

THE ARRANGEMENT OF THE SYNOVIAL MEMBRANE IN THE
PALMAR DIGITAL SHEATHS. By CHARLES R. WHITTAKER,
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THIS investigation was undertaken in order to determine the precise relations that the synovial membrane bears to the individual tendons contained in the palmar digital sheaths. On account of the great difficulty involved in satisfactorily demonstrating the synovial coverings of the tendons in adult subjects, recourse was had to full-time embryos.

That the arrangement of the synovial membrane at birth coincides with that at maturity may be safely deduced, because :—

(1) The extent of the digital sheath is identical, *i.e.* from the base of the ungual phalanx to a point slightly above the head of the metacarpal bone.

(2) The sheaths have a similar situation with regard to the great palmar bursa, those of the index, middle, and ring fingers being isolated from it, that of the little finger usually communicating with it, and that of the thumb passing along its radial border and then beneath the anterior annular ligament into the forearm.

(3) The tendons of the flexor sublimis digitorum and the flexor profundus digitorum, as they lie in the sheath, present the same relations to each other as in the adult.

On opening up the sheaths our attention is first directed to the bands (*vincula accessoria*) which unite the tendons to each other and to the posterior wall of the sheath. The *ligamenta brevia* are two in number: the distal one, triangular in shape, continuous with the under surface of the flexor profundus digitorum: the proximal one, somewhat quadrilateral in appearance, passes from the synovial band which links together the tendons of the flexor sublimis digitorum near their insertion, to the back of the sheath.

Ligamenta brevia consist of a variable quantity of loose connective tissue covered by a film of synovial membrane. The free extremity is bifid (fig. 6). In well-injected specimens they are noticed to be vascular, a twig from the digital artery piercing the lateral wall of the sheath to enter them. The remaining *vincula*, that is, the *ligamenta longa*, are

rounded, cord-like bands composed of dense connective tissue surrounded by synovial membrane. Their number varies, but in the majority of cases we recognise two groups, single and paired. The former comprise one or two bands joining the deep flexor to the superficial flexor tendons; the latter pass from the flexor sublimis digitorum to the lateral margins of the posterior aspect of the sheath.

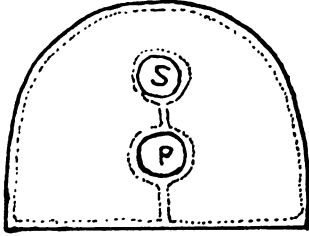


FIG. 1.

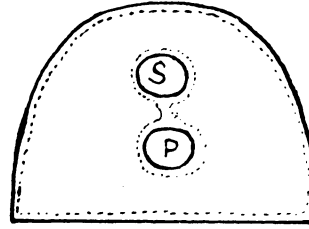


FIG. 2.

The synovial relations of the individual tendons are best displayed by a series of horizontal sections cut through the whole thickness of the sheath and its contents.

Fig. 1.—This section is taken through the palmar extremity of the sheath. Each tendon possesses a separate investment; the synovial membrane, after wrapping round the flexor profundus digitorum, becomes continuous with the layer lining the sheath.

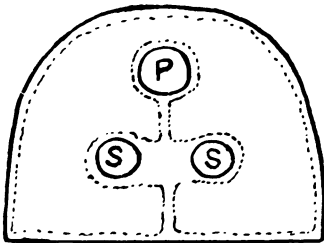


FIG. 3.

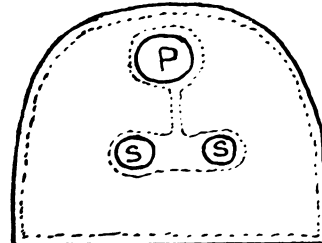


FIG. 4.

Fig. 2.—The arrangement here depicted is that found over the first phalanx, before the splitting of the flexor sublimis digitorum.

Fig. 3.—The flexor sublimis digitorum has divided. The synovial membrane, after investing the flexor profundus digitorum, passes over a ligamentum longum to enclose the split flexor sublimis digitorum, and from thence by means of a ligamentum brevum to line the sheath.

Fig. 4 is made through the first interphalangeal joint. A film of synovial membrane connects the flexor profundus to the flexor sublimis digitorum. At this point there is no band going to the posterior part of the sheath.

Fig. 5 shows the relations found from the base of the second phalanx to the insertion of the flexor sublimis digitorum. The ligamentum brevis

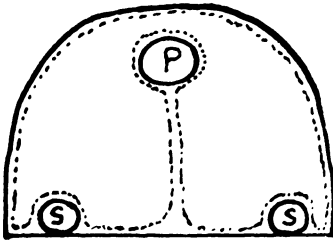


FIG. 5.

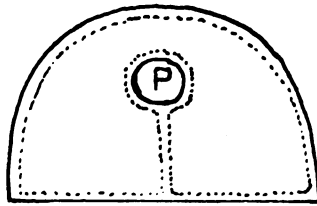


FIG. 6.

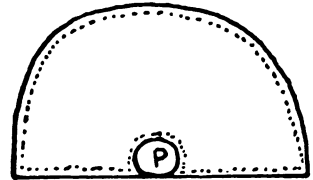


FIG. 7.

of the flexor profundus reaches the back of the sheath and then rests upon the tendons of the flexor sublimis.

Fig. 6 is drawn through the distal half of the second phalanx, or through the second interphalangeal joint. Only the tendon of the flexor profundus digitorum is present with its ligamentum brevis.

Fig. 7.—This section is made through the base of the ungual phalanx. The synovial membrane covers the inner sheath wall and passes over the insertion of the flexor profundus digitorum.

