

Calcinosis Mimicking Tumor: A Rare Case Report

Suyog Wagh¹, Sudhir Sharan¹, Arvind Goregaonkar¹, Aditya Mugutrao¹,
Kishan Panjwani²

Abstract

Background: Scapula is a common site for bony and soft tissue lesions. However, due to the vast number of lesions presenting around the scapula and their relatively low incidence, diagnosis is often missed or delayed, thereby affecting the clinical outcome. Common lesions around the scapula are osteochondromas, osteosarcoma, chondrosarcoma, etc. We present a case of a 12-year-old female child with a scapula mass, which was reported ambiguously in multiple radiographic investigations as well as biopsies.

Case Report: A 12-year-old female patient presented to the outpatient department with complaints of swelling in the right scapular region along with difficulty in range of motion (ROM) and chest pain. The mass had irregular margins and was non-tender. A computed tomography scan was suggestive of Parosteal osteosarcoma involving the scapula, serratus anterior, latissimus dorsi, and parietal pleura. Magnetic resonance imaging was suggestive of a primary neoplastic lesion. Blood reports revealed hyperphosphatemia. A J needle biopsy was inconclusive. The patient was managed with In-toto excision of the mass. The inferior angle of the scapula had to be removed as the mass was adhered to it. Histopathological examination (HPE) was suggestive of tumor calcinosis. The patient was started with physiotherapy as per pain tolerance immediately. The patient was followed for 6 months. There was no clinical or radiological evidence of recurrence, and the patient regained her complete ROM without pain.

Results: The patient was followed up for six months, during which no clinical or radiological signs of recurrence were observed. She regained full, pain-free range of motion. The patient is able to do activities of daily living.

Conclusion: Scapula is often affected by multiple pathologies of varying origins, which have morphological and radiological resemblances leading to confusion and delayed diagnosis. A comprehensive clinical evaluation, along with correlating metabolic and radiological investigations, may suggest a diagnosis; however, definitive confirmation should always be obtained through excision and histopathological examination (HPE).

Keywords: Tumour calcinosis, scapula, osteosarcoma, Scapula, neoplasm, tumor calcinosis, shoulder, pleura.

Introduction

The shoulder girdle, comprising the proximal humerus, clavicle, scapula, and surrounding soft tissue, is affected by bone and soft-tissue tumors as much as 33% of the lower limb [1]. Most of the scapula ossifies intramembranous. Ossification of various parts of the scapula occurs differently, starting before birth and

continuing throughout childhood, with two ossification centers unifying at around 15 years of age. Around 4% of all bone tumors originate from the scapula [2]. It also provides attachment to multiple muscles, thereby making it difficult to differentiate soft tissue lesions from bony pathology on clinical examination, especially in the pediatric age group. Previous studies have suggested that tumors occurring in the scapula have a higher risk of malignancy [3]. The most common malignant tumors are osteosarcoma, chondrosarcoma, and Ewing's sarcoma [4,5]. Benign tumors are reportedly prevalent in the pediatric age group, the most common being osteochondroma

¹Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and Hospital, Mumbai, Maharashtra, India,

²Department of Orthopaedics, V. N. Desai Hospital, Mumbai, Maharashtra, India.

Address of Correspondence

Dr. Suyog Wagh,

Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and Hospital, Mumbai, Maharashtra, India.

E-mail: suyogwagh6159@gmail.com

Submitted Date: 07 April 2025, Review Date: 18 May 2025, Accepted Date: 09 May 2025 & Published Date: 30 Jun 2025

Journal of Clinical Orthopaedics | Available on www.jcorth.com | DOI:10.13107/jcorth.2025.v10i01.726

© The Author(s). 2025 Open Access. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and non-commercial reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.

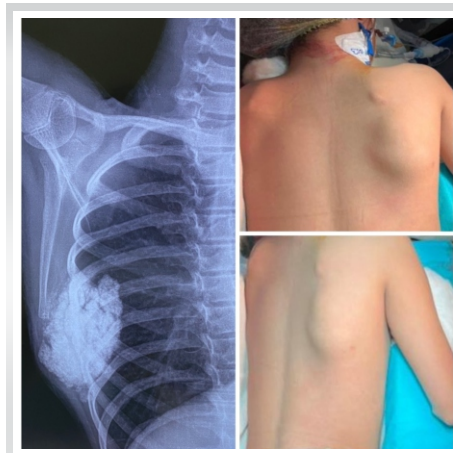


Figure 1: Pre-operative X-ray and clinical photograph.

