

TENOSYNOVIAL GIANT CELL TUMOR OF THE ANKLE: A CLINICAL CASE

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RESUME

Background. Tenosynovial giant cell tumor is a rare benign disease that primarily affects the synovium and tendon sheath. Its prevalence is 30.3 cases per million people per year. Surgery remains the primary treatment for tenosynovial giant cell tumor. Tumor excision is the gold standard of treatment; however, along with the tumor, compromised areas of the tendon sheath, capsule, and ligamentous apparatus should be excised, which can cause joint dysfunction. Therefore, careful preoperative planning is essential for tenosynovial giant cell tumor. This includes not only determining the extent of tumor resection but also reconstructing the ligamentous component to restore range of motion and preserve the function of the operated joint.

The aim. To present a clinical case of surgical treatment of tenosynovial giant cell tumor with simultaneous resection of the tumor and additional stabilization of the ankle joint using the Brostrom – Gould technique.

Materials and methods. 65-year-old woman was admitted with a diagnosis of tenosynovial giant cell tumor of the left ankle, grade II osteoarthritis of the left ankle, and regional osteoporosis. After thorough preoperative preparation, the patient underwent surgical treatment: excision of the tumor and ligament reconstruction of the ankle.

Conclusion. In our clinical case, the tumor was completely removed, and the surgery was carried out along with ankle stabilization. Over a one-year follow-up, the patient has shown no signs of tumor recurrence, and ankle function and ability to work have been fully restored.

Key words: nodular tenosynovitis, tenosynovial giant cell tumors, ankle joint, ankle instability

Received: 13.11.2025
Accepted: 10.12.2025
Published: 25.12.2025

For citation: Kuklin I.A., Menshova D.V., Usoltsev I.V., Tishkov N.V., Chepurnykh E.E. Tenosynovial giant cell tumor of the ankle: a clinical case *Acta biomedica scientifica*. 2025; 10(6): 161-166. doi: 10.29413/ABS.2025-10.6.17

ТЕНОСИНОВИАЛЬНАЯ ГИГАНТОКЛЕТОЧНАЯ ОПУХОЛЬ ГОЛЕНОСТОПНОГО СУСТАВА: КЛИНИЧЕСКИЙ СЛУЧАЙ

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РЕЗЮМЕ

Актуальность. Теносиновиальная гигантоклеточная опухоль — это редкое доброкачественное заболевание, которое в первую очередь поражает синовиальную оболочку суставов и сухожильных влагалищ. Распространённость заболевания составляет 30,3 на 1 млн человек в год. Основным методом лечения теносиновиальной гигантоклеточной опухоли остаётся хирургическое вмешательство. Иссечение опухолевидного образования является золотым стандартом лечения, однако вместе с опухолью необходимо иссекать компримированные участки сухожильных влагалищ, капсулы связочного аппарата, что может приводить к нарушению функции сустава. Таким образом, при теносиновиальной гигантоклеточной опухоли необходимо тщательное предоперационное планирование, которое включает не только определение объёма резекции опухоли, но и реконструкцию связочного компонента для восстановления объёма движений и сохранения функции прооперированного сустава.

Цель. Продемонстрировать клиническое наблюдение хирургического лечения теносиновиальной гигантоклеточной опухоли с одномоментной резекцией опухолевидного образования и дополнительной стабилизацией голеностопного сустава по Brostrom – Gould.

Материалы и методы. Женщина 65 лет поступила с диагнозом: теносиновиальная гигантоклеточная опухоль левого голеностопного сустава, остеоартроз левого голеностопного сустава II степени. После тщательной предоперационной подготовки пациентке выполнено оперативное лечение – иссечение опухолевидного образования, пластика связок голеностопного сустава.

Заключение. В нашем клиническом случае опухолевидное образование было удалено полностью, оперативное пособие было дополнено стабилизацией голеностопного сустава. За год наблюдения у пациентки отсутствуют признаки рецидива опухоли, полностью восстановлены функция голеностопного сустава и трудоспособность.

Ключевые слова: нодулярный теносиновит, теносиновиальные гигантоклеточные опухоли, голеностопный сустав, нестабильность голеностопного сустава

Статья поступила: 13.11.2025
Статья принята: 10.12.2025
Статья опубликована: 25.12.2025

Для цитирования: Куклин И.А., Меньшова Д.В., Усольцев И.В., Тишков Н.В., Чепурных Е.Е. Теносиновиальная гигантоклеточная опухоль голеностопного сустава: клинический случай. *Acta biomedica scientifica*. 2025; 10(6): 161-166. doi: 10.29413/ABS.2025-10.6.17

