DEVELOPMENT OF A NEW DESIGNED KNIFE FOR TRIGGER FINGERS

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Trager finger is one of the most common problem that treated by hand surgeon. At first conservative treatment with corticosteroid injection usually done. This conservative treatment has sometimes the recurrence of the symptom and the risk of tendon rupture to inject it in many times.

(Purpose)
We developed a new designed knife for minimum invasive surgery of Trigger finger. The purpose of this study is to confirm the availability and safety for this treatment.

<new designed knife>

Introducer into the A1pulley

(Materials and Methods)
This knife is composed by a small blade and a two-piece guide with an introducer of tendon sheath with the protection of the flexor tendons and the land mark of the position of the blade to protect the tissue around it. It presents a specialized shape to cut A1 pulley which manufactured a prototype for this study. Twenty-five fingers of five cadaveric hands were investigated the anatomical location and to make sure the availability and safety to cut A1 pulley.

① for incision of this method
② proximal end of A1pulley
③ distance among neurovascular bundle

thumb 5mm (4~6mm)
index 22mm (21~23mm)
middle 23mm (21~24mm)
ing 22mm (21~23mm)
little 18mm (17~19mm)

(approximately)

① proximal end of A1pulley
thumb 5mm (4.5~5.5mm)
index 12mm (11~13mm)
middle 12mm (11~14mm)
ing 12mm (11~12mm)
little 10mm (9~11mm)

The anatomical location of proximal end of A1 pulley from palmar phalangeal crease (PPC) was 5mm in thumb(4.5~6mm), 22mm in index and ring finger(21~23mm), 23mm in middle finger(21~23mm), 18mm in little finger(17~19mm).

The average length of each A1 pulley was 5mm in thumb(4.5~5.5mm), 12mm in index(11~13mm), middle(11~14mm) and ring(11~12mm) finger, 10mm in little finger(9~11mm).

The average distance of Neurovascular bundle around the both side of A1 pulley was 9mm in thumb(8~10mm), 9.5mm in index(9~10mm) and ring(9~10mm) finger, 10.5mm in middle(10~11mm), 9mm in little finger(8~10mm)

The A1 pulley was completely cut in all fingers, and the injury of neurovascular bundle and palmar arterial arch was not recognized. A shallow injury of the flexor tendon was revealed ten fingers in all.

(Conclusion)
1. We developed the new designed knife for trigger fingers, and investigated the complications with the cadaveric hands.
2. The A1 pulley were cut completely in all cases.
3. Ten tendons in Twenty-five fingers had the injury of a surface and longitudinal tear.