

A Case of Extraskelatal Chondroma in the Left Inguinal Region

Alexey Shabunin^{1,2,3}, Ivan Lebedinsky^{1,2}, David Dolidze^{1,2,3}, Zurab Bagatelia^{1,2,3}, Ekaterina Solomonova⁴, Anna Bumbu², Serghei Covantsev^{2,5}

¹ Department of Oncology No. 71, Botkin Hospital, Moscow, Russia

² Department of Clinical Research and Development, Botkin Hospital, Moscow, Russia

³ Department of Surgery, Russian Medical Academy of Continuous Professional Education, Moscow, Russia

⁴ Department of Surgery, Marienkrankenhaus St Wendel, St Wendel, Germany

⁵ Department of Emergency Surgery No. 76, Botkin Hospital, Moscow, Russia

Corresponding author: Serghei Covantsev, Department of Clinical Research and Development, Botkin Hospital, Moscow, Russia; Email: kovantsev.s.d@gmail.com

Received: 24 April 2024 ♦ **Accepted:** 3 July 2024 ♦ **Published:** 31 December 2024

Citation: Shabunin A, Lebedinsky I, Dolidze D, Bagatelia Z, Solomonova E, Bumbu A, Covantsev S. A case of extraskelatal chondroma in the left inguinal region. *Folia Med (Plovdiv)* 2024;66(6):917-922. doi: 10.3897/folmed.66.e126111.

Abstract

Extraskelatal chondromas are rare benign neoplasms comprising mature hyaline cartilage. A distinctive feature of these tumors is that they develop in soft tissues away from bone and cartilage. Extraskelatal chondromas account for 1.5% of benign soft tissue tumors. They occur predominantly at 30-60, in males, and in the hand or foot. In only 4% of cases, the tumor is located not on the extremities. Patients predominantly complain of increased mass, rarely on pain or a pulling sensation. The literature on the chondromas of the anterior abdominal wall is scarce. We present a rare case of a large extraskelatal left inguinal chondroma in a 71-year-old patient. The mass was over 6 cm large, and this is the only case of inguinal chondroma described in the literature. The mass was resected with surrounding tissues (a surgical margin of 1 cm) under combined endotracheal anesthesia and the histology confirmed the tumor to be a chondroma.

Keywords

chondroma, extraskelatal inguinal chondroma, sarcoma

INTRODUCTION

Benign neoplasms of cartilage are rare. They mimic malignant neoplasms, particularly chondrosarcomas, and therefore require timely diagnosis and often surgical intervention.^[1] In rare cases, cartilage neoplasms are located distantly from the joints and bones. A variant is an extraskelatal chondroma.

Extraskelatal chondromas are rare benign neoplasms comprising mature hyaline cartilage. A distinctive feature of the tumors is that they develop in soft tissues distantly from bone and cartilage. Cartilaginous tumors in soft tissues have been mentioned by Paget in 1870; however, the first detailed case description of an ossifying chondroma of

the soft skullcap was described in 1883.^[2,3]

Extraskelatal chondromas account for 1.5% of benign soft tissue tumors. The literature describes only a few cases of extraskelatal chondromas, primarily in the upper and lower extremities. Chondromas outside the extremities account for only 4% of the cases.^[1,4-6]

Here we present a description of a unique case of extraskelatal left inguinal chondroma in an elderly man.

CASE REPORT

A 71-year-old male patient presented with complaints of a mass in the left inguinal region. He first noticed the mass five

years ago and asked for a consultation because it was increasing. We performed biopsy under ultrasound control (February 18, 2020). Histology showed soft tissue tumor with areas of necrosis, possibly extraskelatal chondroma. After biopsy, the patient noted that the tumor increased by 1 cm.

Immunohistochemical report dated February 25, 2020 confirmed tumor immunophenotype close to chondroma, tumor cells expressing S100, reacting with actin; total cytokeratin was negative. A follow-up examination revealed sigmoid diverticulosis without signs of diverticulitis, kidney sinus cyst, or liver calcification. Other investigations and laboratory data were normal. Abdominal CT scan showed a calcified subcutaneous mass in the left inguinal area (from 45.1 mm to 61.1 mm) not invading the surrounding structures, parapelvic cyst, and focal bone osteosclerosis (Fig. 1). There were no laboratory abnormalities (normal blood count; normal metabolic panel with creatinine and urea; parathyroid hormone and vitamin D level were investigated to rule out hyperpara-

thyroidism and hypervitaminosis D; calcium, phosphate, total proteins, and albumin were within reference level).