Tenosynovial giant cell tumor (also known as nodular tenosynovitis or pigmented villonodular tenosynovitis) is a benign synovial tumor that affects joints, tendon sheaths, and joint capsules [1, 2]. This neoplasm has a tendency to grow progressively and can cause pressure on the surrounding soft tissues, leading to edema, pain, and restricted joint function. As a result, the quality of life of patients can be significantly reduced, limiting their daily activities [3]. The prevalence of the disease is 30.3 cases per million people per year, with a peak incidence occurring between the ages of 30 and 50 years. The knee joint is the most common site of occurrence, accounting for 64 % of cases, followed by the ankle (14 %), hip (10 %), foot (5 %), and shoulder (1 %) [4, 5]. Macroscopically, tenosynovial giant cell tumors appear as well-defined nodular masses that can range in color from dark red to light brown or yellow. Surgery remains the primary treatment. However, treatment guidelines have not been established based on the results of large-scale studies or high-quality evidence [6]. The lack of a standardized approach to surgical management highlights the significance of this issue. The gold standard treatment for these tumors is excision, but along with the tumor mass, it is also necessary to remove compromised areas of the tendon sheath, capsule, and ligamentous structures, which can cause joint dysfunction. Therefore, for tenosynovial giant cell tumor, careful preoperative planning is essential. This includes not only assessing the extent of resection required for the tumor but also determining how to reconstruct the ligamentous components to restore joint mobility and preserve joint function.

AIM

To present a clinical case of surgical treatment for a tenosynovial giant cell tumor, involving the simultaneous resection of the tumor-like mass and additional stabilization of the ankle joint using the Brostrom-Gould procedure.

CLINICAL CASE

Patient N., aged 65, presented to the Clinical Diagnostic Department of the Irkutsk Scientific Centre of Surgery and Traumatology, complaining of a tumor-like mass in the area of the left ankle joint, moderate pain, and a limited range of movement in the ankle. Medical history: the tumor-like mass had been bothering her since 2020. Over the four years before presentation, the tumor had been growing. Prior to hospitalization, a histological examination revealed a tenosynovial giant cell tumor of the ankle (nodular tenosynovitis).

The following diagnosis was established: M65.8 Tenosynovial giant cell tumor of the left ankle joint.

Grade II osteoarthritis of the left ankle. Surgical treatment was recommended, consisting of excision of the tumor-like mass and reconstruction of the ligamentous structures of the ankle via ankle joint plasty (Fig. 1).

Surgical stages

Under sterile conditions, using spinal anesthesia, a 15 cm zigzag incision was made on the dorsal surface of the patient's left ankle, exposing an 8 cm x 8 cm tumor-like mass (Fig. 2).

During the dissection of the tumor-like mass from the soft tissues, it was observed that it had diffusely infiltrated the joint capsule as well as the ligaments of the lateral aspect of the ankle joint, including the anterior talofibular and calcaneofibular ligaments. Separation was not possible, and therefore, it was decided to remove the tumor-like mass together with the surrounding tissues. As a result of these manipulations, a wound defect was formed, with the talus serving as the base of the wound. Additionally, lateral instability of the ankle was noted. In order to address this instability, the surgical procedure was supplemented with joint stabilization using the Brostrom-Gould method, involving the use of the extensor retinaculum and transosseous sutures (Fig. 3).



FIG. 1.
Tenosynovial giant cell tumor of the ankle joint

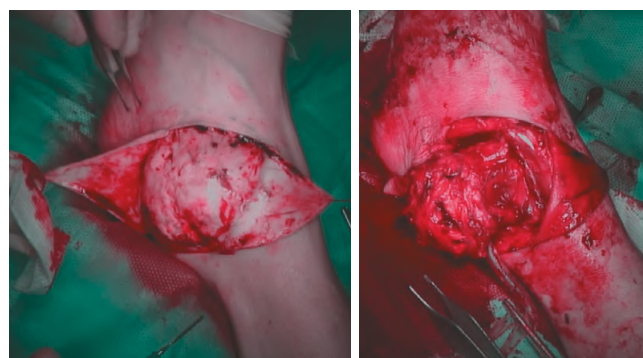


FIG. 2.
Isolation of a tumor-like formation from soft tissues

Hemostasis was achieved during the surgical procedure, and the wound was closed in layers. A sterile dressing was applied, and plaster immobilization was applied to the plantar surface of the left foot, from the tips of the toes to the mid-portion of the lower leg.

Postoperative histological analysis (Fig. 4) confirmed the preoperative diagnosis of a localized tenosynovial giant cell tumor.

The postoperative period was uncomplicated. Plaster immobilization continued for 6 weeks. Following immobilization, the patient started performing therapeutic exercises for the ankle joint. At 12 months following surgery, the patient reported no complaints and her condition was considered satisfactory. She leads an active lifestyle and participates in sports activities. During a follow-up examination, a full range of motion was observed in the ankle joint and no evidence of tumor recurrence was identified. Dynamic follow-up is ongoing (Fig. 5).

