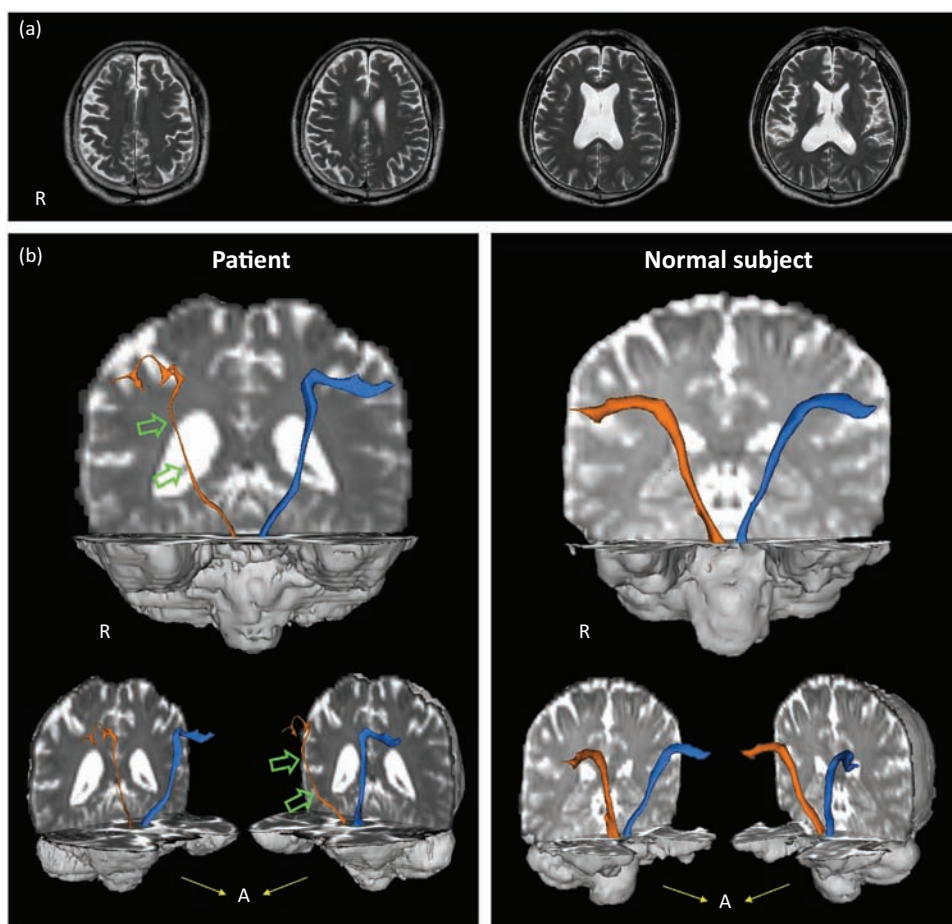


## Image of the month: Dysphagia due to injury of the corticobulbar tract following traumatic brain injury

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A 51-year-old male patient was diagnosed with traumatic epidural hematoma in the left frontal area and contusional hematoma in both prefrontal areas resulting from a fall after being hit by a truck while walking in a side street, in which the patient's head hit the ground. The patient lost consciousness for approximately 45 days and experienced continuous post-traumatic amnesia from the time of the accident. His Glasgow Coma Scale score was 8 when he arrived at the hospital. He underwent conservative management at the department of neurosurgery of a local hospital. After recovering consciousness, he felt dysphagia for water or watery food. When he drank water, he usually showed aspiration such as severe coughing. The conventional brain MRI taken at approximately four months did not show abnormality along the pathway of the corticobulbar tract (CBT) (Fig 1a).<sup>1</sup> Six months after the trauma, he visited the



**Fig 1.** The MR images and result of diffusion tensor tractography. (a) T2-weighted brain MR images taken at four months do not show abnormality along the pathway of the corticobulbar tract (CBT). (b) Results of diffusion tensor tractography for the CBT. The right CBT revealed severe narrowing (arrows) compared with the left CBT and those of a normal subject (44-year old female).

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rehabilitation department of a university hospital for evaluation of dysphagia.

Diffusion tensor imaging (DTI) data were acquired at five months after onset using a 6-channel head coil on a 3 T Philips Gyroscan Intera (Philips, Ltd, Best, The Netherlands) with single-shot echo-planar imaging. Fibre tracking was performed using the Oxford Centre for Functional Magnetic Resonance

Imaging of the Brain (FMRIB) Software Library (FSL; [www.fmrib.ox.ac.uk/fsl](http://www.fmrib.ox.ac.uk/fsl)). The seed region of interest (ROI) was placed at the lower portion of the precentral gyrus on the axial slice in which the top of the lateral ventricle could be seen, and the target ROI was placed on the lower pons of the anterior blue portion on the color map.<sup>2</sup> The right CBT showed severe narrowing compared with the left CBT (Fig 1b).

In this case study, we found narrowing of the right CBT on DTT in a patient with dysphagia following traumatic brain injury. Severe narrowing of the right CBT on DTT indicates neural injury and this injury of the right CBT likely contributed to the dysphagia in this patient. Because no definite brain lesion was detected on conventional brain MRI, traumatic axonal injury was the most likely pathogenetic mechanism.<sup>3,4</sup> We think that DTT for the CBT would be helpful for detecting the lesion for patients with swallowing difficulty following traumatic brain injury. ■

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