The mass was resected with the surrounding tissues (1-cm surgical margin) under combined endotracheal anesthesia (Fig. 2). We found no invasive tumor growth in the surrounding tissues. Histology showed a skin flap with a solid tumor in the dermis and cellular tissue (Fig. 3). Neoplastic tissue contained hyaline cartilage lobules with irregular cellularity because of areas of myxomatosis. Chondrocytes are monomorphic, without atypia. No mitotic activity is noted. Inclusions are found of calcifications and trabeculae of bone. Immunohistochemistry found positive reaction with anti-S100, negative reaction with PCKAE1/AE3 antibodies, calponin, and p63 (the reactions with actin and total cytokeratin were negative).

The postoperative period was uncomplicated, and the patient was discharged on the third day after surgery. There were no signs of recurrence over a 3-year period.

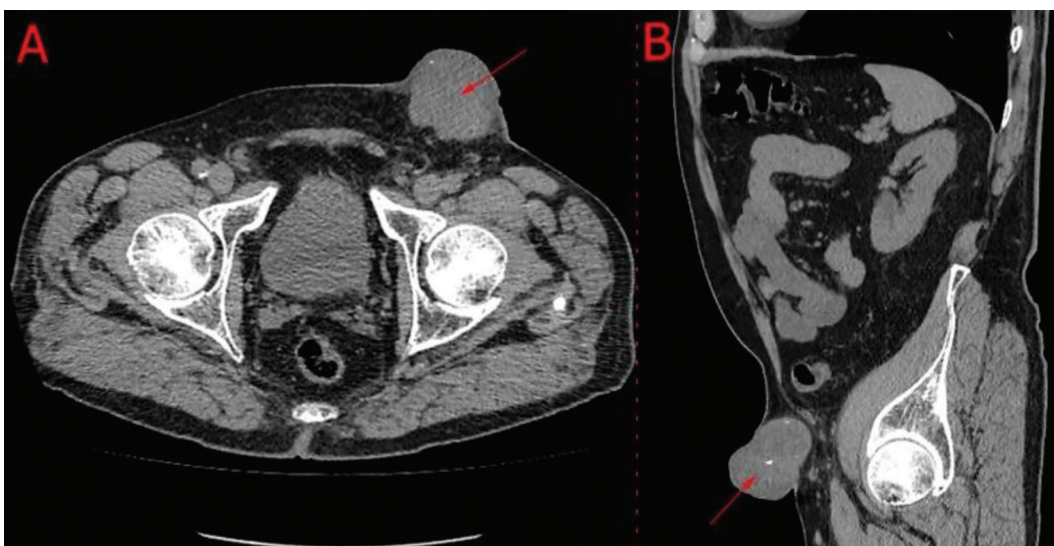


Figure 1. A. Abdominal CT scan, axial section (arrow indicates mass); B. Abdominal CT scan, sagittal section (arrow indicates mass).



Figure 2. Gross view of the tumor. A. Frontal view; B. Lateral view.

