

# The change in incisal angle of patients undergoing surgically assisted rapid maxillary expansion (SARME) operation.

Jenni Ponsi<sup>1</sup>, Lotta Veistinen<sup>1</sup>, Laura Lakio<sup>1</sup>, Anu Kiukkonen<sup>1</sup>

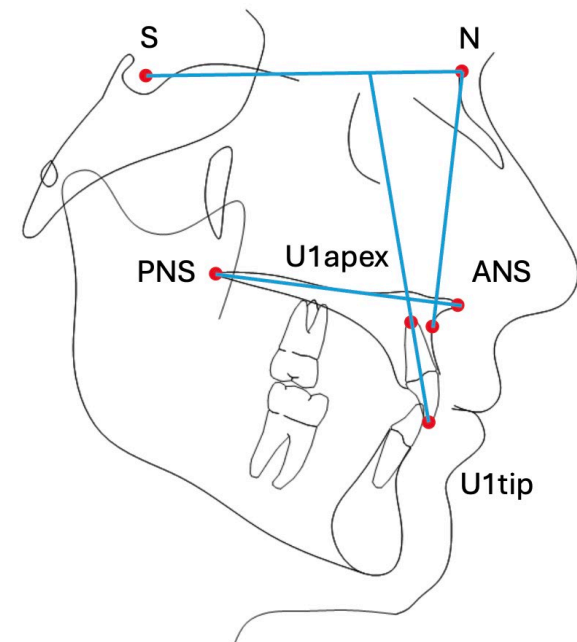
<sup>1</sup> Department of Oral and Maxillofacial Diseases, Helsinki University Hospital and University of Helsinki, Helsinki, Finland

## AIM

The aim of this retrospective study was to investigate if it is possible to retrocline proclined incisors with SARME operation and fixed appliances.

## MATERIALS/METHODS

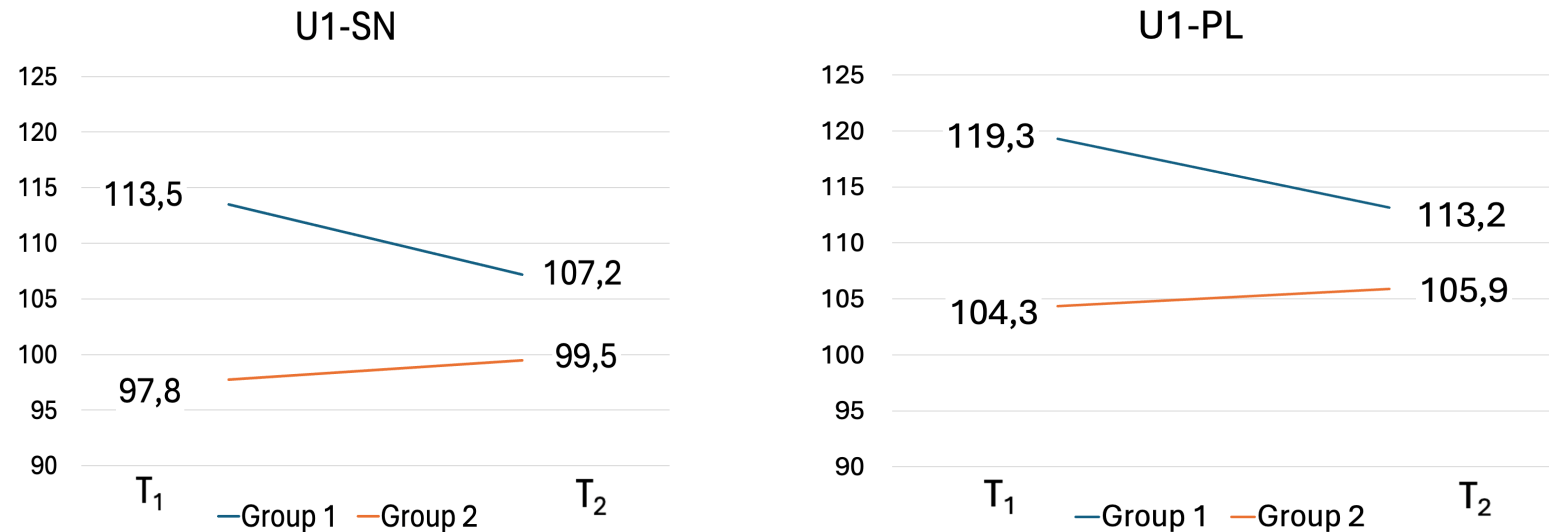
The study group consisted of 63 patients who were treated with SARME operation and fixed appliances at the Department of Oral and Maxillofacial Diseases, Helsinki University Hospital, Helsinki, Finland from 2010 to 2021. We retrospectively examined patient records, including photographs and lateral radiographs. The study group consisted of 32 females (mean age 24.05±8.0 years) and 31 males (mean age 35.5±9.2 years), total mean age of 29.2±9,0 years. The indications for SARME operation were narrow maxilla and/or labial incisors and/or crowding and/or crossbite. Patients were divided into two groups. Group 1 consisted of patients whose initial incisal angle (upper incisors (UI)-Palatal plane (PL)) was labial (>110 degrees). In Group 2 incisors were not labial (≤110 degrees). 56 of the patients were treated with Roth-torque brackets and 7 with standard brackets. We measured the SNA, U1-SN, U1-PL angles before and after the treatment. The cephalometric analyses were done with Dolphin Imaging®-software. The widening was calculated from the amount the widening appliance was turned.



Cephalometric values were calculated from the points above.

## RESULTS

Maxilla was widened on average  $7.4\text{mm} \pm 1.9\text{mm}$  and teeth were aligned and/or retracted in the gained space. In Group 1 the initial incisal angle (UI; upper incisors - PL; palatal plane) was  $119.3^\circ \pm 6.6^\circ$  and (UI; upper incisors - SN; Sella-nasion)  $113.5^\circ \pm 7.3^\circ$ . In Group 2 initial UI-PL  $104.3^\circ \pm 4.9^\circ$  and UI-SN was  $97.8^\circ \pm 4.6^\circ$ . After orthodontic treatment in Group 1 UI-PL was  $113.2^\circ \pm 7.1^\circ$  and UI-SN was  $107.2^\circ \pm 6.6^\circ$ . In Group 2 post-treatment UI-PL was  $106.0^\circ \pm 4.5^\circ$  and UI-SN was  $99.5^\circ \pm 5.4^\circ$ . The change of UI-PL in Group 1 and Group 2 was  $-6.13^\circ$  and  $+1.57^\circ$ , respectively. SNA angle changed from  $80.01^\circ \pm 3.41^\circ$  to  $79.34^\circ \pm 3.17^\circ$ .



Group 1 (119,3) consisted of people whose initial incisal angle was labial and incisal angle of Group 2 (104,3) was not labial.

## CONCLUSIONS

With SARME operation and fixed appliance alignment, proclined incisors were able to be retroclined 6 degrees on average. SNA angle change was not clinically significant in both groups.