

Osteochondral Resurfacing (OCRPRC) for Capitate Chondrosis in Proximal Row Carpectomy

Peter Tang, MD, MPH, Joseph E. Imbriglia, MD

From the College of Physicians & Surgeons, Columbia University, New York, NY; and the University of Pittsburgh School of Medicine, Wexford, PA.

Purpose: Proximal row carpectomy (PRC) can be an effective treatment option for arthritis of the wrist, but the operation is contraindicated when there is substantial arthritis of the capitate head. We describe a new technique that involves resurfacing of the capitate when there is chondrosis by using osteochondral grafts harvested from the resected carpal bones. The purpose of this study was to assess the outcomes of patients who had osteochondral resurfacing in the setting of PRC (OCRPRC) for capitate chondrosis and to determine how they compare with published results of conventional PRC.

Methods: Patients having PRC who had grade II to IV (Modified Outerbridge Scale) capitate chondrosis underwent osteochondral resurfacing of the capitate. Preoperative and postoperative pain level, employment status, range of motion (ROM), grip strength, and Mayo wrist scores were assessed, and Student's *t*-test was used. Postoperative Disability of the Arm, Shoulder and Hand (DASH) scores were also calculated.

Results: Eight patients with an average age of 53 years were followed up for 18 months. Preoperatively, 7 patients described their pain as moderate to severe; postoperatively, 7 patients described their pain as mild to no pain. Preoperative arc of motion was 84° (74% of the contralateral side); postoperative arc of motion was 75° (66% of the contralateral side). Preoperative grip strength was 29 kg, or 62% of the contralateral side; postoperative grip strength was 34 kg, or 71% of the contralateral side. Preoperative Mayo wrist score was 51 ("poor"); postoperative Mayo wrist score was 68 ("fair"). Average postoperative DASH score was 19.5. Follow-up radiographs showed that 75% of patients had mild to no degeneration. Magnetic resonance imaging at 21 months postoperatively showed graft incorporation. No complications were encountered.

Conclusions: Our results with osteochondral resurfacing compare favorably with the published results of conventional PRC in terms of pain relief, employment status, ROM, and grip strength. (*J Hand Surg* 2007;32A:1334–1342. Copyright © 2007 by the American Society for Surgery of the Hand.)

Type of study/level of evidence: Therapeutic IV.

Key words: Autogenous osteochondral graft, proximal row carpectomy.

Multiple studies have indicated that proximal row carpectomy (PRC) can be an effective motion-preserving procedure for arthritis of the wrist. The operation consists of resection of the scaphoid, lunate, and triquetrum, and if trapezial-styloid impingement occurs, radial styloidectomy is performed with careful preservation of the volar radioscaphocapitate ligament.¹ Subsequently, wrist motion occurs between the proximal capitate and lunate fossa of the radius, which logically makes the

ideal candidate for PRC one free of degenerative changes at the proximal capitate and lunate fossa.^{2–7} As wrist arthritis progresses, however, as in stage III scapholunate advanced collapse (SLAC) wrist or stage II/III scaphoid nonunion advanced collapse (SNAC) wrist, the articular surface of the proximal capitate becomes arthritic. Nevasier emphasized and Green reiterated that there should be limited or no arthritic involvement in the head of the capitate and lunate fossa of the radius.^{1,8} Various authors as well

as the senior author have suggested that when there is mild degeneration of these articular surfaces, PRC can still provide good to excellent results.^{2-6,9}

Substantial arthritis of the capitate head, however, is a contraindication to PRC.²⁻⁷ In these cases, alternative procedures such as scaphoid excision and intercarpal fusion or wrist fusion should be considered. Other authors, in an attempt to create a broad, stable radiocarpal pseudoarthrosis advocate ignoring the articular status of the capitate head and resecting the proximal capitate with or without capsular interposition.¹⁰ The goal of this study was to evaluate the outcomes of a new wrist procedure for capitate chondrosis in the setting of PRC and determine how they compare with published results of conventional PRC. In this procedure, the degenerated area of the capitate is resurfaced with an osteochondral graft harvested from normal articular surface from the resected carpal bones.

