

Surgical Treatment of Synovial Cyst in Scapholunate Joint

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ABSTRACT

Ganglion cysts are the most common soft-tissue mass in the hand and wrist, making up 50% to 70% of all masses. They are most common in individuals in their twenties and forties, with women being affected three times more than males. The primary symptoms reported by people with wrist ganglion cysts are pain, weakness, and a visually unappealing look. Approximately 10% of patients report a prior traumatic experience being linked to the emergence of a ganglion cyst.

Surgical treatment is often performed on an outpatient basis, using general anesthesia or axillary block anesthesia. A pneumatic tourniquet ensures a field without blood. Using a magnifying loupe is recommended to avoid detecting the pedicle and its connection to the ligaments below.

Dorsal ganglion cysts involve making a transverse incision immediately above the cyst, dislodging the primary cyst from surrounding tissues using tenotomy scissors. Angelides' approach involves making a curved cut through the capsule next to the cyst, allowing for the removal of capsular attachments and mucin ducts. To alleviate severe pain caused by dorsal ganglion cysts, it is recommended to surgically remove the posterior interosseous nerve above the extensor retinaculum.

Volar wrist ganglion cysts involve making an incision along the radial side of the cyst, enabling both proximal and distal extension to reach distant capsular attachments. The ganglion is released from all adjacent connective tissue, and the radial artery is moved both towards the body and away from it.

Precise control of bleeding is achieved using bipolar electrocautery, and the wound is thoroughly flushed with fluid. Skin margins are infused with a prolonged-acting local anesthetic, and the wound is sealed with intermittent 4-0 or 5-0 nylon sutures. Prompt mobilization is recommended, but a splint is not used until significant dissection has occurred.

KEYWORDS: ganglion cyst, scapholunate joint, hand surgery

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INTRODUCTION

The ganglion cyst is the most prevalent soft-tissue mass seen in the hand and wrist, making up 50% to 70% of all masses in this area. Ganglion cysts may develop at any age, however they are most common in individuals in their twenties and forties. Women are impacted at a rate three times higher than males. Ganglion cysts frequently need surgical removal to alleviate the discomfort and correct the deformities.

The primary symptoms reported by people with wrist ganglion cysts are pain, weakness, and a visually unappealing look. Approximately 10% of patients report a prior traumatic

experience being linked to the emergence of a ganglion cyst. Many researchers hypothesize that a history of recurrent mild trauma contributes to their formation. Typically, ganglions are characterized by their hard or rubbery texture, lack of attachment to the skin, and size that typically falls within the range of 1 to 3 cm. They often do not cause pain when touched. Discomfort is intensified by wrist movement, especially when it is taken to the maximum. The discomfort is often dull and last for a long time. Multiple researchers have shown that smaller ganglions tend to cause greater pain compared to bigger ones.

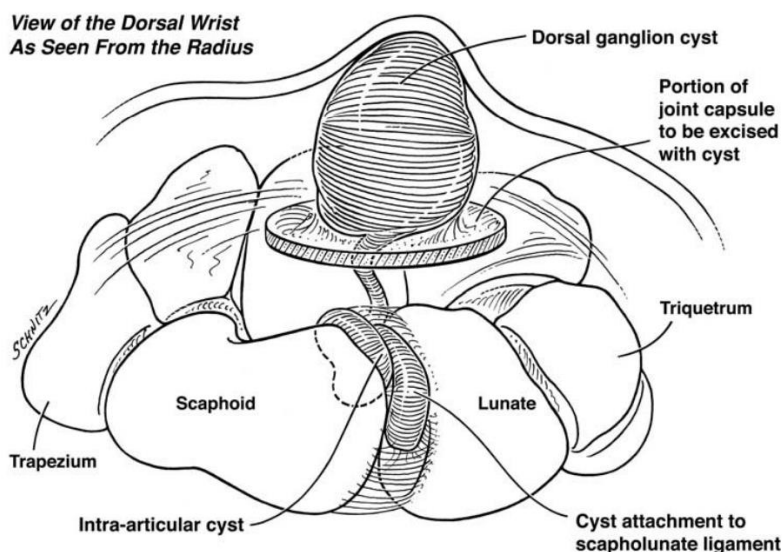


Figure 1. A representation of a ganglion cyst with its pedicle attachment to the scapholunate ligament.

SURGICAL TREATMENT

When conservative therapy fails or the patient cannot tolerate it, surgery is the preferred therapeutic option. Ganglion cyst excision is often performed on an outpatient basis. General anesthetic is the preferable method, however axillary block anesthesia is also acceptable. A pneumatic tourniquet guarantees a field without blood. Using a magnifying loupe is recommended because not being able to precisely detect the pedicle and its connection to the ligaments below has been significantly linked to a greater likelihood of recurrence.

