A rare case of unipennate third and fourth lumbricals arising from the flexor digitorum profundus tendon for the ring finger

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Abstract

Introduction
The third lumbral usually arises from the adjacent sides of the flexor digitorum profundus tendons for the middle and ring fingers, whereas the fourth lumbral arises from the adjacent sides of the flexor digitorum profundus tendons for the ring and little fingers. This article reports a rare case of unipennate third and fourth lumbricals.

Case report
During regular dissections for medical undergraduates, we came across unusual origin of the third and fourth lumbricals. Both muscles were unipennate and arose from the anterior surface of the flexor digitorum profundus tendon for the ring finger. Then, the tendons of the two lumbricals ran distally and finally attached to the radial margins of the extensor expansions of the ring and little fingers. Further, no variations were observed in the first and second lumbricals. The anomalous origin of the third and fourth lumbricals reported here is remarkable in professional rock climbers.

Conclusion
Unipennate nature and anomalous origin of third and fourth lumbricals may be liable to rupture during precise movements of the ring and little fingers.

Introduction
Lumbricals, the intrinsic muscles of the hand, arise from the bare areas of tendons of flexor digitorum profundus (FDP). Their point of origin usually lies at the level of the middle of the palm. Classically, the first and second lumbral muscles are unipennate and third and fourth are bipennate. The first and second lumbricals take origin from the radial sides and palmar surfaces of the FDP of the index and middle fingers, whereas the third lumbral from the adjacent sides of the FDP tendons of the middle and ring fingers and fourth lumbral from the adjacent sides of the tendons of the ring and little fingers. All the lumbricals then pass distally along the radial side of the corresponding metacarpophalangeal joints anterior to deep transverse metacarpal ligaments. By a narrow tendon, all the four muscles finally get inserted to the radial margins of extensor digital expansions. Lumbricals frequently show variations in its origin, insertion and presence of accessory slips. They also frequently vary in number. Their number may be reduced to two or three, and rarely all four are absent. In the present case, we report a unilateral unusual origin of the third and fourth lumbricals in the right hand.

Case Report
During regular dissections, we came across an anatomical variation of the third and fourth lumbricals in the right hand. It was observed in an approximately 55-year-old male cadaver of South Indian origin. The third and fourth lumbricals presented an unipennate arrangement. The third lumbral arose from the radial aspect of anterior surface of the FDP tendon for the ring finger. The fourth lumbral also arose from the ulnar aspect of the anterior surface of the FDP tendon for the ring finger. The tendons of the third and fourth lumbricals passed distally and finally inserted to the radial margins of the extensor expansions of the ring and little fingers respectively. Both muscles received nerve supply from the deep branch of the ulnar nerve. Further, no variations were observed in the origin, insertion and arrangement of muscle fibres in the first and second lumbricals.

Discussion
Variations in the attachments of the lumbricals are common. Any lumbral muscle may be unipennate or bipennate. It has been demonstrated that when compared to the first and second lumbricals, the third and fourth lumbricals are more variable in their attachments. Mehta and Gardner have observed the unusual patterns of lumbral attachments in 86% of cases. In their study, the third lumbral muscle showed the greatest variation in its attachments (45.3%). Further, they have stated that lumbricals were more variable at their insertion than the origin. The split insertion is the more frequently reported variation of the third and fourth lumbricals. The third lumbral arises with two heads from the adjacent sides of the FDP tendons for the middle and fourth fingers in 98% of cases. The unipennate origin of the third lumbral is rarely reported in the literature. Wood has observed such origin in 4 out of 104 hands. The fourth lumbral usually

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For citation purposes: Ravindra SS, Sirasanagandla SR, Nayak SB, Mohandas Rao KG, Kumar N. A rare case of unipennate third and fourth lumbricals arising from the flexor digitorum profundus tendon for the ring finger. OA Case Reports 2013 Dec 24;2(15):150.
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