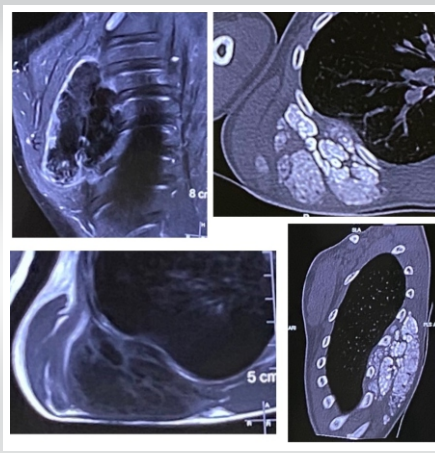


Figure 2: Pre-operative magnetic resonance imaging/computed tomography.

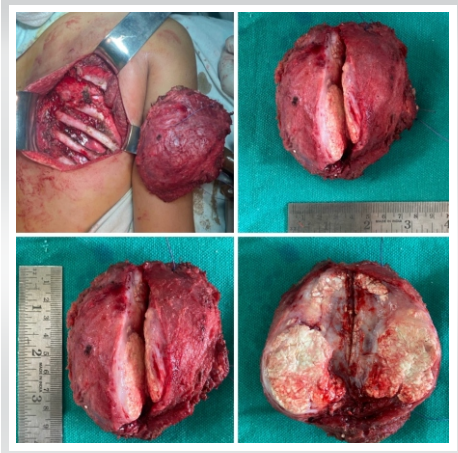


Figure 3: Resected mass.

[3]. In a study of 418 patients, 40% of all benign tumors had soft-tissue origin [6]. Proximity to the chest wall, multiple neurovascular bundles, and muscular planes make the scapula a challenging site for biopsy [7]. Due to the vast number of lesions presenting around the scapula and their relatively low incidence, diagnosis is often delayed, thereby affecting the clinical outcome.

Hereby, we present a case of scapula mass/tumor calcinosis in a 12-year-old child, which was reported differently in multiple radiographic investigations and biopsies.

Case Report

A 12-year-old girl presented to the orthopedic outpatient department with complaints of swelling in the right shoulder girdle for 5 years. The swelling was rapid in onset but not progressive. The patient did not complain of pain over the lesion but had a restricted range of motion (ROM) with 90° abduction and 30° internal rotation. The patient also complained of mild

chest pain without any respiratory difficulty. On examination, the mass was round with irregular margins, measuring around 8 × 5 × 4 cm. Tenderness could not be elicited. X-ray (Antero-posterior and lateral) was done, which was suggestive of a hyperintense lesion along the inferomedial aspect of the right scapula (Fig. 1). Computed tomography (CT) scan was suggestive of involvement of Latissimus Dorsi and Serratus Anterior with extension to 5th–7th intercostal spaces and indenting the parietal pleura without involvement of ribs and scapula. Findings were suggestive of Parosseous osteosarcoma over Myositis Ossificans. Similar findings were noted in magnetic resonance imaging (MRI)- with findings suggestive of a primary neoplastic lesion (Fig. 2). Routine blood investigations revealed mildly elevated serum phosphorous levels with otherwise normal reports. A J needle biopsy was performed under sedation to establish a definitive diagnosis, which was suggestive of uncalcified bone showing active absorption by many osteoclasts with pump osteoblasts, with few cells showing atypia. The patient was planned for wide local excision of the mass. The patient was intubated under general anesthesia and then given a lateral position for the surgery. A curvilinear incision was taken on the lateral margin of mass. It was observed that the mass was adhered to the Serratus Anterior and Latissimus Dorsi. However, any major neurovascular structures were not involved. Pleura between the 5th and 8th intercostal space was also involved and had to be resected to excise the tumor. The inferomedial part of the scapula was involved, advocating the resection of the body of the scapula. As the nature of the lesion was not exactly understood, a safe margin of 2 cm was kept circumferentially. The resected mass appeared chalky white and was surrounded by soft tissue. It was firm in consistency and measured 10 cm × 8 cm × 4 cm (Fig. 3). It was sent for histopathological examination (HPE) in a sterile container with formalin. Edges of the remaining scapula were filed. An intercostal drainage tube was inserted due to pleural excision. Side-to-side muscle sutures were taken to approximate