The treatment of dorsal ganglion cysts involves making a transverse incision immediately above the cyst. Extensive skin incisions are seldom required because to the high mobility of the dorsal skin. The primary cyst is dislodged from the surrounding tissues by using tenotomy scissors. To prevent the cyst from bursting, since it would complicate the process of identifying and completely removing the pedicle and capsular attachments. According to Angelides' approach, a curved cut is made through the capsule next to the cyst, along the end closest to the scaphoid bone. The capsule is raised and pulled back while the incision in the capsule is extended around the ganglion. Currently, one can see the capsular attachments and mucin ducts that are attached to the scapholunate ligament. The attachments should be surgically

removed from the scapholunate ligament in a tangential manner, without causing any damage to the ligament itself. A large portion of the dorsal capsule is removed along with the cyst, significantly decreasing the likelihood of the cyst coming back. To prevent iatrogenic scapholunate instability, it is crucial to preserve the integrity of the scapholunate ligament. Avoid closing the capsule mainly or with a flap since these types of closures only result in a delay of early mobilization. To alleviate severe pain produced by dorsal ganglion cysts, it is recommended to surgically remove the posterior interosseous nerve above the extensor retinaculum. This procedure helps reduce discomfort caused by the stretching of the nerve as it passes through the cyst's protective covering. The posterior interosseous nerve is located in the space between the third and fourth compartments of the extensor tendons on the radius bone. It is accompanied by the posterior interosseous artery.

The treatment of volar wrist ganglion cysts involves making an incision that follows a curved path along the radial side of the cyst. The incision is strategically positioned to enable both proximal and distal extension in order to reach distant capsular attachments. The palmar cutaneous branch of the median nerve originates 5 cm closer to the wrist joint and travels towards the fingers along the inner side of the flexor

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carpi radialis tendon. It subsequently passes through the volar carpal ligament to provide feeling to the thenar eminence. Damage to the nerve during dissection might result in numbness in this specific region. The volar ganglion cyst often occurs in proximity to the radial artery, sometimes encircling the blood vessel. If the artery is only slightly affected, then precise and gentle separation of the artery from the cyst may be achieved with blunt dissection.

The approach reported by Lister and Smith¹⁴ in 1978 is helpful when the cyst is closely attached to the vessel wall. The ganglion is released from all adjacent connective tissue and the radial artery is moved both towards the body and away from it. To avoid damaging the blood vessel, a little portion of the cyst wall, about 1 to 2 millimeters, is intentionally left attached to the artery before removing the ganglion. After the artery is isolated and safeguarded, the pedicle may be followed to its connections with the scaphotrapezial or radiocarpal ligament and removed. The identification of capsular attachments is generally more challenging on the palm side of the wrist compared to the back side of the wrist. When it is challenging to locate the connection between the ganglion and the wrist, applying pressure to the surgical area produces the release of mucin, which helps to discover smaller and more twisted ducts. Alternatively, a local anesthetic substance may be administered into a different location and watched as it passes through the link between the radio carpal joint and the capsule. Complete excision of dorsal ganglion cysts effectively reduces the likelihood of early recurrence.

Following the removal of the tourniquet, precise control of bleeding is achieved by using bipolar electrocautery, and the wound is thoroughly flushed with fluid. The skin margins are infused with a prolonged-acting local anesthetic, such as bupivacaine 0.5%, and the wound is sealed with intermittent 4-0 or 5-0 nylon sutures. A soft and puffy bandage is placed on top of a non-sticky dressing. Prompt mobilization is recommended; however, a splint is not used until there has been significant dissection, such as in some cases of volar ganglion cysts. The skin is sutured and a dressing is placed as previously explained. The sutures are typically removed during a span of 10 to 14 days. The patient utilizes a loosely fitted elastic bandage for a duration of 2 weeks in order to manage the edema. Therapy, whether it be guided or a home exercise program, is maintained until the individual is able to move their joints through their whole range of motion. Postoperative treatment for volar wrist splint patients follows a similar approach as that for dorsal ganglion cysts, with the addition of using a volar wrist splint for enhanced patient comfort after lengthy dissections.



Figure 2. Tumor in scapholunate joint



Figure 3. Presence of synovial cyst in the scapholunate joint



Figure 4. Synovial cyst on right hand in scapholunate joint

CONCLUSION

Despite the uncertain cause of the ganglion cyst, surgical intervention may be pursued with assurance that patients would experience relief from their symptoms. Removing the cyst, its pedicle, and a section of the capsule significantly reduces the likelihood of it coming back.

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