Materials and Methods

Between 2004 and 2005, the articular surface of the capitate was evaluated in all patients having a PRC. Prior to surgery, informed consent was obtained for each patient to include osteochondral resurfacing. When the chondrosis was noted to be grade II to IV (Modified Outerbridge Scale: grade I, softening of the articular cartilage; II, fibrillation or superficial fissures of the cartilage; III, deep fissuring of the cartilage without exposed bone; IV, exposed bone)¹¹ and the area of the chondrosis could be adequately resurfaced by a graft less than 10 mm in diameter, these patients were enrolled in the study and underwent capitate resurfacing with osteochondral grafts. The location, grade of chondrosis, and size in both the volar-dorsal direction and radial-ulnar direction were recorded, and the location of graft harvest was noted.

We recorded age, gender, dominance, operative side, and previous surgeries. Preoperative pain level (none, mild, moderate, severe), work status (regular employment, restricted, able to work but unemployed, unable), range of motion (ROM), and grip strength (using a Jamar dynamometer set at III and adjusted for dominance where dominant extremity is 10% greater than nondominant extremity)¹² were obtained from clinic notes and patient interviews. Postoperative data regarding pain level, work status, ROM, grip strength, and Disability of the Arm, Shoulder and Hand scores (DASH; 100 being the worst and 0 being the best possible score)¹³ were obtained at postoperative office visits or at physical therapy visits. With the available data, preoperative

and postoperative modified Mayo wrist scores were calculated (modified Mayo wrist score: excellent, 90–100 points; good, 80–90; fair, 65–80; and poor, less than 65).¹⁴ To detect statistical change between the preoperative and postoperative states, Student's *t*-tests were used to compare preoperative and postoperative pain level, work status, ROM, grip strength, and Mayo wrist score. Preoperative and postoperative radiographs were evaluated for degenerative changes using the system proposed by Culp.⁵ Radiographic degeneration and functional outcome were compared using analysis of variance/eta squared to evaluate the relationship between radiographic findings and continuous variables of function (ie, wrist motion, grip strength, Mayo wrist score). For categorical variables (ie, pain level and work status), Kramer's V correlation coefficient was used. Postoperative wrist magnetic resonance imaging (MRI) was planned to assess graft incorporation.

Demographics

Eight patients (7 men, 1 woman) with an average age of 53 years (range, 39–67 years) were enrolled in the study (Table 1). Average follow-up evaluation was 18 months (range, 8–25 months). The dominant extremity was involved in 6 patients. Half the patients were diagnosed with SLAC wrist, and the rest had the diagnosis of SNAC wrist. Five patients were laborers including a roofer, welder, power company linesman, maintenance supervisor, and body shop manager, and the other occupations included an administrator, business owner, and retired secretary.

Three of the 6 patients with SNAC wrist had open reduction and internal fixation. One of these 3 patients had 2 other surgeries before the PRC procedure. These included carpal tunnel release and radial styloidectomy and concomitant first dorsal compartment release for de Quervain's disorder. During our index procedure, 1 patient had a carpal tunnel release and another had a dorsal wrist ganglion excision.

Technique

A longitudinal incision is made just ulnar to Lister's tubercle. The interval between the third and fourth compartments is opened and the tendons are retracted. The posterior interosseous nerve in the fourth compartment is identified and resected. A longitudinal incision is made in the joint capsule, and the capsule is elevated proximally and distally, exposing the proximal and distal carpal rows. The articular surfaces of the proximal capitate and lunate fossa of the radius are inspected for degenerative changes. If the area of chondrosis of the capitate is grade II to IV and the size is less than 10 mm,

Download English Version:

<https://daneshyari.com/en/article/4071025>

Download Persian Version:

<https://daneshyari.com/article/4071025>

[Daneshyari.com](https://daneshyari.com)