O-11

Multifidus Cervicis originates from the C5 and C6 lateral mass: Radiological analysis using sagittal MRI

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Background: At last year"s CERS-Europe meeting, we reported that the Multifidus originates from the dorsal aspect of the lateral mass of C5 and C6, as well as the transverse processes of C7 and T1, based on our cadaveric studies. However, due to the relatively small number of cadavers examined, further validation was required in a larger sample.

Research question: Can the origin of Multifidus be identified on MRI? If so, from which vertebral level of the lateral mass does the Multifidus originate?

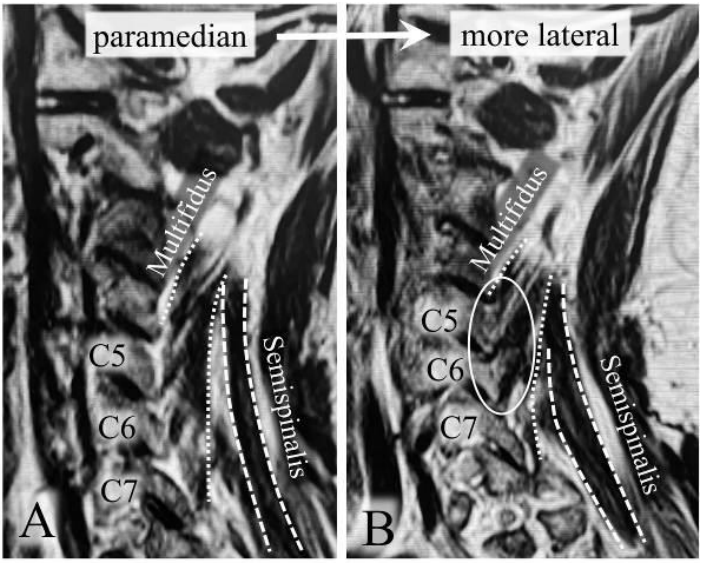
Design: Retrospective radiological study.

Methods: We reviewed MRIs of 88 consecutive surgical patients (mean age 67 years, 70% male). To identify the Multifidus muscle, we first located the deep extensor muscles attached to the C2 spinous process on the paramedian sagittal plane of T2-weighted MRI. Multifidus, running ventrally to Semispinalis, was distinguished from Semispinalis, which occupies the most dorsal layer, using the fat layer between these two muscles as a margin (Figure A). The origin of Multifidus, defined as the region contiguous with the dorsal cortex of the lateral mass appearing as low-intensity on T2-weighted MRI, was identified in sequential lateral sagittal planes (Figure B, circle), and its corresponding vertebral levels were determined.

Results: The origin of Multifidus was successfully identified in all cases. The origin spanned multiple lateral masses; C4 in 41 cases (46.6%), C5 in 87 (98.9%), C6 in 85 (96.6%), and C7 in 33 (37.5%). In all but one case (98.9%), the origin was continuously identified from C5 to C6. The most rostral vertebral level of the origin was C4 in 41 cases (46.6%), C5 in 46 (52.3%), and C6 in one (1.1%).

Discussion: Multifidus originates from the dorsal aspect of the lateral mass below C4, most commonly from C5 to C6. When deciding the extent of lateral exposure in posterior decompression surgeries, attention should be given to avoid unintentional damages to the origin of Multifidus.

Fig. 1


paramedian
more lateral
Multifidus
Semispinalis
C5
C6
C7
A
B