

Dorsal Scapholunate Capsulodesis: Viegas' Technique

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1 Introduction

The existence of scapholunate instability signifies an association of intrinsic scapholunate ligament lesion and lesions of the extrinsic carpal stabilizing ligaments [1–8]. Many techniques for scapholunate stabilization have been described ranging from simple pinning [9] to wrist arthrodesis [10–12] including ligament repairs [13] and a variety of capsulodesis and tenodesis techniques [14].

After studying the dorsal carpal ligaments [1, 15], Viegas described a transverse dorsal capsulodesis technique [16] using the dorsal intercarpal ligament to reinforce the dorsal component of the interosseous scapholunate ligament.

2 Technique

Once the diagnosis of scapholunate instability is established – arthroscopically if need be – the indication of performing this technique depends on the duration of the lesion, its irreparability and the degree of laxity of the ligament. Anaesthesia is locoregional or general. The patient lies supine with the hand on an arm table. The hand is in pronation, with slight wrist flexion and positioned on a rolled crepe bandage. Under tourniquet, a longitudinal midline incision parallel to the finger extensors is used. Hemostasis is performed using bipolar diathermy and the extensor retinaculum is incised through the fourth extensor compartment. The radial border is dissected off Lister's tubercle exposing EPL followed by the radial wrist extensors. The EDC tendons are retracted ulnarly, while the radial extensors and EPL are

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Fig. 1 Capsular exposure

retracted radially to expose the capsule (Fig. 1). The posterior interosseous nerve is identified at the dorsal border of the radius and resected about 1 cm proximally after coagulation. Fatty tissue covering the capsule may be resected to facilitate identification of the fibres. The dorsal intercarpal band of fibres of the dorsal intercarpal ligament (DICL) should then be identified palpating with fine closed forceps to mark the transverse thickening of fibres firmer than the rest of the capsule. Berger described specific landmarks to identify the bands of the dorsal ligament [17]. The capsule is incised at the proximal margin of this dorsal intercarpal ligament (Fig. 2a–b). The posterior aspects of the scaphoid and lunate are thus exposed and the scapholunate ligament lesion is identified. The dorsal pole of the scaphoid is usually subluxed dorsally and may be reduced by axial traction on the hand, pushing the proximal pole anteriorly – possibly using a K-wire as a ‘joystick’. The lunate is likewise reduced by axial traction. If this is insufficient, wrist flexion will correct the lunate position which is maintained using a temporary radiolunate 1.6 mm K-wire. A scapholunate pinning is done with a 1.2 mm K-wire, completed using a scaphocapitate K-wire.

The dorsal intercarpal ligament is then prepared for reinsertion. After a chronic lesion, it is found to be retracted lying more distal to its anatomical position over the lunate and the dorsal groove of the scaphoid, and usually adherent to the carpus [16]. It can be dissected off using the scalpel, taking care not to section it (Fig. 3). The scaphoid groove and the dorsal horn of the lunate are freshened using a rasper (Fig. 4). The dorsal intercarpal ligament can now be transferred to the dorsal scapholunate interval. If the capsule is retracted and the DICL cannot be properly mobilized, it can be detached from the rest of the capsule by an incision parallel to the initial one (Fig. 5), along its distal border. Once it is at the scapholunate interval,

