

# DTI in the Head and Neck Region with Parallel Imaging Technique at 3T MR [大会長賞記録]

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## PURPOSE

Diffusion tensor tractography (DTT) is widely used for the evaluation of neural fibers of brain and spinal regions. However, DTT for head and neck regions has not been reported. The purpose of this study was to evaluate the feasibility of DTT of the neural fibers in the head and neck region at 3T.

## MATERIALS AND METHODS

MR imaging of the head and neck region was performed on 5 volunteers and 5 patients at a 3T MR scanner (Philips, Achieva). All participants underwent 3D-TFE and DTI using a sequence with 6 motion-probing gradient orientations, a b value of 1000 s/mm<sup>2</sup>. The DTI data were post-processed using Fiber Tracking V4.1 (PRIDE). For DTT we applied the two-region-of-interest method to fusion images of anatomical and DTI data. In the volunteer study, the target regions for DTT were the inferior alveolar canal for the inferior alveolar nerve, the carotid space for cranial nerves (CN) IX-XII, and the parotid space for the facial nerve. In the

patient study, the relationship between the visualized fibers and lesions were confirmed at surgery.

## RESULTS

In the 5 volunteers, the fibers were depicted in all regions except one parotid space region. The mean number of visualized fibers was highest for the inferior alveolar canal region (20.2 fibers), followed by the carotid space (14.8); it was lowest for the parotid space (4.7). The mean length of the visualized fibers was longest for the carotid space region (21.7 mm), followed by the inferior alveolar canal (19.9), and shortest for the parotid space (15.1). In the 5 operated patients, the fibers visualized with DTT corresponded to the vagus- hypoglossal-, accessory- and facial nerve.

## CONCLUSION

With the parallel imaging technique using a 3T MR, DTT of the neural fibers in the head and neck region is feasible.