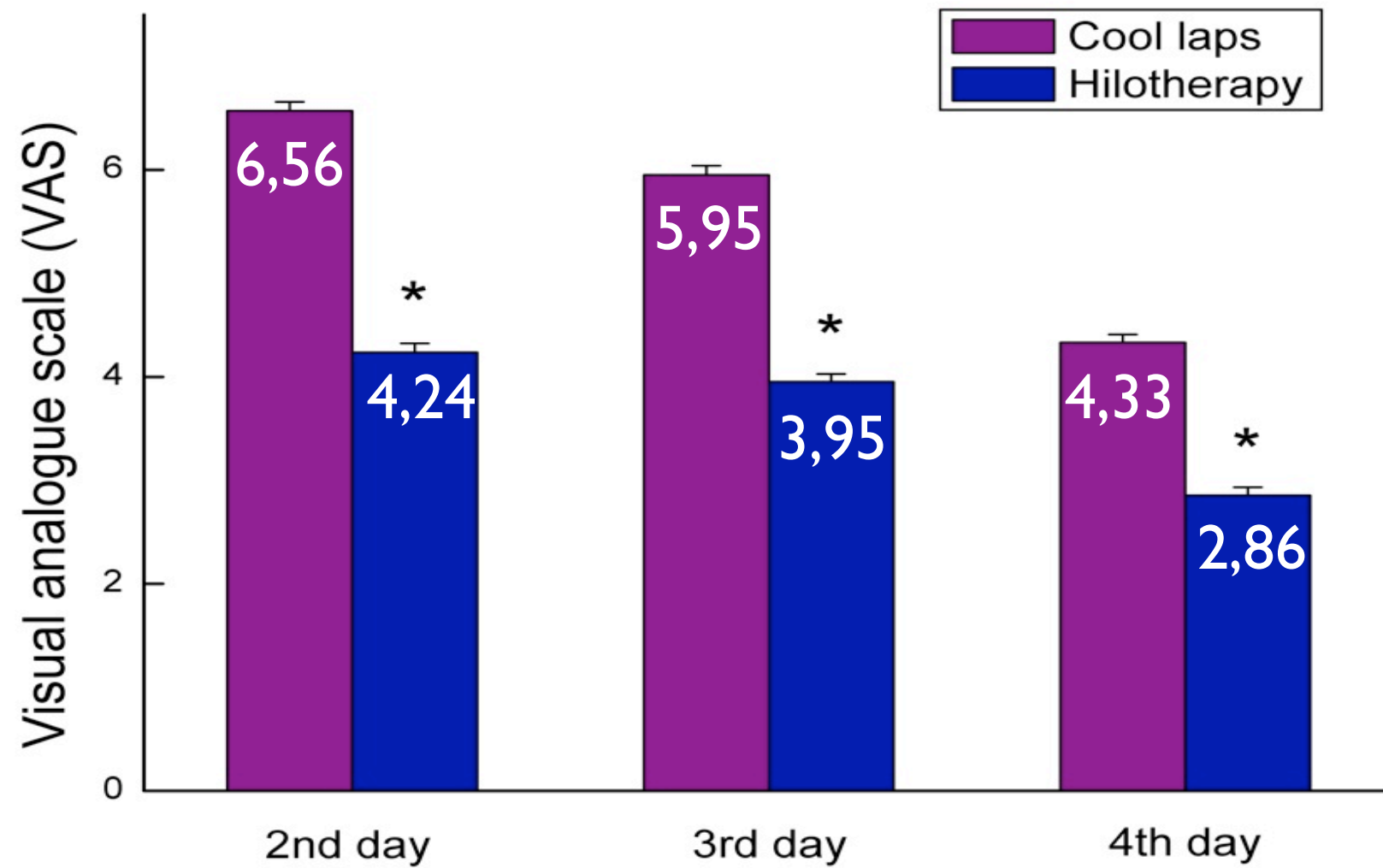


— Cool laps  
— Hilootherapy



# Results

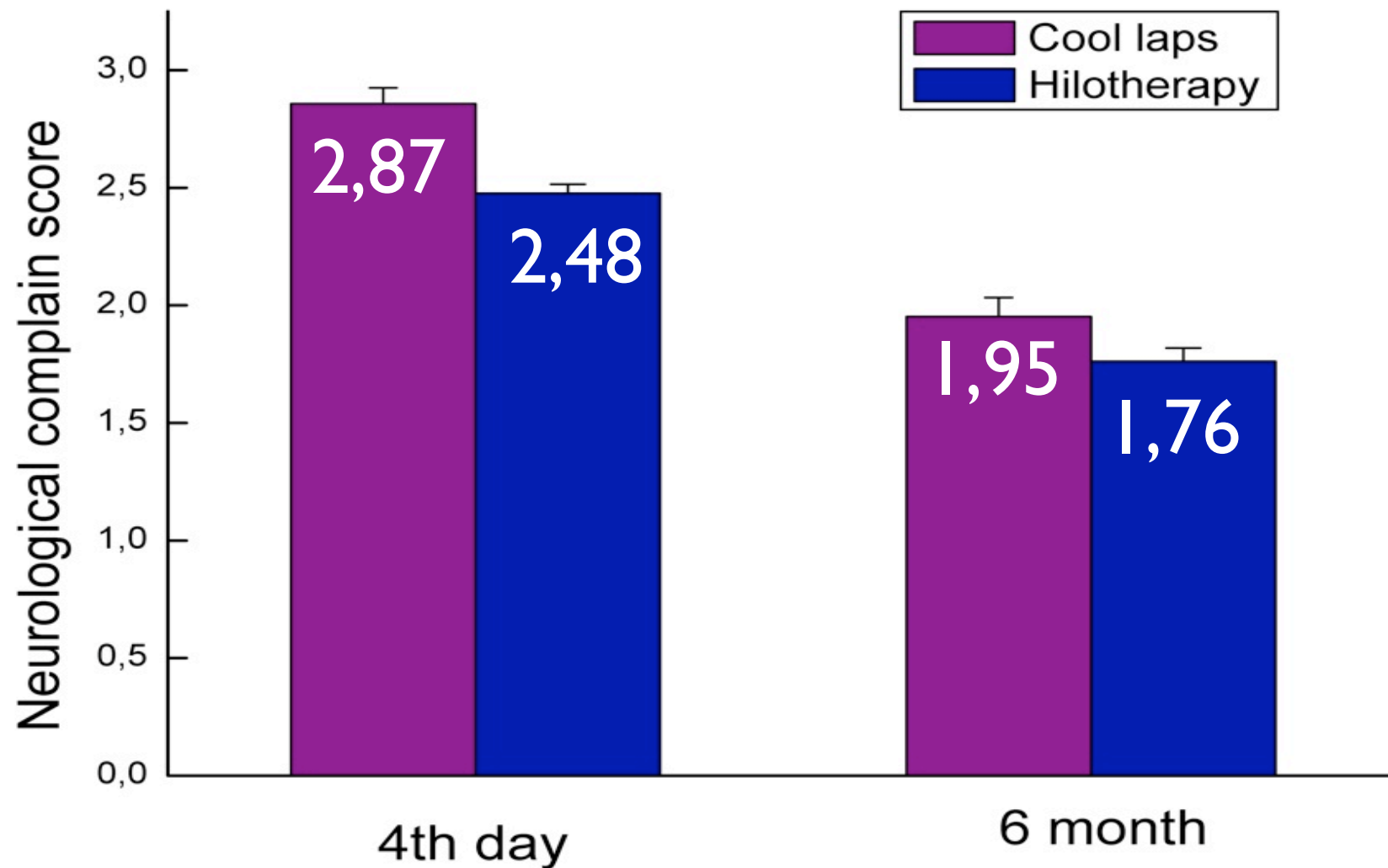
## pain rating scale





# Results

