

Ganglion cysts of the wrist.

Oliver Evans*

Editorial Office, Journal of Advanced Surgical Research, London, United Kingdom

Accepted November 08, 2021

Ganglion Cyst

This article summarises what is known about ganglion cyst development, natural history (50% of cysts dissolve on their own), diagnosis, and treatment. Although the specific process of cyst development is uncertain, the majority of current hypotheses suggest that extra-articular mucin "droplets" combine to create the tumor's main body. The "cyst wall" and pedicle (which connects the cyst to a neighbouring synovial joint) are created until later. Watchful waiting, non-operative aspiration/injection, and surgical removal are all possibilities. Despite the fact that therapy is often unneeded, many individuals seeking consultation are looking for a long-term solution. The procedure of cyst aspiration/injection is associated with a significant rate of recurrence. Surgery has a reduced likelihood of recurrence, but it also has a greater rate of complications. All of the existing therapeutic choices are ineffective.

Ganglia are benign soft tissue tumours that most often affect the wrist but can affect any joint. The dorsal side of the wrist is home to 60% to 70% of ganglion cysts, which interact with the joint through a pedicle. This pedicle generally arises from a variety of locations along the dorsal side of the wrist capsule, including the scapholunate ligament. On the volar side of the wrist, 13% to 20% of ganglia can be identified, originating via a pedicle from the radio scaphoid/scapholunate interval, scaphotrapezoid joint, or metacarpotrapezoid joint, in that order of occurrence. The ganglia that arise from a flexor tendon sheath in the hand make up around 10% of all ganglia. Other joints, as well as intraosseous and intratendinous ganglia, have a significantly lower incidence.

The pedicle has a convoluted channel that connects the cyst to the underlying joint microscopically. Angelides' intraoperative and arthrographic findings, as well as those of Andren and Eiken, who found movement of intra-articular contrast from the radiocarpal joint into the ganglia in 44% of patients with a dorsal wrist ganglion and 85% of patients with a volar wrist ganglion, support the existence of this link. A one-way valve mechanism has been proposed since contrast does not appear to flow from the cyst into the joint. The amount of tiny "micro-cysts" present in the tissue around the pedicle is considered to produce such a one-way valve. These "micro-cysts" interact with the main ganglion and are thought to be a component of the tortuous pedicle lumen, which connects the cyst to the joint and creates the one-way valve mechanism.

The ganglion's wall is made up of randomly oriented collagen sheets stacked in loose layers, one on top of the other, according to electron microscope analysis. In the collagen sheets, there are a few cells that appear to be fully functioning fibroblasts or mesenchymal cells. It is important to note that because these formations lack a synovial lining, they cannot be classed

as genuine cysts. Despite the presence of isolated regions of mucinous degeneration in the cyst wall, no substantial global degenerative alterations, necrosis, or inflammatory changes have been observed inside the pseudocyst or adjacent tissues.

The gelatinous substance found in cystic fluid is mostly hyaluronic acid, with smaller quantities of glucosamine, globulins, and albumen. Biochemically, this fluid differs from intra-articular synovial fluid and is considerably thicker. The fluid's origin has yet to be determined, although it is thought to be the result of one of three methods. It might come from the joint itself, pushed into the cyst by wrist motion, or from an extra-articular degenerative process that results in cyst development and subsequent connection to the joint, or it could come from mesenchymal cells within the cell wall. It's possible that a mix of these processes is involved.

Unfortunately, the origin of the ganglion, like the origin of its fluid, is unknown. It's proven tough to confirm cyst genesis theories, and most can't account for all of the ganglion cyst's recognised characteristics. The lack of synovial lining within the cyst makes the idea that it's just a simple herniation of the joint capsule difficult to believe. Pathologic investigations revealing no pericystic inflammatory alterations have discredited the idea that ganglions have an inflammatory origin.

Three alternative possibilities, on the other hand, are nevertheless worth considering. Joint stress (acute or chronic) can cause a tear in the joint capsule, allowing synovial fluid to seep into the peri-articular tissue. The gelatinous cystic fluid and the cyst wall are formed as a result of the subsequent interaction between this fluid and local tissue.

Some writers have proposed that pre-existing joint disease (peri-scaphoid ligamentous damage, etc.) is the underlying cause of rent/cyst development in support of this "capsular rent" idea. Joint abnormalities are considered to cause changes in biomechanics, weakened capsules, and eventually fluid leakage and cyst development. Despite the existence of intra-articular joint disease in 50% of ganglion patients, there is no link between this pathology and postoperative cyst recurrence, according to arthroscopic results. This has led some to believe that intra-articular disease isn't the catalyst for ganglion development in the "rent" idea.

Joint stress, on the other hand, may cause mucoid degeneration of adjacent extra-articular connective tissue, resulting in fluid collection and cyst development. According to this idea, the cyst and pedicle create a direct link to the joint only after the cyst is formed.

Finally, some researchers believe that joint stress may induce mucin production by mesenchymal cells in the surrounding tissues, which may be seen using electron microscopy. The

coalescence of tiny pools of mucin to create the major cyst is the ultimate common route of all of these hypotheses. The surrounding pseudocapsule is produced by an unknown process, however compression of surrounding tissues is a possibility.

The popularity of ganglia and the broad range of therapies that have been devised are most likely the result of its frequent presentation to physicians and the absence of a truly satisfying therapeutic option. For acute treatment, aspiration is a useful and easy alternative, although it appears to have little long-term influence on resolution. On the other hand, current adjunctive treatments offer little advantage over aspiration alone. Surgery improves ganglia resolution, although it is frequently more intrusive than the patient's symptoms merit. Individual patient concerns about the ganglion cyst must be determined initially. The physician can give assistance as the patient chooses the most suitable course of action for their situation, based on a detailed understanding of the natural history of ganglia and the available treatment choices and results.

References

1. Thornburg LE. Ganglions of the hand and wrist. *J Am Acad Orthop Surg.* 1999;7(4):231-38.

2. Andren L, Eiken O. Arthrographic studies of wrist ganglions. *J Bone Joint Surg Am.* 1971;53(2):299-302.

3. Loder RT, Robinson JH, Jackson WT, et al. A surface ultrastructure study of ganglia and digital mucous cysts. *J Hand Surg.* 1988;13(5):758-62.

4. Duncan KH, Lewis RC. Scapholunate instability following ganglion cyst excision: a case report. *Clin Orthop Relat Res.* 1988;228:250-53.

5. Jagers M, Akkerhuis P, Heijden M, et al. Hyaluronidase versus surgical excision of ganglia: a prospective, randomized clinical trial. *J Hand Surg.* 2002;27(3):256-58.

*Correspondence to:

Oliver Evans
Editorial Office
Journal of Advanced Surgical Research
London
United Kingdom
E-mail: oliverevns..@gmail.com