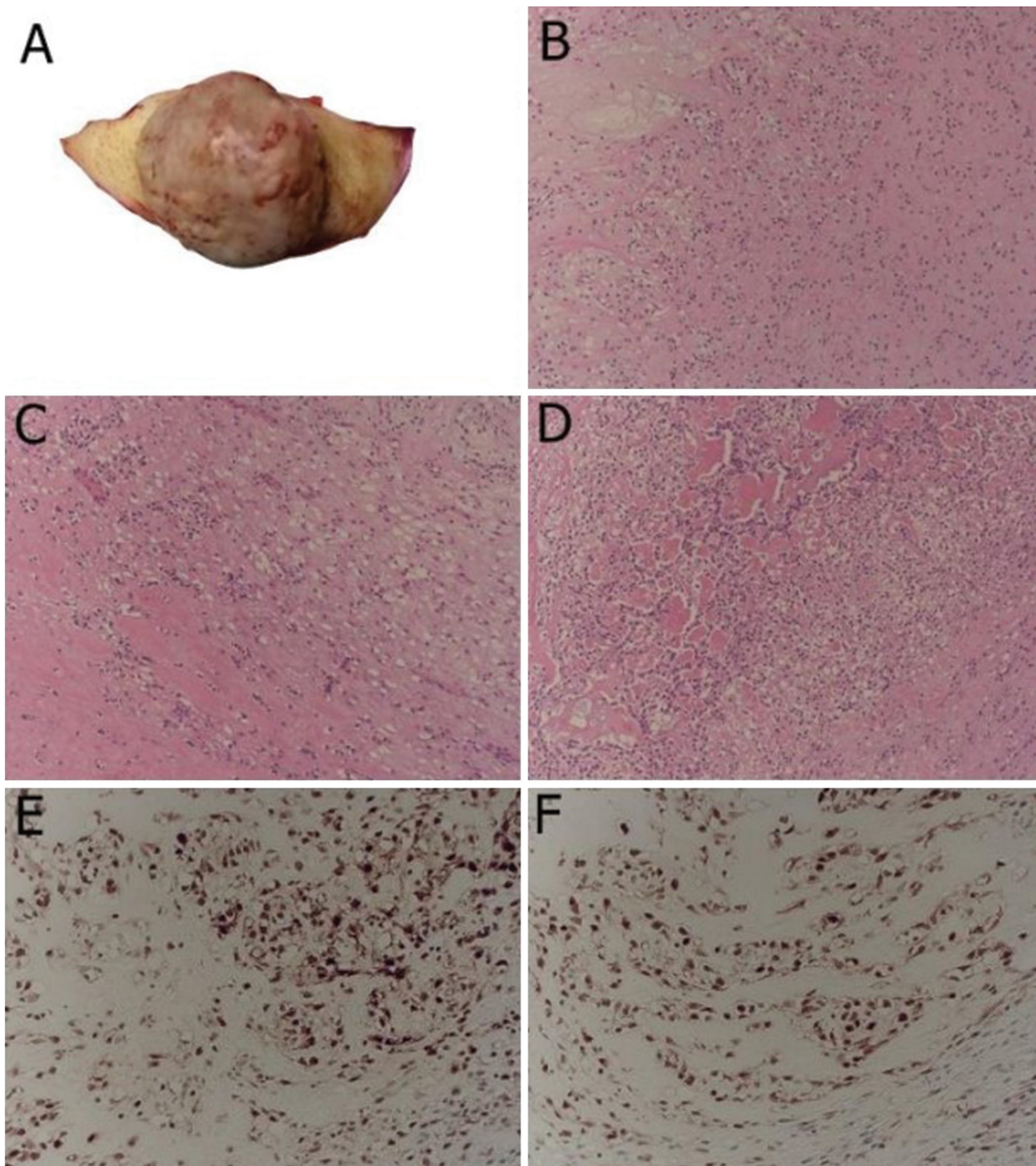


Figure 3. Morphology. A. Gross view of the tumor; B, C, D. Tumor histology ($\times 100$); E, F. Tumor immunohistochemistry (anti-S100, $\times 100$).

DISCUSSION

Extraskeletal chondromas occur predominantly at 30-60 years, more commonly in males (61%), predominantly in the hand (64%–72%) or foot (20%–24%). In only 4% of the cases, the tumor is not located on the extremities. Patients predominantly complain of increased mass, rarely on pain or a pulling sensation. The tumors almost always have a

clear contour, lobular structure, and size of 1-2 cm. Histologically, they are usually represented by hyaline cartilage with areas of calcification, less often by giant cells with chondroblast activity. In 17.86% of cases, tumor may have recurrence within the next 5-6 years.^[1,4-6] Calcifications are usually ring-shaped or focal in areas of hyaline cartilage.^[7] Extraskeletal chondromas account for only 1.5% of all benign soft tissue tumors.^[1,4-6] Only one case is described

with an anterior abdominal wall tumor in a child.^[4] Typically, extraskeletal chondromas are treated by marginal resection with preservation of surrounding structures and do not require extended surgical intervention.^[6] However, in large masses reconstruction may be required.^[8]

The differential diagnosis should primarily include skin and soft tissue cancers as these conditions can be life-threatening. Other conditions include glomus tumor, eccrine poroma, epidermal cyst, osteoma cutis, and calcinosis cutis.^[9,10] Calcinosis cutis may be caused by a number of conditions such as trauma, inflammation, varicose veins, infections, connective tissue disease, hyperphosphatemia, and hypercalcemia.^[11] Connective tissue disease that are associated with calcinosis cutis are systemic sclerosis, dermatomyositis and systemic lupus erythematosus. Therefore, patients should be carefully evaluated if they present any symptoms of these conditions.^[12] It can also be seen in primary and secondary hyperparathyroidism or other conditions associated with calcium metabolism.^[13,14] Core-needle biopsy is valid and favorable method to differentiate a benign tumor from a malignant mass. However, the sensitivity and specificity of incisional biopsy is higher than that of core-needle biopsy (88.9% vs. 66.7%) for differential diagnosis of sarcomas.^[15] Taking into account the rarity of this tumor, surgical incision remains the main diagnostic and treatment strategy. Cancers should be ruled out before surgery to understand the necessity of excision or lymph node dissection. Auto-immune and metabolic conditions are ruled out in order to avoid unnecessary surgery. A list of diagnostic modalities is presented in **Table 1**.

