INTRODUCTION
Alterations of the TMJ may produce changes in its temporal articular soft tissue. Pullinger et al. found a correlation between a flatter eminence slope and curve to an increased soft tissue thickness at the eminence crest [5]. Structural changes of the temporal component were examined in most of joints with anterior disk position and some with perforated disks [1]. However, thicker or thinner articular soft tissue was not predictable by the underlying compact bone contour or thickness [4]. Displacement of the TMJ joint disk was associated with significantly increased thickness of the articulating soft tissue of the posterior and anterior slopes of the articulating eminence. Increase in articular soft tissue thickness is interpreted as an adaptive mechanism to maintain the joint function during movement. When the plasticity of the tissue is surpassed, the adaptation will be thwarted and replaced by tissue breakdown [3].

The aim of this study was to compare the extension and thickness of the temporal articular soft tissue in different states of TMJ alteration.

METHODS
In accordance with ethical research standards 16 human TMJs, fixed in 5 % formalin, were histologically prepared in 12μm sections and stained in Alcian Blue with the Periodic Acid Shift reaction (PAS) at pH 2.5. Corresponding sections from the lateral, central and medial joint-third were all positioned identically and digitally photographed. Measurements of soft tissue thickness were carried out with the KS 300 measuring-software-system (Zeiss). The sections were oriented to the horizontal axis of the cranial base. The thickness of the joint-surface, which was demarked with the Alcian Blue, was measured at the following points: (a) inflection point, (b) posterior slope, (c) apex, (d) anterior slope, (e) near the anterior capsular attachment, (f) the distance from (c) to (e), (g) at the highest point of the joint, (h) near the posterior capsular attachment, (i) the distance from (g) to (h).

The TMJs studied demonstrated varying morphological diagnosis: 18 regularly configured joint-third, 9 with anteriorly dislocated disks, 18 with a flattening of the tuberculum and 3 with perforated disks.

LITERATURE
due to Temporomandibular Joint Alterations

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RESULTS

The thickness of the joint surface from the lateral, central, and medial joint-third of all investigated temporomandibular joints demonstrated only slight differences. Specifically, the thickness at the lateral portion of the highest point in the joint (g:p=.002) and near the posterior capsular attachment (h:p=.016) was significantly greater compared to that of the central and medial regions. The distance between the highest point of the joint and the posterior capsular attachment was longest in the medial joint third and significantly greater than in the central third (i:p=.03).

With the exception of 6 regular TMJs, the specimens presented several cases of deviations to the physiological structure of the TMJ. These deviations included flattening of the articulation surfaces or the tuberculum, degenerative arthrotic alterations, perforations, and anteriorly displaced disks.

TMJs containing no morphological abnormality demonstrated consistent joint thickness.

All joints that contained morphological abnormalities showed particularly pronounced thickness of the joint-surface. A highly significant difference in thickness was observed in joints which obtained a flattening of the tuberculum (b:p=.029, c:p=.008).

The joint thirds with a perforated disk showed a considerable increase of temporal and condylar articular soft tissue in two cases, whereas there was a loss of articular soft tissue combined with degenerative arthrotic alterations in one case.

The distance between the apex and the anterior capsular attachment was significantly shorter in the joint thirds with anteriorly dislocated disks compared to that of the regularly configured joint thirds (f:p=.46).

CONCLUSION

This result may be due to a physiological compensation for loss of osseous structure. Histological staining with Alcian Blue was the ideal method for evaluating each joint surface. We can conclude from our results that slight TMJ alteration result in a thickening and extension of the temporal articular soft tissue.