Prospective Outcomes and Associations of Wrist Ganglion Cysts Resected Arthroscopically

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Purpose To prospectively evaluate objective and subjective outcomes of arthroscopic dorsal wrist ganglion cyst resection, and to identify and examine intra-articular pathologies associated with ganglion cysts.

Methods We prospectively evaluated 55 patients with dorsal wrist ganglion cysts who underwent arthroscopic resection with a minimum follow-up of 24 months. Ten had recurrent ganglion cysts previously treated with open resection. Grip strength, wrist motion, and Disabilities of the Arm, Shoulder, and Hand questionnaire scores were evaluated preoperatively and at 6 weeks, 6 months, and 2 years postoperatively. Intraoperative findings were reviewed.

Results In primary ganglion cysts a discrete stalk was present in 4 of 45 cases and diffuse cystic material and redundant capsular thickening were present in 38 of 45 cases. Cystic material appeared to arise from the radiocarpal joint exclusively in 11 of 42 cases, extended into the midcarpal joint in 29 of 42 cases, and arose exclusively from the midcarpal joint in 2 of 42 cases. The scapholunate joint demonstrated instability types I (2 of 45 cases), II (22 of 45 cases), III (20 of 45 cases), and IV (1 of 45 cases). The lunatotriquetral joint demonstrated instability types II (6 of 45 cases) and III (39 of 45 cases). At 6 weeks, average grip strengths increased by 5.9 kg and wrist flexion decreased 13°. Preoperative Disabilities of the Arm, Shoulder, and Hand scores improved from 14.2 to 1.7 at 6 weeks and remained stable at 2 years. At 2 years, all patients demonstrated motion to within 5° of preoperative measurements, and there were no recurrences.

Conclusions Patients experienced significant increases in function and decreases in pain within 6 weeks after arthroscopic ganglion cyst resection, and the recurrence and complication rates appear to be comparable to open resections. Ganglion cysts also have a high association with certain interosseous laxities, and recurrent ganglion cysts originating from the midcarpal joint are not contraindications for arthroscopic resection. Assessment of the midcarpal joint is necessary for complete resection of most ganglion cysts, and identification of a discrete stalk is an uncommon finding and not necessary for successful resection. *(J Hand Surg 2009;34A:395–400.*

Type of study/level of evidence Therapeutic IV.

Key words Arthroscopy, ganglion cyst, laxity, outcomes, resections.

Despite becoming a well-accepted practice, arthroscopic ganglion cyst resection remains poorly understood, with most of the current literature offering mainly retrospective case studies with small cohorts.[2–5,7,8] Arthroscopic ganglion cyst resection provides several theoretical advantages over open techniques, including faster recovery,[2,3,5,7,8] lower complication and recurrence rates,[2,4,7] and more satis-

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fying cosmetic results.[2–5,7,8] The current literature, however, lacks significant scientific support for these claims of superior outcomes.[2–5,7,8] Furthermore, the role of arthroscopic excision for recurrent cysts has been controversial (Singh D, Culp R. presented at the American Society for Surgery of the Hand, 2002), and although scapholunate laxity and other intra-articular findings have been associated with ganglion cysts, there has been no specific evaluation and classification of these laxities. Regarding technique, some surgeons evaluate the midcarpal joint routinely during the resection (Singh D, Culp R. presented at the American Society for Surgery of the Hand, 2002),[2] whereas others do not, with only anecdotal support for or against each practice.[3,4] Also, the inconsistent identification of a distinct ganglion cyst stalk[2,3,8] suggests that its importance has been overstated.

The purposes of this study are to prospectively evaluate objective and subjective outcomes of dorsal wrist ganglion cysts resected arthroscopically, and to identify and examine intra-articular characteristics associated with ganglion cysts.

MATERIALS AND METHODS

A total of 55 patients with dorsal wrist ganglion cysts were prospectively enrolled in this study after failing nonsurgical treatment. They consisted of 33 women and 22 men with an average age of 42 years (range, 15–52 years). Ten patients had previous open excisions with consequent recurrence prior to evaluation. Twelve patients had previous aspirations with consequent recurrences. Of the 45 patients who had not had prior surgery, 34 had failed some form of nonsurgical treatment (eg, anti-inflammatory medication, splinting, aspiration, or steroid injection); the remaining 11 patients elected to have resection without attempting nonsurgical options. Whereas no patients reported acute trauma within 6 months of ganglion cyst occurrence, 7 recalled specific trauma to the wrist in the remote past. A total of 48 patients reported pain as a primary reason for surgery, whereas 7 did not have pain but did not like the appearance of the ganglion cyst. The average duration of ganglion cyst symptoms before surgery was 10 months (range, 2–52 months). Institutional review board approval was granted before initiation of the study, and patients gave informed consent for participation.

Preoperative evaluation

Preoperatively, we measured grip and pinch strengths and wrist motion using standard assessment instrumentation. Patients also completed a preoperative visual analog pain scale (0–10) and Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire, with all data obtained within 1 month prior to surgery. Patients were separated into 2 groups; 45 had primary cysts (group 1) and 10 had recurrent cysts after previous surgery (group 2). We evaluated groups 1 and 2 separately because previous surgical intervention may influence intra-articular findings.

Postoperative evaluation

Six weeks, 6 months, and 2 years after surgery, we again obtained grip strengths, wrist motions, and DASH scores. Throughout the follow-up period, patients were specifically assessed for any recurrences of cysts or complications such as hematoma, painful neuroma, infection, paresthesias, decreased sensation, tenosynovitis or tendon injury, complex regional pain syndrome, hypertrophic scarring, and any subjective reports of problems that lie outside of what might be expected.

Surgical technique

All surgeries and postoperative evaluations were performed by the senior author or under the senior author's direct guidance. A tourniquet was placed on every patient as a precaution and inflated in the event intra-articular bleeding obscured visualization, which occurred in approximately one third of patients. Operative time averaged 25 minutes.

All patients underwent arthroscopic examination, in which both the radiocarpal and midcarpal joints were evaluated with a 2.7-mm arthroscope. The presence of a cystic stalk, the origin of cystic material, ligament laxity, and extrinsic or interosseous ligament integrity were documented. We evaluated interosseous ligament laxity using the arthroscopic classification system described by Geissler et al.[1] (Table 1).

While the patient's arm is suspended in a traction tower with 5 to 8 kg of traction applied, a 6-R portal is created as a visualization portal. The more radial 3-4 or 4-5 portals are avoided at this time to prevent inadvertently decompressing the cyst. With the arthroscope introduced through the 6-R portal, a working portal might traditionally be a 3-4 portal. Nevertheless, because dorsal ganglion cysts often overlap the general vicinity of the 3-4 portals, we typically create the working portal adjacent to the immediate area of the cyst, rather than directly over the 3-4 portal. Consequently, the working portal is usually just distal and sometimes slightly radial to the actual 3-4 portal. A 2.9-mm,