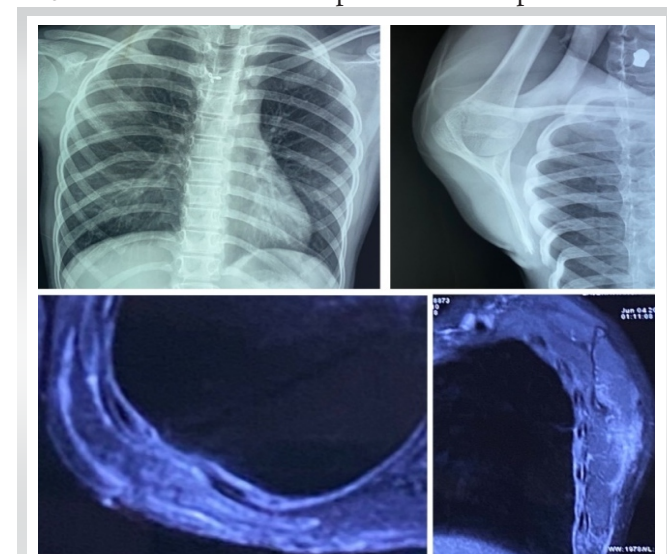


Figure 4: Post-operative X-ray and magnetic resonance imaging.

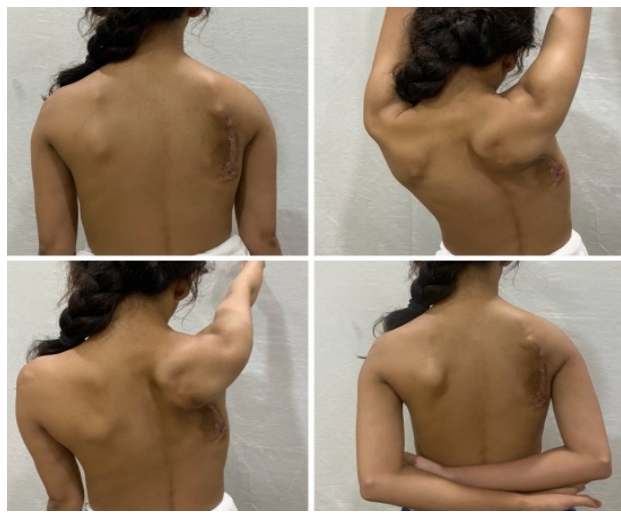


Figure 5: Range of motion at 3 months postoperatively.

the void. The incision was closed with simple sutures over a 10F drain. The patient was extubated without difficulty and received post-operative antibiotics and analgesics. Physiotherapy was started on post-operative day 1 as per the pain tolerance of the patient. Incentive spirometry was started on post-operative day 2. The drain and intercostal drain tubes were removed on post-operative day 2 and post-operative day 3, respectively. The patient underwent an uneventful recovery period without any signs of respiratory distress. Chest pain reduced within 7 days post-surgery. The histopathological report was suggestive of tumoural calcinosis. Physiotherapy was continued, and the patient was followed up for 3 months. An MRI ruled out any subsequent tumor growth (Fig. 4). The patient regained her complete ROM at the end of 3 months (Fig. 5). On a 6 month follow-up, she is able to do all her activities of daily living without showing any signs of recurrence.

Discussion

Tumour calcinosis is a rare hereditary condition characterized by single or multiple painless periarticular masses [8]. It was initially described in medical literature toward the end of the 19th century by Giard and Duret [9, 10]. The work of Inclan et al. was important in coining the term tumoural calcinosis while also differentiating it from dystrophic and metastatic/metabolic calcification, describing the metabolic values, and publishing radiographs [11]. The patient presents with complaints of a non-progressive swelling in the periarticular region, restricting the range of motion without significant tenderness. These findings were consistent with our patient. The greater trochanter bursa is the most common site of tumor calcinosis but it is also seen in the elbow, shoulder girdle, foot, etc. Lesions are seen primarily in the first 2 decades. They are classically described as densely calcified lobular masses confined to the

