

Arthroscopic Management of Dorsal and Volar Wrist Ganglion



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KEYWORDS

• Dorsal ganglion • Volar ganglion • Wrist arthroscopy • Treatment

KEY POINTS

- Dorsal and volar wrist ganglia are benign tumors that can disappear spontaneously.
- Conservative treatment is the best primary treatment of dorsal or volar wrist ganglia owing to the benign character and the frequency of its spontaneous disappearance.
- Arthroscopic resection is a simple technique, which is minimally invasive and avoids the complications of open excision, especially unsightly scarring and joint stiffness.
- The patient must be informed of the recurrence rate, similar to that after open surgery.
- Scapholunate instability can be associated with a dorsal wrist ganglion, should not be missed, and should be treated with arthroscopy.

INTRODUCTION: NATURE OF THE PROBLEM

Dorsal and volar wrist ganglia are benign tumors that can disappear spontaneously, and most of them are asymptomatic. Surgery is reserved for the rare painful ganglia, or more often for cosmetic concern.

Even in painful wrist ganglia, range of motion and function are usually well preserved, and those tumors are benign. In effect, the treatment has to be safe, with a low complication rate and good preservation of wrist motion. Arthroscopic resection fills those criteria and is simple and reliable.¹

For dorsal wrist ganglia, recent cadaveric studies has allowed the precise understanding that the dorsal scapholunate (SL) region is a complex composed of 3 distinct elements²:

- The dorsal segment of the SL ligament
- The dorsal intercarpal ligament (DIC)

- The dorsal capsuloscapholunate septum (DCSS), which unites the SL ligament to the DIC and contributes to the stabilization of the SL bony interval (**Fig. 1**).

The hypothesis of its origin is a mucoid dysplasia associated with intracapsular and extra-synovial ganglia, which occurs at the level of this dorsal SL complex. Medially, the dysplasia herniates into the wrist joints, usually into the midcarpal joint. Laterally, the dysplasia is extended by a pedicle between the DIC and the radio lunotriquetral (LRLT) ligament, or either distally beneath the DIC or laterally toward the radial border of the radiocarpal compartment. Dorsal ganglia are more common (70%). The incidence in men and boys is 25/100,000 and in women and girls is 43/100,000. Conservative treatment is probably the best primary treatment for dorsal wrist ganglia owing to the benign character and the high

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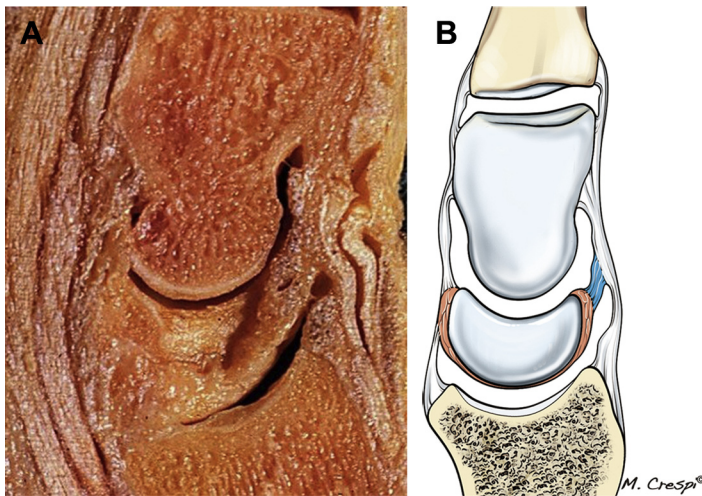


Fig. 1. (A) Sagittal cut of the wrist passing through the lunate and showing the dorsal SL complex. (B) The 3 components of the dorsal SL complex: the dorsal portion of the SL ligament in brown, the dorsal capsuloligamentous septum, DCSS, in blue, and the DIC, the integrating part of the dorsal capsule, in white.

frequency of spontaneous disappearance by 6 months. Arthroscopic resection is a simple and minimally invasive technique. The patient must be informed of the recurrence rate of 11%,³ similar to that following open surgery. Arthroscopic resection avoids the complications of open excision, especially unsightly scarring and joint stiffness.

An SL instability can be associated with a dorsal wrist ganglion and should not be missed. Arthroscopic treatment allows assessment and repair to the SL ligament if necessary.

Volar wrist ganglia are less common (20%). They occur mainly in the radiocarpal joint, and rarely in the midcarpal joint, and in scapho-trapezio-trapezoid (STT) osteoarthritis. They are due to capsule destruction at the volar insertion of the SL ligament in the midcarpal joint. Like dorsal ganglia, these are benign tumors. The operative risks are related to the proximity of the cyst with the radial artery and nerve, especially in the open procedure. Arthroscopic resection is a simple and reliable procedure as long as the surgical technique is performed correctly, given that the intracapsular origin of the ganglion is far from tendons, ligaments, and muscles.

Surgical treatment is indicated only in cases whereby the ganglion causes pain or is unsightly. Its recurrence rate is similar to open resection, but without the risk of injuring tendons, ligaments, nerves, and muscles. Arthroscopic resection involves less scarring, minimal time away from work, and faster functional recovery.

INDICATIONS/CONTRAINDICATIONS

Conservative treatment is probably the best primary treatment for dorsal and volar wrist ganglia, as mentioned before.

In the case of persistence of ganglion, aspiration is a current treatment. However, the recurrence rate is high: 59% with a low rate of complication (3%) according to a systematic review and meta-analysis.⁴ Steroid injection after aspiration has been proposed but does not give better results.⁵

Open surgical excision offers significantly lower chance of recurrence with a rate of 21% but a higher rate of complications of 14%.⁵

According to this same review, arthroscopic excision has yielded promising outcomes with a 6% recurrence rate and 4% complication rate. However, the data from comparative clinical trials are limited and have not demonstrated the superiority of the arthroscopic approach. In another study with 114 dorsal wrist ganglia at a minimum of 2 years follow-up, the recurrence rate was 11%.³ Arthroscopic treatment of ganglion cyst seems to be at least as good with fewer complications.

An SL instability can be also associated with a dorsal wrist ganglion and should not be missed. Arthroscopic SL ligament assessment and repair are necessary during the same procedure.

Arthroscopic resection of volar ganglion is also an effective method for well-selected ganglia arising from the radiocarpal joint.⁶ The risk is related to the proximity of the cyst with the radial artery and nerve.

There is no contraindication of arthroscopic ganglion excision.

SURGICAL TECHNIQUE/PROCEDURE

Preoperative Planning

MRI assists in the diagnosis and identification of the pedicle of the ganglion in order to plan the procedure (Fig. 2). The resection of the ganglion must be performed at the origin of the pedicle.

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