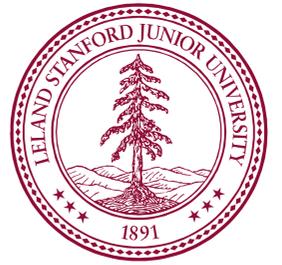




Arthroscopic Dorsal Wrist Ganglion Excision Assisted with Color-Aided Stalk Visualization



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Hypothesis

During arthroscopic excision of dorsal wrist ganglia, this color-aided technique improves complete stalk visualization. This reduces the need for extensive capsular debridement, decreases the incidence of recurrence, and limits related complications such as iatrogenic scapholunate ligament injury, hypertrophic scarring, and painful neuroma formation.



Figure 1. Color-assisted view of the ganglion stalk with Indigo Carmine (base of the stalk identified by needle)

Introduction

Dorsal wrist ganglia (DWG) represent up to 70 % of wrist masses.² Arthroscopic excision of DWG is evolving to become a desirable technique for surgical management due to the potential for smaller incisions and less capsular disruption.⁵ In contrast to open surgery, arthroscopic resection has been shown to provide improved range of motion, aesthetic appearance, incidence of complications, recovery time, pain relief, and overall patient satisfaction.^{3,5,6}

Regardless of surgical approach, post-operative recurrence of the ganglion is commonly documented and is likely attributed to inadequate excision of the stalk or the presence of multiple occult cysts that remain unresected.^{6,8,9,11,17} Recurrence rates between open and arthroscopic excision has shown no significant difference: 8.7 % vs. 10.7 %, respectively.⁹ Adequate arthroscopic resection of DWG is dependent on the identifying the stalk emanating from the dorsal scapholunate ligament. However, variable rates of stalk visualization have been reported, ranging from 9 to 100 %.^{5,9,13,14}

In this study, we retrospectively evaluate the frequency of DWG stalk identification and the incidence of recurrence with color-aided visualization. This visualization is achieved by injecting Indigo Carmine dye percutaneously into the DWG to aid in visualization of the stalk.

Materials & Methods

A retrospective chart review was performed identifying a consecutive series of 27 patients who had undergone arthroscopic excision of visibly identifiable DWG with the color-aided technique.

These procedures were performed at our institution by one fellowship trained hand surgeon. A dilute Indigo Carmine dye was injected percutaneously into the ganglion and visualized intraarticularly prior to the resection (Figure 1). Once visualized, the resection of the stalk and DWG was performed with the arthroscope in the 6R portal and the shaver in the 3-4 portal (Figures 2-4).

The primary outcome measure was identification of the ganglion stalk. The secondary outcome measure assessed recurrence of the DWG.

A minimum of 1-year follow-up was used to assess for DWG recurrence. Patients were contacted via telephone and questioned for any evidence of recurrence of the mass.

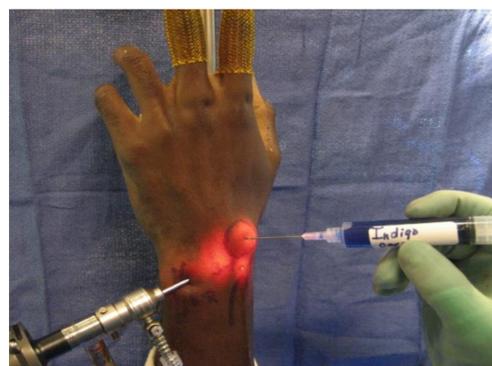


Figure 2. Percutaneous administration of Indigo Carmine into the DWG. The arthroscope is in the 6R portal.

Results

Twenty-seven patients (20 females, 7 males; average age 33 years) underwent arthroscopic excision of dorsal wrist ganglia with the color-aided technique. The ganglion stalk was documented to be completely visualized in all 27 cases (100 %) following the Indigo Carmine injection. Telephone communication was successful with all 27 patients with an average post-operative duration of 25 months (range 12–42 months). One patient experienced recurrence (3.7% incidence), 8 months after surgery. No intraoperative complications were identified.

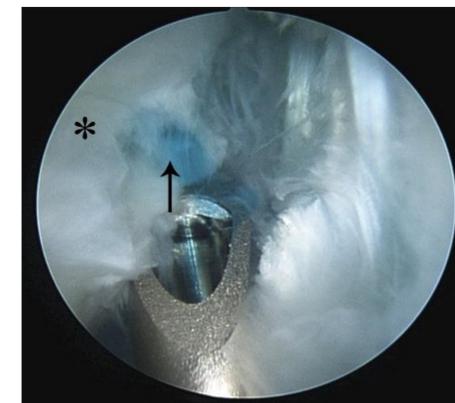


Figure 3. Excision of the cyst and stalk performed using a motorized shaver. The back of the shaver protects the dorsal scapholunate ligament (*). The dye may be seen entering the dSIL (arrow).

Conclusions

1. Using Indigo Carmine injections, we visualized the ganglion stalk in 100 % of cases.
2. There was only one recurrence of the ganglion in this cohort.
3. This color-aided technique is safe and helps to facilitate a more ideal resection that is limited to the pathologic tissue, preventing iatrogenic scapholunate ligament or dorsal capsule injury.

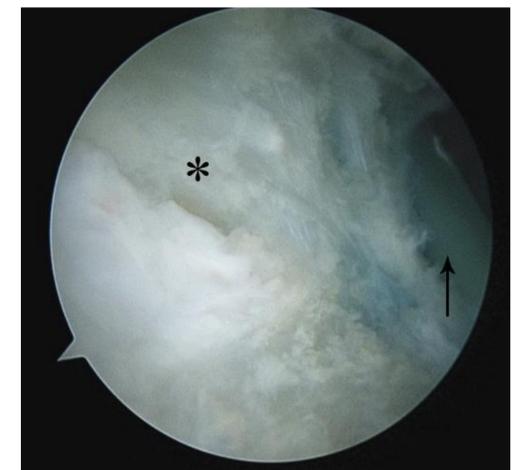


Figure 4. View of the dorsal scapholunate ligament (*) following complete excision of the stalk and cyst. Extensor tendons identified by arrow.

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