

A new surface landmark for thumb digital nerve bifurcation: a cadaveric study

Kitty Wu, William R Aibinder, Robert S Richards, Nina Suh

Purpose: The radial and ulnar thumb digital nerves are critical for tactile sensation and dexterity in the hand. This cadaveric study sought to validate a surface landmark for the bifurcation of the thumb radial digital nerve (RDN) and ulnar digital nerve (UDN).

Methods: We used 24 fresh-frozen cadaveric specimens for dissections. With the thumb placed in the plane of the palm and fully radially abducted, the index finger metacarpophalangeal joint was flexed to 90°. Then, while keeping the distal interphalangeal joint straight, the proximal interphalangeal joint was flexed until the fingertip contacted the thenar eminence to identify the point of bifurcation. We made a *U*-shaped incision and identified the bifurcation of the thumb RDN and UDN. The point of bifurcation was measured from the ulnar- and proximal-most aspects of the incision.

Results: The bifurcation of the thumb RDN and UDN was consistently identified within the *U* in 22 of 24 specimens (92%). In 16 specimens, the index RDN was also identified either trifurcating with the thumb RDN and UDN or branching from a common digital nerve of index RDN and thumb UDN. Most bifurcation points were found directly along the ulnar and proximal edge of the incision. Two specimens contained a bifurcation point 2 mm ulnar to the ulnar limb of the *U*.

Conclusions: The bifurcation *U* is a consistent landmark for the thumb RDN and UDN point of bifurcation. The variable branching patterns in this region confirms the importance of thorough clinical examination with penetrating injuries to the thenar eminence. This surface anatomic landmark for the thumb RDN and UDN bifurcation may aid in preventing iatrogenic injuries during elective procedures and identifying at-risk structures during penetrating injuries to the palm.