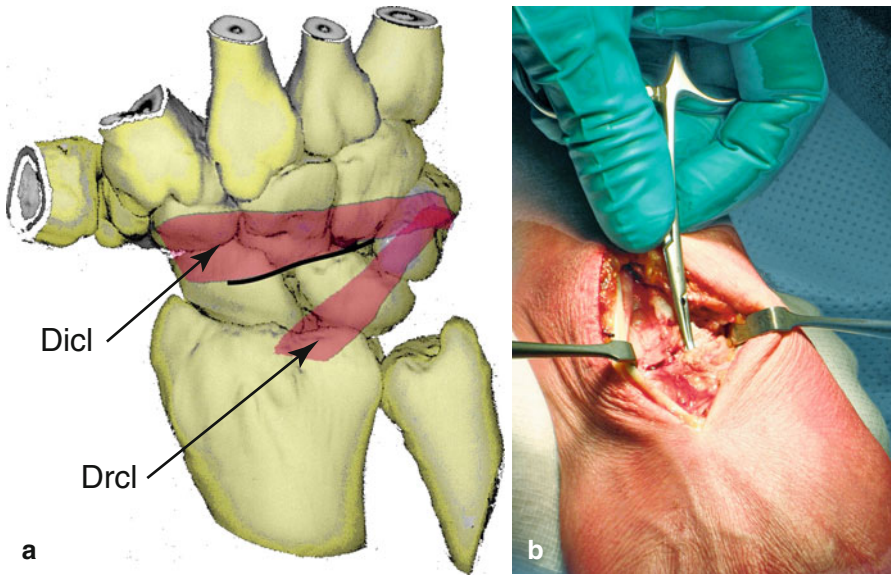
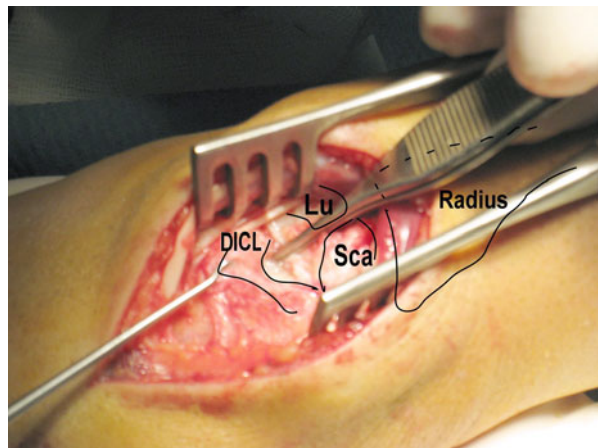


Fig. 2 (a) Dorsal capsular incision. *DRCL* dorsal radiocarpal ligament, *DICL* dorsal intercarpal ligament, — Capsular incision. (b) Dorsal capsular incision

Fig. 3 Detachment of dorsal intercarpal ligament (*DICL*). (*LICD*): Dorsal Inter Carpal Ligament. *Sca* scaphoid, *Lu* lunatum



it is secured by two anchors, sometimes three or four, taking care to maintain transverse tension on the fibres of the DICL to maintain reduction and keep the scapholunate junction closed (Fig. 6).

The transverse capsular incisions are left open so as not to limit postoperative wrist flexion. Once the tendons are repositioned, the retinaculum is repaired by two x stitches with braided absorbable 2/0 suture. The K-wire is cut but kept long enough so that EPL does not pass over it and rupture. The skin is sutured using simple

Fig. 4 Freshening of the scaphoid groove using a rasp. Scapholunate pinning and scaphoid anchor are in place. *Sca* scaphoid, *Lu* lunatum

