

## Case Report

# Ganglion Cyst of the Thenar Muscle: A Case Report



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## ABSTRACT

Ganglion cysts are the most common type of soft tissue tumors in the hands and wrists. When presented in rare locations, they may cause diagnostic and therapeutic challenges. In this report, we presented a case of a ganglion cyst in the thenar muscle of a 25-year-old woman, which was located adjacent to the recurrent branch of the median nerve. It was removed with surgical excision. The patient's six-month follow-up was uneventful. This case suggests that ganglion cysts should be included in the differential diagnosis of the hand and wrist pathologies because the late diagnosis can endanger the adjacent structures, such as the recurrent branch of the median nerve.

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## 1. Introduction

**G**anglion cysts are lesions that grow in the joint capsule or tendon sheaths. These lesions are the most common type of soft tissue tumors in the hands, wrists, and feet (50% to 70%). It is more common in women (70%) [1-4]. Medical concerns include the cosmetic appearance of the mass, pain, weakness, and malignancy. This lesion subsides with rest and enlarges with activity and, in most cases, disappears spontaneously. Surgical excision has a lower risk of recurrence compared to aspiration [5].

Ganglion cysts are mainly located in areas that are easily detected by hand surgeons. The differential diagnosis for swelling of the dorsal side of the wrist is extensor tenosynovitis, lipomas, and other hand tumors [6]. Rarely ganglion cyst is presented in unusual locations, such as the lunate, scaphoid, and intra-tendinous portion [3, 7]. Involvement of the thenar muscle is very rare and has been reported in only two previous studies.

Here, we report a ganglion cyst of the thenar muscle in a 25-year-old woman, which was located adjacent to the recurrent branch of the median nerve.

## 2. Case Presentation

A 25-year-old woman presented to our orthopedic clinic with a progressively growing mass over the palmar aspect of her left and non-dominant hand from one year ago without increasing pain. She had no history of specific trauma. On physical examination, the patient had a firm, mobile, non-tender mass on the volar aspect of the radial side of the hand, in the periphery of the thenar muscles. The thenar muscle power was good (grade 5). She had no sensory deficits in the palmar surfaces of her thenar muscle and digits. The approximate size of the lesion in palpation was 1×1 cm. No limitation exists in the range of motion of the wrist.

Radiographic evaluation with plain X-rays did not show fracture or acute abnormalities. Magnetic resonance imaging (MRI) without gadolinium contrast revealed a cystic mass on the volar aspect of the hand, adjacent to the thenar muscles. The lesion was well-circumscribed, with a size of 2×2×1 cm and low signal intensity on T2 sequences (Figure 1).

The patient was taken to the operating room, and the median nerve was explored with an incision at the volar side of the wrist parallel to the thenar crease. A cystic

mass was found at the depth of the digital nerve and the recurrent branch of the median nerve in the muscle fiber of the thenar muscle (Figure 2).

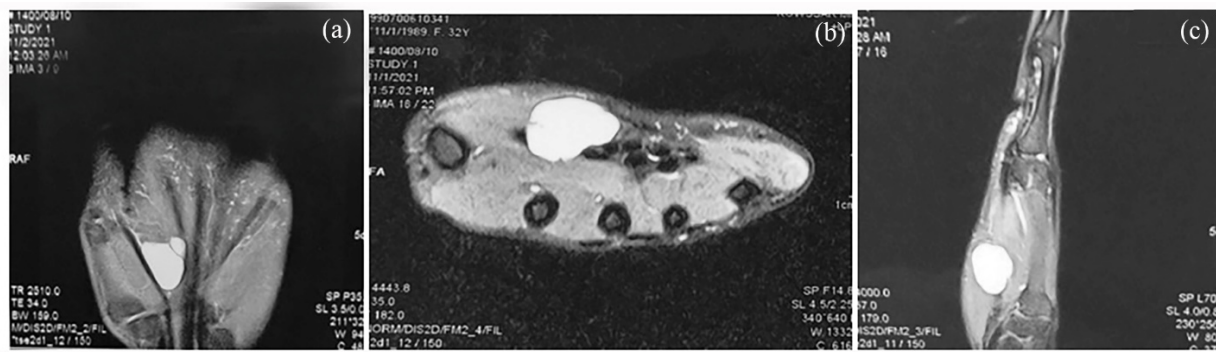
By protecting the recurrent branch of the median and digital nerve, the mass was excised and sent to the pathology department. Macroscopic evaluation of the mass revealed a 2.5×1×0.5 cm lesion with a smooth inner surface and without papillary projections (Figure 3a). Histologic evaluation showed a multilocular cystic structure composed of dense collagenous walls without true epithelial lining with foci of myxoid change (Figure 3b). Accordingly, the diagnosis of a ganglion cyst was made.

The patient remained symptom-free during the six months postoperatively. The clinical and radiological recurrence was not observed during the follow-up period. The patient provided written informed consent to use her medical data for publication.