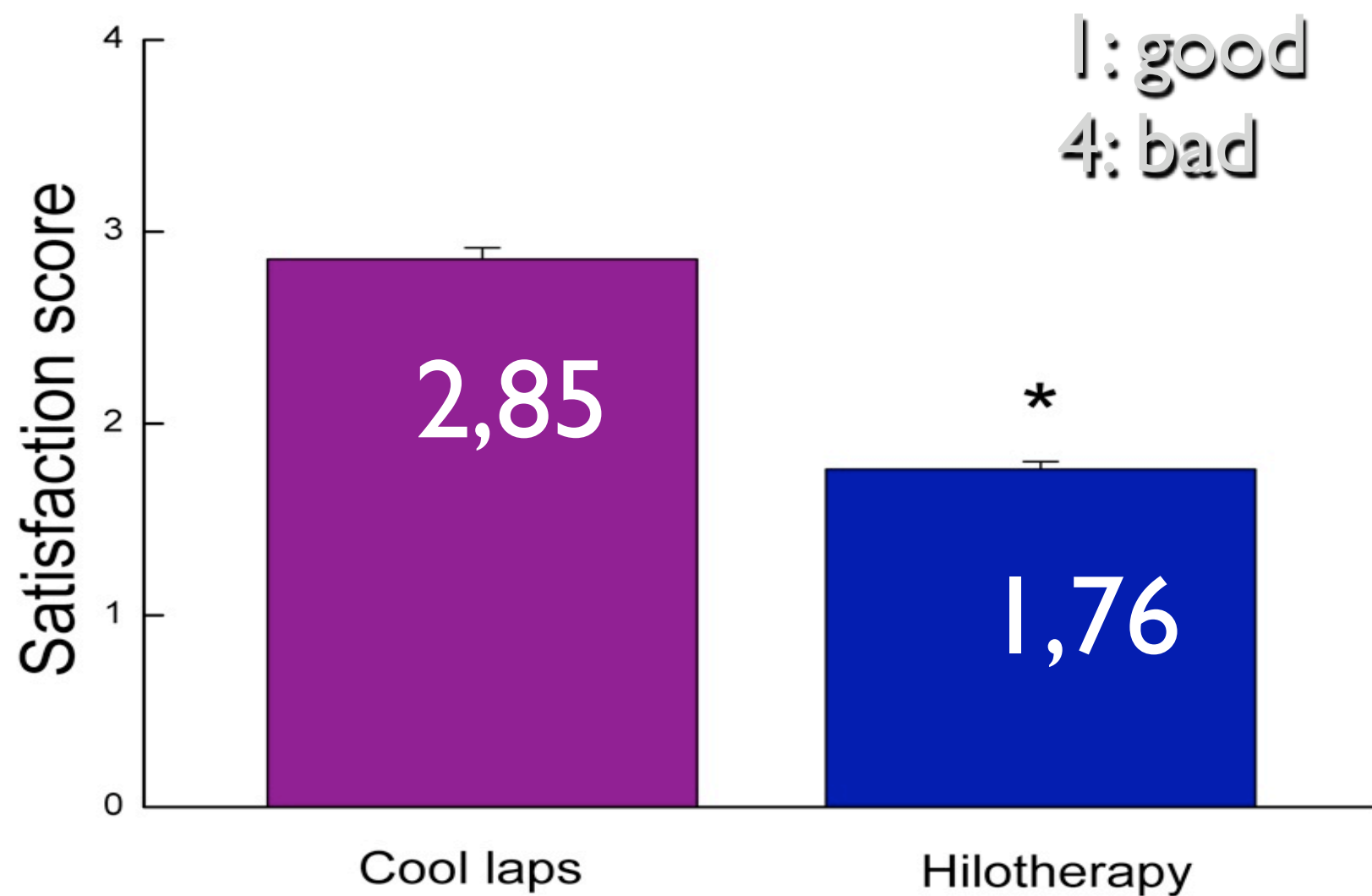
## neurological disturbance





# Results

## satisfaction score





# Conclusion

- confirmed shown a new method to measure facial swelling
- less swelling in ml
- less pain
- no significant difference by neurological complains
- more satisfied patients
- Improvement of technology and individual mask