Carpal malalignment analysis after excisional arthroplasty and tendon interposition in scaphotrapeziotrapezoidal osteoarthritis

Michel Chammas, M.D.PhD. a, Charline Garcon, M.D. a, Adeline Cambon-Binder, M.D. b, Bertrand Coulet, M.D., Ph.D. c, Cyril Lazerges, M.D. a

a: Hand and Upper Extremity Unit, Lapeyronie University Hospital, Montpellier, France
b: Orthopaedic Surgery department, Saint-Antoine Hospital, Paris, France

• Introduction

Isolated osteoarthritis (OA) of the scaphotrapeziotrapezoidal (STT) joint is uncommon. At an advanced stage, the scaphoid comes vertical, which leads to a carpus adaptive displacement and appearance of dorsal intercalated segment instability (DISI). When conservative measures fail to relieve symptoms, surgery may be indicated. Treatment options include STT arthrodesis with risk of painful non-union and radioscaphoid impingement, minimal resection of the distal scaphoid and interposition of tendon tissue or without interposition, in an open procedure or under arthroscopy.

The aim of this study was to evaluate carpal malalignment after arthroplastic resection of the distal scaphoid with tendon interposition in isolated STT arthritis and its clinical consequences.

• Material and Methods

This was a retrospective, monocentric and single-operator study, including 16 patients (20 wrists) with mean age 67.6 years (range 56-80). All patients had grade 2 or 3 STT osteoarthritis according to the Crosby classification. The distal pole of the scaphoid was resected anteriorly with tendon interposition.

• Results

Clinical outcomes: At a mean follow-up of 6 years (range 1–15), the mean (SD) pain score was 1.8 (2.7), with no pain in 10 patients. Overall, 85% of the patients were satisfied, with a mean QuickDASH score of 28.7 (range 0-77). Wrist motion and strength were not significantly affected by the procedure as compared with the contralateral side. The mean wrist flexion was 64.5°, extension 47°, radial deviation 14° and ulnar deviation 27.5°.

Radiographic outcomes: Using the Crosby score, the preop mean STT arthritis grade was 2.6 (SD 0.51, range 2-3). The mean (SD) RL angle was -13° (10°) before surgery and -35° (10°) at the last follow-up (p=0.0006). If we consider an RL angle > 15° as abnormal (DISI), 18 patients (90%) had DISI at the last follow-up. The mean (SD) preoperative CL angle was -8° (9°) and -14° (9°) after surgery, with 8 wrists (40%) showing an abnormal CL angle. The SL angle was normal in 90% patients, with mean SL angle 58° (SD 15°; range 22-92°). The carpal height ratio was preserved. 35% of patients showed midcarpal OA only and 15% both radiocarpal and midcarpal OA at the last follow-up (Figure 5). Radiography revealed 14 type I and 6 type II lunate wrists. Ten patients (50%) showed midcarpal subluxation, defined as CL angle > 15° associated with a distance between lunate and capitate > 3 mm, with 4 type I lunate wrists (28% of type I lunate wrists) and 6 type II lunate wrists (100% of type II lunate wrists).

• Discussion

The resection of the distal pole of scaphoid in STT arthritis gives good clinical results with the achievement of indolence and a conservation of joint mobilities and strength. However, there is a radioclinic discordance with evolution towards a carpal malalignment with DISI and midcarpal subluxation, especially in type II lunate wrist in our study. We found augmentation of the CL angle correlated with the midcarpal subluxation. This instability was identified in all type II lunate wrists but only 28° of type I wrist wrists.

• Conclusion

The occurrence of midcarpal subluxation, usually well tolerated clinically, is correlated with an increase in capitolunate angle and appears to be associated with a Viegas type II lunate wrist. Arthroplastic resection of distal scaphoid with tendon interposition gives good long-term clinical results in isolated STT osteoarthritis.

However, with a type II lunate wrist increasing the risk of midcarpal subluxation, other surgical options can be discussed.

• References


