

Double the Digits, Double the Tendons: A Rare Cadaveric Case of Type III Thumb Polydactyly with FPL and EPL Duplication

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INTRODUCTION: Thumb polydactyly, or preaxial polydactyly, is a congenital anomaly involving duplication of the first digit. The Wassel-Flat classification, a revised system based on radiographic and anatomical findings, categorizes duplications by the level of skeletal bifurcation, from the distal phalanx (Type I) to the metacarpal (Type VII), and includes subtypes reflecting soft tissue complexity and joint involvement. While typical thumb anatomy is well documented, tendon duplications in polydactyly remain underreported, particularly in cadaveric studies.

METHODS: During routine dissection of an adult cadaver, a duplicated right thumb was identified. Radiographic and anatomical analysis confirmed a Wassel-Flat Type III classification. Dissection focused on the musculoskeletal and neurovascular structures, with emphasis on the flexor and extensor compartments.

RESULTS: The cadaver displayed a bifid metacarpophalangeal joint consistent with Wassel-Flat Type III. Each duplicated digit had distinct osseous elements articulating with a shared metacarpal base. Two independent flexor pollicis longus (FPL) tendons and two extensor pollicis longus (EPL) tendons were identified. The FPL showed a Y-shaped bifurcation, while the EPL bifurcated distal to Lister's tubercle, with one tendon noticeably thicker. Each tendon inserted into its respective duplicated thumb. Neurovascular branches supplied both digits, with no evidence of surgical modification.

DISCUSSION AND CONCLUSION:

This rare case illustrates a unique duplication of both FPL and EPL tendons in a Wassel-Flat Type III thumb polydactyly. Although standard hand anatomy is well studied, soft tissue variations in polydactyly are seldom documented. Recognizing such differences is critical for hand surgeons, particularly in preoperative planning for excisional or reconstructive procedures. This case adds to the limited cadaveric literature and underscores the importance of documenting anatomic variants beyond skeletal classification to improve surgical preparedness.