The etiology of extraskeletal chondromas is controversial. One opinion is that the tumor develops from residual fetal tissue in areas of primordial fetal cartilage. Another opinion is that the metaplasia of mesenchymal pluripotent

cells forms cartilage.^[6] There are no documented cases of malignant tumor transformation.^[1,2]

The histological examination usually reveals lobules of mature or immature cells (chondrocytes or chondroblasts), hyaline cartilage with variable degrees of cellularity.^[16] Immunohistochemistry is an important part of the diagnostic process, since conventional staining rarely allows chondromas to be distinguished from malignant neoplasms. Various markers are currently used, including S100, vimentin, EMA, and CK but the tissue is negative for epithelium and myoepithelial cell markers.^[17] The staining options remain open and recently an alternative marker, D2-40, has been proposed and showed a high diagnostic accuracy.^[18]

The case presented has several features. The patient was 71 years old, whereas the tumor is most commonly found in the 30-60 age range. The mass was significantly larger (over 6 cm) than similar ones. This is the only case of inguinal chondroma described in the literature. During the following 5-6 years, some tumors may recur in the same location. Therefore, the patient should be carefully monitored.

CONCLUSIONS

The skin and subcutaneous fat masses are common. In extremely rare cases, they may present as chondromas because of the atypical tumor location distant from bone and cartilage. The preoperative examination is needed to exclude the malignancy.

Acknowledgements

The authors have no support to report.

Table 1. Tests for differential diagnosis of calcified masses

Diagnostic test	Comment
Complete blood count	To exclude lupus erythematosus and possible hematological disease
Creatinine and urea	To exclude chronic kidney failure
Parathyroid hormone	Primary or secondary hyperparathyroidism
Vitamin D, calcium, phosphate, total proteins, albumin	To exclude primary and secondary hyperparathyroidism or calcium metabolism abnormalities
Creatine phosphokinase, lactate dehydrogenase, glutamic oxaloacetic transaminase, glutamic pyruvic transaminase, aldolase levels	These should be obtained to evaluate for dermatomyositis.
Antinuclear antibodies (ANA), anti-dsDNA, and anti-ENA	These should be obtained for lupus and systemic sclerosis
USG	This can demonstrate tumor extent into the surrounding tissue, however limited information can be obtained due to artifacts from calcification
CT and MRI	Optimal diagnostic modalities to evaluate tumor extension especially in cases of potential malignancies
Core-needle biopsy	Optimal examination to rule out malignancy