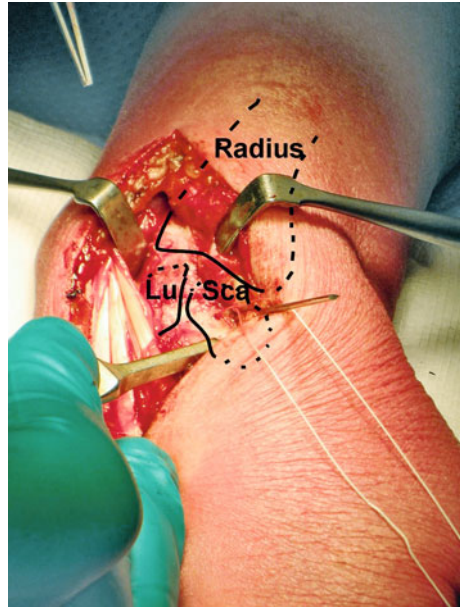
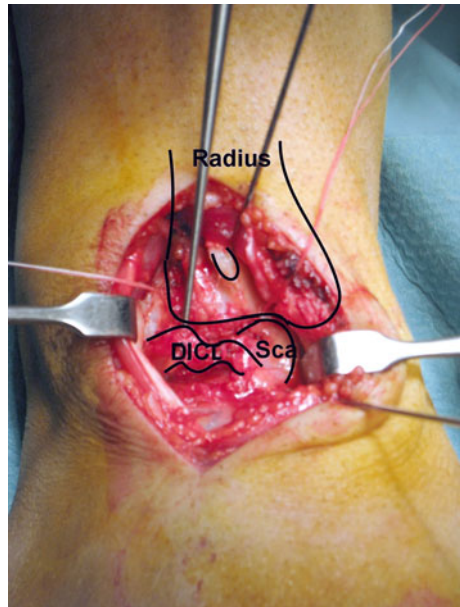


Fig. 5 Proximal transfer of DICL. *Sca* scaphoid



stitches of nonabsorbable 4/0 monofilament over a drain. If the patient is compliant, a simple enforced removable splint is placed, facilitating dressings and allowing forearm swelling and remission. Fingers are allowed mobilization in space with no grip or loading to avoid any distraction at the scapholunate interval.



Fig. 6 Appearance on X-ray showing good scapho-lunate stability and motion

3 Preliminary Results of Our Series

We present results of our first 14 cases, with average follow-up of 21 months (18–31). There are 10 men of average age 31 years (19–42) and 4 women of average age 28 years (21–36). The average preoperative delay was 8 months (3–14). There were nine work-related accidents and five domestic accidents.

The procedure consisted of a capsulodesis with 2 anchors 8 times, 3 anchors 3 times, 4 anchors twice and 5 anchors once (suture breakage).

At follow-up wrist ROM was recorded. There was 49.8° flexion, 53.2° extension, 23° radial deviation and 40° ulnar deviation. The grip was 27.8 kgf; Pain using VAS (score 1–10) was 1.94 with preoperative pain score at 6.57. The PRWE global score moved from 58.2/150 preoperative to 25.4/150 postoperative. Ten patients had very good or good results, three satisfactory and one bad result.

There were four skin irritations cured by wire removal and one EPL irritation without rupture. Two cutaneous dysaesthesias disappeared at 4 and 9 months postoperative. One patient developed a stage 2 SLAC lesion at 30 months, not shown on X-ray but confirmed by scintigraphy and second look arthroscopy.

4 Discussion

Scapholunate instability is the most common carpal instability [16] due to concentrated loading on the carpus at this point [20]. By far, the commonest treatment is the Blatt capsulodesis [21, 22]. But results are disappointing. Capsulodesis does not suppress the pain nor the radiological misalignment and causes a clear decrease in wrist flexion [23, 24]. It seemed logical to design a capsulodesis more respectful of the physiological isometry of the wrist. Since it has been stated that the strongest component of the scapholunate ligament is the dorsal one [18, 19], we have considered a ligamentoplasty that is transverse and not axial. The Viegas' technique meets these requisites. The choice of the dorsal intercarpal ligament is also interesting since it is more resistant than the interosseous scapholunate ligament and thus more adapted to replacing it [15].

Clinical results do not give complete recovery; however, 10 out of 14 patients were satisfied or very satisfied with their outcome. Bad result corresponds to the SLAC lesion developed. These are only preliminary results; the sample size and follow-up time are not sufficient to draw definite conclusions.

5 Indications

We use this technique for cases of chronic scapholunate instability – dynamic or static – where the scaphoid is reducible and no arthritis is seen on arthroscopy. This corresponds to stages 3 and 4 scapholunate instability according to Garcia-Elias et al. [25].

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