soft tissue, usually at the extensor surface of the joint along the distribution of the bursa [8]. Patients may also complain of ocular and dental abnormalities. Although it was initially thought that tumor calcinosis was always associated with hyperphosphatemia and normal calcium, it was later observed that only a few patients had mild hyperphosphatemia [8, 11]. It is thought to transmit in an autosomal dominant manner but lately has also shown autosomal recessive transmission with involvement of GALNT3 and FGF23, which induce metabolic dysregulation of phosphate, suggesting a post-translational defect [12-14]. The three most common theories of pathological are (a) reparative dysfunction due to repetitive trauma, (b) Degradation of histiocytic aggregates, which initiate osteoclastic activity by repetitive trauma, and (c) Exaggerated reparative response due to hemorrhage from microtrauma [15]. Tumour calcinosis is seen as a cystic multilobulated mass in periarticular areas, which is appreciated better in an axial CT image [11]. The cystic appearance may show fluid-fluid levels, which is also termed a sedimentation sign [16]. It may also appear as a homogenous mass, thereby not making sedimentation sign pathognomonic. T2 MRIs show either a diffuse, lower signal-intensity pattern or a bright, nodular pattern with alternating areas of high signal intensity and signal void [17]. The T1 pattern shows a non-homogenous lesion with low signal activity [17]. However, a lot of other lesions not only share the radiological appearance of Tumour calcinosis but also its distribution, size, and morphological features, thereby making the diagnosis difficult. Certain sites, such as the shoulder girdle, especially the scapula, make the diagnosis even more difficult due to the large number of lesions affecting it. Early diagnosis of scapula lesions is important for better outcomes but is often delayed due to the infrequency of the lesions and multiple pathologies affecting this region [6]. In a study conducted by Khan et al., it was observed that scapular lesions are more likely to be malignant than benign, with the risk of malignancy rising with increasing age [6]. However, soft tissue tumors were more likely to be benign. The commonest benign and soft tissue tumors affecting scapula in the pediatric age group were reported as Osteochondroma and Lipoma, respectively, whereas the most common malignant tumor was Ewing's sarcoma. Other reported lesions were chondrosarcoma, elastofibroma, osteosarcoma, liposarcoma, enchondroma, etc. Very few cases of tumor calcinosis affecting the scapula have been reported, and none of them presented at a young age along with chest pain. The proximity of the scapula to the chest wall and the risk of involving the non-involved surrounding muscles and neurovascular bundles make it a complicated site for biopsy, which further adds to the challenge of early diagnosis. Tumoural calcinosis may be confused by osteochondroma due to its similar clinical features and morphology but can be differentiated radiologically as osteochondroma is not

hyperlucent and is often a bony outgrowth connected to the bone with a stalk. Furthermore, it also has a cartilaginous cap, which can be demonstrated by an MRI [18]. Parosteal variety of osteosarcoma that arise in the cortical bone or soft tissue without destroying the underlying bone. They expand into surrounding tissues as a calcified mass, which mimics tumoural calcinosis radiologically, increasing the chances of misdiagnosis, as was seen in our case [19]. Clinical history and biochemical markers can be useful in differentiating them. The most common cause of periarticular calcification is Calcinosis of Chronic Renal Failure. Despite not having any radiological or histological differences with tumor calcinosis, it is usually not confused due to the obvious medical history and considerable diminution in size post-hemodialysis [8, 20]. Various other conditions, such as calcinosis universalis, calcinosis circumscripta, calcific tendonitis, synovial sarcoma, and synovial osteochondromatosis, may be confused with tumor calcinosis but are distinguished based on clinical examination and thorough radiological reports. Suggested markers for tumor calcinosis include elevated serum Phosphate levels, elevated 1,25-dihydroxy-Vitamin D levels, and multisystemic involvement [21].

As there are multiple conditions with similar appearing lesions, diagnosis of tumor calcinosis is difficult with imaging alone. A thorough clinical examination and metabolic workout must be carried out to narrow the diagnosis. Biopsy in the scapular region is challenging due to multiple reasons mentioned before. Due to this, only excision followed by HPE can be considered completely reliable in the diagnosis of tumor calcinosis.

