SCIENTIFIC ARTICLE

Diagnosis and Arthroscopic Management of Dorsal Wrist Capsular Impingement

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Purpose Dorsal wrist capsular impingement (DWCI) is characterized by pain attributable to impingement of dorsal capsular tissue during wrist extension. The diagnostic criteria and management algorithm for this condition have not been well established. The aims of our study were (1) to retrospectively review the clinical presentation and arthroscopic findings of patients treated surgically for DWCI and (2) to evaluate the outcomes of arthroscopic debridement for this condition.

Methods A total of 19 patients were treated with arthroscopic debridement for isolated DWCI from 2006 to 2015 by two surgeons (M.J.R. and D.S.R.) at a single institution. A chart review was performed to gather information on clinical presentation, radiological findings, operative details, and outcomes including numeric pain scale rating, range of motion, Mayo wrist score, and Quick Disabilities of the Arm, Shoulder, and Hand score. Patients were contacted at the time of the study for final telephone follow-up.

Results Symptoms were present for a median of 12.5 months (range, 3.5−124.4 mo) prior to surgical intervention, and all patients had pain localized to the dorsal and central wrist with passive terminal wrist extension (100%; 19 of 19). We obtained magnetic resonance imaging in 66% of patients (12 of 19). Diagnostic arthroscopy yielded evidence of infolded, redundant dorsal capsular tissue in all cases (19 of 19), and there was no evidence of concomitant wrist pathology. Compared with preoperative values, postoperative improvements were seen in average numeric pain scale rating (6.0−1.9), Quick Disabilities of the Arm, Shoulder, and Hand score (45.8−4.8), and Mayo wrist score (50.0−87.8). These improvements were sustained at 41.6 months after surgery (range, 11.9−73.8 months). One complication of superficial cellulitis occurred.

Conclusions Dorsal wrist capsular impingement is a clinical diagnosis; magnetic resonance imaging may be helpful in evaluating for other pathologies. Diagnostic arthroscopy yields evidence of redundant dorsal capsular tissue, and arthroscopic debridement of this tissue offers a safe and effective treatment to improve pain and functional scores. *(J Hand Surg Am. 2017;42(3):e167−e174. Copyright © 2017 by the American Society for Surgery of the Hand. All rights reserved.)*

Type of study/level of evidence Therapeutic IV.

Key words Dorsal wrist capsular impingement, dorsal wrist pain, dorsal wrist syndrome, ganglion cyst, wrist arthroscopy.

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Dorsal wrist capsular impingement (DWCI), also called dorsal wrist syndrome or dorsal wrist impingement, is a clinical disorder characterized by focal pain at the dorsal radiocarpal joint attributed to pathological impingement of redundant dorsal wrist capsular tissue between the extensor carpi radialis brevis tendon and the scaphoid. Dorsal wrist capsular impingement was originally reported by Watson et al[1,2] who described it as a form of predynamic carpal instability that was linked to the pathology of ganglion cysts. Although some surgeons question the existence of DWCI as a discrete clinical entity, those who acknowledge its existence hypothesize that its etiology may involve acute trauma or chronic repetitive microtrauma, at times including partial avulsion of the dorsal wrist ligaments.[3,4]

Different arthroscopic and open techniques have been described for management of DWCI,[2–6] yet no technique has been widely accepted as the treatment of choice. Outcomes reported following surgical management of DWCI in several small series have been good,[3–5] yet these studies may be subject to publication bias given lack of widespread recognition of this condition, and data from larger study groups with longer follow-up are lacking.

The aims of our study were (1) to retrospectively review the clinical presentation and arthroscopic findings of patients treated surgically for DWCI and (2) to evaluate the outcomes of arthroscopic debridement for this condition. The secondary aim is to report patient-rated functional outcomes at several years after surgery to determine if improvements following surgery are sustainable. It was hypothesized that surgery would result in significant improvements in pain and function and that these improvements would be sustained at the time of final follow-up.

MATERIALS AND METHODS

Approval for this retrospective chart review was obtained through our institutional review board.

Study group

Using Common Procedural Terminology codes, we retrospectively identified 338 patients who were treated with arthroscopic debridement of the wrist by 1 of 2 fellowship-trained hand surgeons (M.J.R. and D.S.R) for DWCI from 2006 to 2015. This study group represents a sample of convenience based upon when the senior author (D.S.R.) began performing wrist arthroscopy at our institution. Among this group, we carefully reviewed detailed surgical reports to find patients who met our initial inclusion criterion (n = 47), which we defined as a description of arthroscopic debridement of "redundant, impinging dorsal capsular tissue."

In order to isolate DWCI specifically to describe its presentation and course of management, we eliminated patients with concomitant pathology. From the group of 47 patients who underwent debridement of "redundant, impinging dorsal capsular tissue," we applied our exclusion criteria, which consisted of any of the following findings documented in the operative report: partial or complete triangular fibrocartilage complex (TFCC) tear (n = 20), partial or complete scapholunate (SL) ligament tear (n = 16), partial or complete lunotriquetral ligament tear (n = 6), ganglion cyst (n = 5), arthritis (n = 2), and carpal tunnel release (n = 2). Several patients met multiple exclusion criteria. Nineteen patients were included in the final study group.

As a part of their preoperative evaluation, all patients included underwent a detailed physical examination that included, but was not limited to, palpation for tenderness, active and passive range of motion (ROM), scaphoid shift test, and resisted wrist extension test. Radiographs were obtained in all patients and were considered to be normal. If there was uncertainty regarding the diagnosis, noncontrast magnetic resonance imaging (MRI) of the wrist was obtained to identify other potential pathology. Prior to surgical intervention, all patients had failed at least 6 weeks of nonsurgical management with activity modification and oral nonsteroidal anti-inflammatory medication and were offered a corticosteroid injection.

Operative technique

Prior to arrival in the operating room, the patient receives a regional interscalene nerve block placed by an anesthetist for planned monitored anesthesia care. The patient is brought to the operating theatre and placed in the supine position with a hand table extension. Once the patient is sedated for monitored anesthesia care, a tourniquet is placed on the arm and the operative upper extremity is prepared and draped in a usual sterile fashion. The extremity is elevated and exsanguinated and the tourniquet is inflated to 250 mm Hg.

The wrist is secured to a distraction tower and elevated with approximately 12 pounds of distracting force across the radiocarpal joint. A standard 3-4 approach is used to insufflate the radiocarpal joint, and the 3-4 portal is made, taking care to avoid the extensor pollicis longus and extensor digitorum communis tendons. A 2.7-mm 30° arthroscope is