

Dorsal loop of the optic radiation

The [temporoparietal junction](#) (TPJ) is a [cortical area](#) contributing to a multiplicity of visual, language-related, and cognitive functions. In line with this functional richness, also the organization of the underlying white matter is highly complex and includes several bundles. The few studies tackling the outcome and neurological burdens of surgical operations addressing TPJ document the presence of language disturbances and visual field damages, with the latter hardly recovered in time. This observation advocates for identifying and functionally monitoring the [optic radiation](#) (OR) bundles that cross the [white matter](#) below the [temporoparietal junction](#). In a study, Michele et al. adopted a multimodal approach to address the anatomic-functional correlates of the OR's dorsal loop. In particular, they combined [cadavers'](#) dissection with [tractography](#) and electrophysiological data collected in drug-resistant epileptic patients explored by [stereoelectroencephalography](#) (SEEG). [Cadaveric dissection](#) allowed them to appreciate the course and topography of the dorsal loop. More surprisingly, both tractography and electrophysiological observations converged on a unitary picture highly coherent with the data obtained by neuroanatomical observation. The combination of diverse and multimodal observations allows overcoming the limitations intrinsic to single methodologies, defining a unitary picture that makes it possible to investigate the dorsal loop both pre-surgically and at the individual patient level, ultimately contributing to limiting the postsurgical damages. Notwithstanding, such a combined approach could serve as a model of investigation for future neuroanatomical inquiries tackling white matter fiber's anatomy and function through SEEG-derived neurophysiological data ¹⁾.

¹⁾

Michele R, Ivana S, Maria DV, Luca B, Domenico L, Maria ZF, Alessandro B, Silvio S, Khalid AO, Valeria M, Pietro A. Tracing in vivo the dorsal loop of the optic radiation: convergent perspectives from tractography and electrophysiology compared to a neuroanatomical ground truth. *Brain Struct Funct*. 2022 May;227(4):1357-1370. doi: 10.1007/s00429-021-02430-5. Epub 2022 Mar 23. Erratum in: *Brain Struct Funct*. 2022 May 5;; PMID: 35320828.

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