Conclusion

Tumour calcinosis is a hereditary disorder of phosphate metabolism but is often mistaken for other lesions due to its morphological and radiological resemblance with multiple pathologies of varying origins. A comprehensive clinical evaluation, along with correlating metabolic and radiological investigations, may suggest a diagnosis; however, definitive confirmation should always be obtained through excision and histopathological examination (HPE).. Over the period of 3 months, our patient experienced no complications, including any recurrences or any late surgical site complications.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

References

- Meller I, Bickels J, Kollender Y, Ovadia D, Oren R, Mozes M. Malignant bone and soft tissue tumors of the shoulder girdle. A retrospective analysis of 30 operated cases. *Acta Orthop Scand* 1997;68:374-80.
- Dahlin DC, Unni KK. *Bone Tumours*. Springfield, Illinois: CC Thomas; 1986.
- Kaiser CL, Yeung CM, Raskin K, Gebhardt MC, Anderson ME, Lozano-Calderón SA. Tumours of the scapula: A retrospective analysis identifying predictors of malignancy. *Surg Oncol* 2020;32:18-22.
- Charles AR, Frederick AM, Michael AW, Steven BL. *The Shoulder*. Philadelphia, PA: Saunders, Elsevier; 2009.
- Shahid M, Varshney M, Maheshwari V, Mubeen A, Siddiqui MA, Julfiqar J, et al. Ewing's sarcoma of scapula: A rare entity. *Case Rep* 2011;2011:bcr0220113810.
- Khan Z, Gerrish AM, Grimer RJ. An epidemiological survey of tumour or tumour like conditions in the scapula and periscapular region. *SICOT J* 2016;2:34.
- Malawer MM, Sugarbaker PH. *Musculoskeletal Cancer Surgery: Treatment of Sarcomas and Allied Diseases*. Germany: Springer Science and Business Media; 2001.
- Olsen KM, Chew FS. Tumoural calcinosis: Pearls, polemics, and alternative possibilities. *Radiographics* 2006;26:871-85.
- Giard A. Sur la calcification hibernale. *CR Soc Biol* 1898;10:1013-5. Giard A. On hibernial calcification *CR Soc Biol* 1898;10:1013-5.
- Duret MH. Tumours multiples et singulieres des bourses sereuses (endotheliomes, peutetre d'origineparasitaire). *Bull Mem Soc Anat Paris* 1899;74:725-33. Duret MH. Multiple and unusual tumors of the serous bursae (endotheliomas, possibly of parasitic origin). *Bull Mem Soc Anat Paris* 1899;74:725-33.
- Inclan A, Leon P, Camejo MG. Tumoural calcinosis. *JAMA* 1943;121:490-5.
- Benet-Pagès A, Orlik P, Strom TM, Lorenz-Depiereux B. An FGF23 missense mutation causes familial tumoral calcinosis with hyperphosphatemia. *Hum Mol Genet* 2005;14:385-90.
- Larsson T, Davis SI, Garringer HJ, Mooney SD, Draman M, Cullen M, et al. Fibroblast growth factor-23 mutants causing familial tumoral calcinosis are differentially processed. *Endocrinology* 2005;146: 3883-91.
- Topaz O, Shurman DL, Bergman R, Indelman M, Ratajczak P, Mizrahi M, et al. Mutations in GALNT3, encoding a protein involved in O-linked glycosylation, cause familial tumoral calcinosis. *Nat Genet* 2004;36:579-81.
- Slavin RE, Wen J, Kumar D, Evans EB. Familial tumoural calcinosis. A clinical, histopathologic, and ultrastructural study with an analysis of its calcifying process and pathogenesis. *Am*

- J Surg Pathol 1993;17:788-802.
16. Hug I, Guncaga J. Tumoural calcinosis with sedimentation sign. Br J Radiol 1974;47:734-6.
 17. Martinez S, Vogler JB 3rd, Harrelson JM, Lyles KW. Imaging of tumoural calcinosis: New observations. Radiology 1990;174:215-22.
 18. Altwaijri NA, Fakeeha J, Alshugair I. Osteochondroma of the scapula: A case report and literature review. Cureus 2022;14:e30558.
 19. Grimer RJ, Bielack S, Flege S, Cannon SR, Foleas G, Andreeff I, et al. Periosteal osteosarcoma--a European review of outcome. Eur J Cancer 2005;41:2806-11.
 20. Chew FS, Roberts CC. Musculoskeletal imaging: A teaching file, 2nd edn. Ann R Coll Surg Engl 2010;92:81-2.
 21. Lyles KW, Burkes EJ, Ellis GJ, Lucas KJ, Dolan EA, Drezner MK. Genetic transmission of tumoral calcinosis: Autosomal dominant with variable clinical expressivity. J Clin Endocrinol Metab 1985;60:1093-6.

Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Wagh S, Sharan S, Goregaonkar A, Mugutrao A, Panjwani K. Calcinosis mimicking tumor: A rare case report. Journal of Clinical Orthopaedics January-June 2025;10(1):69-73.