DISCUSSION

Tenosynovial giant cell tumor is a rare benign, but locally aggressive disease that primarily affects the synovial membrane of joints and tendon sheaths. There are two main types of tenosynovial giant cell tumor: diffuse and localized. The diffuse type is characterized by infiltrative involvement of the synovial membrane, while the localized form presents as a nodule within a joint [7]. For the localized type of tumor, complete resection of the tumor is recommended. For the diffuse type, incomplete resection or local recurrence may require additional treatment, such as radiotherapy and cryotherapy. The clinical course is often unpredictable and local recurrences can occur. In 2017, Fraser E.J. et al. conducted a literature review of 131 cases of tenosynovial giant cell tumor and reported on treatment outcomes. The local recurrence rate for ankle joint involvement was 19.7 %, and for foot involvement, it was 12.5 % [6]. The ankle joint is a more complex anatomical structure, as it contains numerous ligaments and tendon sheaths. In the case of tenosynovial giant cell tumors of the foot and ankle, open surgical intervention is typically used, while arthroscopic resection is rarely used and can be technically challenging and, depending on the location and extent of the tumor, may not be promising [7]. Fraser E.J. et al. (2017) sought to provide recommendations for possible surgical treatments based on the available evidence. As a result, open synovectomy was given a grade C recommendation [8]. Scheele C. et al. (2025) conducted a retrospective study on 34 patients who had undergone surgical treatment for tenosynovial giant cell tumors of the foot and ankle. Of these patients, 33 underwent open surgery. In 95.2 % of localized cases, a macroscopically complete tumor resection was achieved [9].

It is worth noting that, with progressive growth, a tumor can infiltrate the ligaments and joint capsule. In such cases, separating the tumor from healthy tissues may not be possible. In our clinical case,

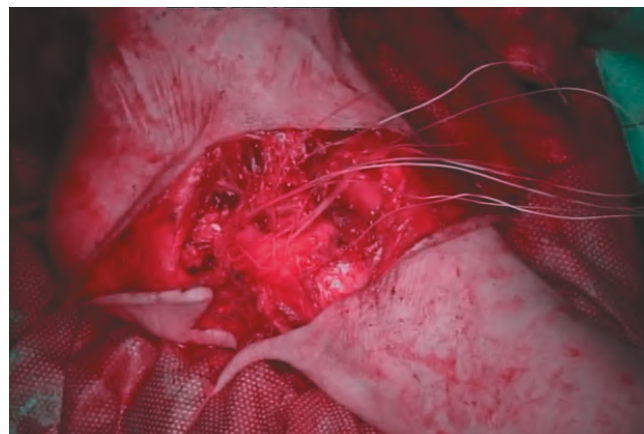


FIG. 3.
Brostrom – Gould ankle ligament plasty

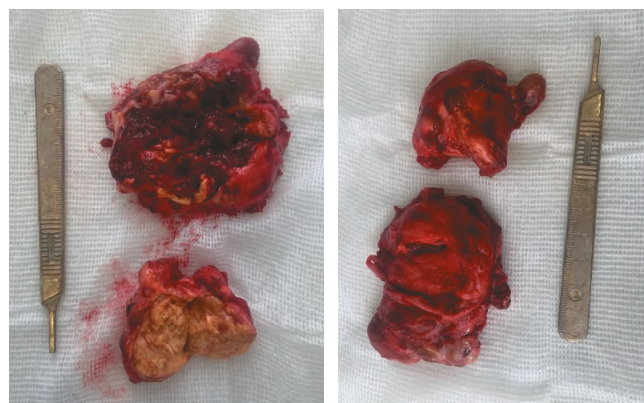


FIG. 4.
External view of the removed tenosynovial giant cell tumor



FIG. 5.
Function of the ankle joint after surgery

the tumor had diffusely infiltrated the joint capsule, as well as the ligaments on the lateral side of the ankle joint, requiring complete removal with surrounding tissues, along with additional stabilization using the Brostrom – Gould technique.

When treating tenosynovial giant cell tumor, it is essential to consider the complex anatomy of the foot and ankle, as well as the proximity of neurovascular structures. Surgeons must be prepared to reconstruct the ligaments simultaneously in order to restore ankle function.

CONCLUSION

Tenosynovial giant cell tumors of the ankle joint region can lead to pain, limited mobility, and a decrease in quality of life for patients. Complete resection of the tumor-like mass is considered the gold standard treatment. In this case, the tumor-like mass was completely removed, and the surgical intervention was supplemented by ankle joint stabilization using the Brostrom-Gould technique. After one year of follow-up, the patient showed no signs of recurrence and ankle joint function and mobility were fully restored.

Conflicts of interest

The authors declare no conflicts of interest.

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