

# Clinical Location of Hook of Hamate: A Technical Note for Endoscopic Carpal Tunnel Release

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Endoscopic carpal tunnel release involves a limited surgical exposure to release the transverse carpal ligament\* (TCL).<sup>1,2</sup> Topographic landmarks can provide valuable reference points to enhance an operation. The hook of the hamate is a useful guide to the ulnar (safe) border of the carpal canal but can be difficult to palpate. Kaplan's cardinal line has been used to estimate the position of the hook of the hamate and the superficial palmar arch. However, the accuracy of this technique is questionable because it is based on a moving reference point, the web space of the thumb.

We report a technique to localize the position of the hook of the hamate and define key relationships of clinical importance for endoscopic carpal tunnel release.

## Technique

The landmarks used to localize the hook of the hamate are illustrated in Figure 1. After the loca-

tion of the pisiform is palpated and marked, a second mark is placed on the proximal palmar skin crease, in line with the midportion of the index finger or second metacarpal. These two points are then connected, forming the index-pisiform line. A second line is drawn from the midpoint of the base of the ring finger, proximally to the wrist crease at the junction of its middle and ulnar third, forming the fourth metacarpal line. The intersection of the index-pisiform line and the fourth metacarpal line directly overlies the hook of the hamate.

## Materials and Methods

The technique was used to localize the hook of the hamate in 10 cadaveric upper extremities. A radiopaque marker was placed on the skin at the measured location of the hook of the hamate (Fig. 2). X-ray films were obtained in the anteroposterior plane. Radiopaque micrometers were placed in the field to allow for adjustments in magnification. The distance from the marker to the hook of the hamate was measured from the x-ray film. From anatomic dissection of cadaveric hands ( $n = 10$ ), markers were also placed on Kaplan's cardinal line, the superficial palmar arch, and the distal extent of the TCL. Kaplan's cardinal line has been used to estimate the position of the hook of the hamate (Fig. 3). Kaplan's line is drawn parallel to the proximal palmar crease from the thumb web space to the ulnar aspect of the palm.<sup>3</sup> It reportedly crosses the hook of the hamate at the level of the ulnar border of the ring finger. The position of this line is dependent on the position of the first metacarpal and then on the mobility of the first carpometacarpal joint. Direct anatomic

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Received for publication Dec. 21, 1992; accepted in revised form Feb. 24, 1994.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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\* For consistency with the terminology defined in a previous publication<sup>6</sup> by the author, this anatomical note is included. *Nomina Anatomica*<sup>7</sup> does not acknowledge the term "transverse carpal ligament" but uses "flexor retinaculum." Nevertheless, clinicians and clinical papers generally use the term "transverse carpal ligament" when referring to the palmar boundary of the carpal tunnel. The term "transverse carpal ligament" is used herein to avoid confusion.