## 3. Discussion

Treatment of benign lesions can be difficult, particularly if presented in rare locations [8, 9]. The dorsal wrist is the most common location of the hand and wrist ganglia (up to 70%). Other common locations are the volar-radial wrist, the dorsal side of the distal interphalangeal joint (mucous cyst), and the volar proximal digital flexion crease (flexor retinacular cyst). Approximately 90% of volar wrist ganglia arise from the radioscaphoid or scaphotrapezoid joint [10]. The thenar of the hand is a rare location for a ganglion cyst. The literature review retrieved two articles describing a volar wrist ganglion at the thenar muscle. In 1993, Chiu and Aschermann reported the first case of a ganglion in the thenar muscle [11]. Azzopardi et al. reported the second case of ganglion cyst originated from the first carpometacarpal joint and rapidly expanded to the thenar eminence ganglion. At first glance, it mimicked a sarcoma [12].

Here, we presented a ganglion cyst originating from the tendon of the thenar muscle. It is essential to differentiate ganglion cysts of unusual locations from other diagnoses to avoid overtreatment of the patients. MRI can be very useful for this purpose. On the T2-weighted MRI, ganglion cysts can be characterized by a lobular, multiseptated, and hyperintense signal covering the whole lesion. Ultrasound evaluation can also be useful in the differentiation of ganglion cysts from other soft tissue lesions [13, 14]. In the present report, we only used MRI for diagnosis.



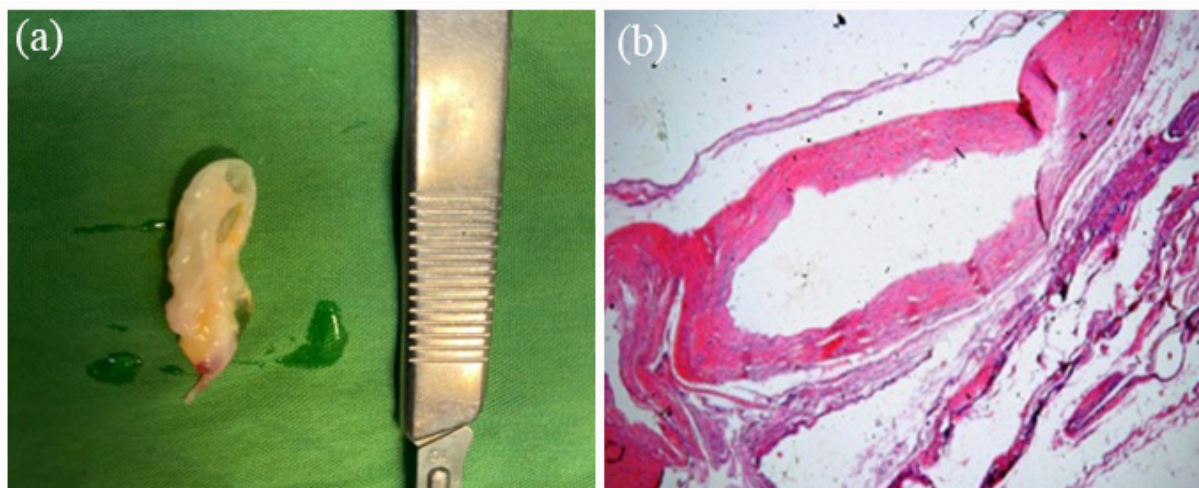
**Figure 1.** T2-weighted magnetic resonance imaging (MRI) Showing a high-intensity mass in the thenar muscle

a) Coronal view; b) Axial view; c) Sagittal view magnetic resonance imaging (MRI)



**Figure 2.** Intraoperative photographs showing the ganglion cyst compressing the recurrent branch of the median and digital nerve

Note: The white arrow shows the recurrent branch of the median nerve; the black arrow shows the ganglion cyst; the gray arrow shows the median nerve.



**Figure 3.** a) Macroscopic view of the extracted lesion; b) Histologic examination of the lesion (40X Magnification)

Treatment of ganglion cysts includes a conservative approach or surgical intervention. In symptomatic cases, surgical excision is the treatment of choice. Also, in cases with atypical localization, difficult needle aspiration, and a high risk of recurrence, surgical resection is recommended. Post-excision recurrence may occur due to the inadequate resection of the tumor mass.

Although atypical localization of ganglion cysts rarely occurs, it should be considered in the differential diagnosis of hand and wrist lesions. In our case, the growth speed and clinical course did not raise the clinical suspicion of malignancy. However, due to the proximity of the mass in the thenar area and its proximity to the crucial adjacent structures, including the recurrent branch of the median nerve and digital nerve, early and accurate diagnosis and treatment through timely clinical investigation and complete preoperative imaging analysis are required.

## Ethical Considerations

### Compliance with ethical guidelines

There were no ethical considerations to be considered in this research and considering that the article is a case report and that the university has not defined a code of ethics for this type of article, the research has been done with the patient's consent at all stages.

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### Authors' contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflict of interest.

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