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

REFERENCES

1. Chung EB, Enzinger FM. Chondroma of soft parts. *Cancer* 1978; 41(4):1414–24.
2. Zlatkin MB, Lander PH, Begin LR, et al. Soft-tissue chondromas. *Amer J Roentgenol* 1985; 144(6):1263–7.
3. Feger J, Knipe H, El-Feky M, et al. Soft tissue chondroma. Reference article, Radiopaedia.org (Accessed on 01 Jan 2024) Available from: <https://doi.org/10.53347/rID-86716>
4. Goyal P, Sehgal S, Ghosh S, et al. Extraskeletal chondroma of anterior abdominal wall in a child. *APSP J Case Rep* 2013; 4(3):54.
5. Khadim MT, Asif M, Ali Z. Extraskeletal soft tissue chondromas of head and neck region. *Annals of Pakistan Institute of Medical Sciences* 2011;7:42–4.
6. Adaletli I, Laor T, Yin H, et al. Extraskeletal chondroma: another diagnostic possibility for a soft tissue axillary mass in an adolescent. *Case Reports in Orthopedics* 2011; 2011:309328.
7. Singh R, Sharma AK, Magu NK, et al. Extraskeletal osteochondroma in the nape of the neck: a case report. *J Ortho Surg (Hong Kong)* 2006; 14(2):192–5.
8. Shabunin AV, Lebedinsky IN, Dolidze DD, et al. Giant bleeding post-traumatic thoracic sarcoma management: A case report. *Front Surg* 2022; 9:1044077.
9. Hsueh S, Santa Cruz DJ. Cartilaginous lesions of the skin and superficial soft tissue. *J Cutaneous Pathol* 1982; 9(6):405–16.
10. Vohra RR, Haseeb M, Owais M, et al. Heavily ossified soft tissue chondroma of plantar foot and the significance of radiological imaging: a case report. *Cureus* 2023; 15(4):e37914. doi: 10.7759/cureus.37914
11. Le C, Bedocs PM. Calcinosis cutis. [Updated 2023 Jul 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK448127/>
12. Gutierrez Jr A, Wetter DA. Calcinosis cutis in autoimmune connective tissue diseases. *Dermatologic Therapy* 2012; 25(2):195–206.
13. Dubois LA, Gray DK, Tweedie EJ. Calcinosis cutis. *Canadian J Surg* 2007; 50(3):217–8.
14. Sepriano AR, de Araújo FC, de Almeida Lourenço PM, et al. Normocalcemic primary hyperparathyroidism presenting as calcinosis cutis. *J Clin Rheumatol* 2014; 20(6):330–1.
15. Klein A, Fell T, Birkenmaier C, et al. Relative sensitivity of core-needle biopsy and incisional biopsy in the diagnosis of musculoskeletal sarcomas. *Cancers* 2021; 13(6):1393.
16. Stockley I, Norris SH. Trigger finger secondary to soft tissue chondroma. *J Hand Surg* 1990; 15(4):468–9.
17. Aslam MB, Haqqani MT. Extraskeletal chondroma of parotid gland. *Histopathology* 2006; 48(4):465–7.
18. Huse JT, Pasha TL, Zhang PJ. D2-40 functions as an effective chondroid marker distinguishing true chondroid tumors from chordoma. *Acta Neuropathologica* 2006; 113(1):87.

Случай внескелетной хондромы в левой паховой области

Алексей Шабунин^{1,2,3}, Иван Лебединский^{1,2}, Давид Долидзе^{1,2,3}, Зураб Багателия^{1,2,3}, Екатерина Соломонова⁴, Анна Бумбу², Сергей Кованцев^{2,5}

¹ Онкологическое отделение № 71, Боткинская больница, Москва, Россия

² Центр клинических исследований, Боткинская больница, Москва, Россия

³ Кафедра хирургии, Российская медицинская академия непрерывного профессионального образования, Москва, Россия

⁴ Кафедра хирургии, Больница Святой Марии, Санкт-Вендель, Германия

⁵ Отделение экстренной хирургической помощи № 76, Боткинская больница, Москва, Россия

Адрес для корреспонденции: Сергей Кованцев, Центр клинических исследований, Боткинская больница, Москва, Россия; Email: kovantsev.s.d@gmail.com

Дата получения: 24 апреля 2024 г. ♦ **Дата приемки:** 3 июля 2024 г. ♦ **Дата публикации:** 31 декабря 2024 г.

Образец цитирования: Shabunin A, Lebedinsky I, Dolidze D, Bagatelia Z, Solomonova E, Bumbu A, Covantsev S. A case of extraskeletal chondroma in the left inguinal region. Folia Med (Plovdiv) 2024;66(6):917-922. doi: 10.3897/folmed.66.e126111.

Резюме

Внескелетные хондромы – редкие доброкачественные новообразования, состоящие из зрелого гиалинового хряща. Отличительной особенностью этих опухолей является то, что они развиваются в мягких тканях вдали от костей и хрящей. Внескелетные хондромы составляют 1.5 % доброкачественных опухолей мягких тканей. Они возникают преимущественно в возрасте 30–60 лет у мужчин и локализуются на руках или ногах. Только в 4 % случаев опухоль локализуется не на конечностях. Пациенты в основном жалуются на увеличение массы, редко на боль или тянущие болевые ощущения. Литература о хондромах передней брюшной стенки скудна. Мы представляем редкий случай большой внескелетной левой паховой хондромы у 71-летнего пациента. Масса была более 6 см в размере, и это единственный случай паховой хондромы, описанный в литературе. Масса была резецирована вместе с окружающими тканями (хирургический край 1 см) под комбинированной эндотрахеальной анестезией, а гистология подтвердила, что опухоль представляет собой хондрому.

Ключевые слова

хондрома, внескелетная паховая хондрома, саркома