

# A Solitary Enchondroma of Great Toe in an Adolescent Male: A Case Report

Shivam Patel, Shail Shah\*, Anurag Anand and Ashwin Deshmukh

Department of Orthopaedics, Dr. D Y Patil Medical College, Hospital and Research Centre, Pune, India

## Abstract

**Introduction:** Solitary enchondromas are benign, usually asymptomatic. Enchondromas are cartilage tumors which are estimated to constitute 3%-17% of all bone tumors and approximately 20% of all cartilage tumors. Enchondroma has higher chances to convert in chondrosarcoma, which varies between 0% and 4.2%. It is difficult to obtain a valid risk estimate, as this requires histopathology MRI reports.

**Case study:** 17 year old male came to the OPD with swelling in his left great toe since 6 months. Swelling was associated with intermittent pain which was dull aching type, no aggravating or relieving factors. Swelling was insidious in onset and gradual in progression. On physical examination Mild restriction of motion of left great toe and a regular swelling over the dorsal aspect of left great toe, hard in consistency without any neurovascular impairment. No presence of scars, sinuses, pigmentation or any ulceration over the swelling. Palpation of the swelling confirmed the presence of a bony hard swelling, non pedunculated, smooth surface of size 3 × 3 × 2.5 cm with ill-defined margins. Swelling was expansile and fixed to skin. X-ray s/o Lytic lesions, scalloping of the cortex and whorls of calcification.

**Discussion:** The literature search was primarily performed in the PubMed database: "Chondroma", "Chondrosarcoma", "Diagnostic Imaging" and "Magnetic Resonance Imaging." Dorsal incision was marked along the great toe along the tendon of extensor hallucis longus, extending 2 cm proximal to MTP joint and distally to base of nail bed. Complete exposure of the tumour was done and along with excision of proximal phalanx after incising the dorsal aspect of the joint capsule. Swelling was expansile and multiloculated involving whole of the proximal phalanx and inseparable from the skin at some areas. Hence the decision was taken to remove whole of proximal phalanx along with tumour. Gap was filled up with fibular strut graft.

**Conclusion:** Solitary enchondromas aggressively increasing in size should be treated surgically bane gap caused after removing the tumor can be filled with bone graft or cement depending on the condition of cortex.

**Keywords:** Enchondroma • Chondroma • Tumour • Fibular strut graft

## Introduction

Solitary enchondromas are usually benign, oftenly asymptomatic. Enchondromas are a type of cartilage tumors estimated to constitute 3%-17% of all bone tumors [1,2] and approximately 20% of all cartilage tumors [1]. Enchondroma has potential for malignant transformation to chondrosarcoma, estimated to vary between 0% and 4.2% [3,4]. To diagnose enchondromas, histopathology investigation needed [1]. Enchondromas which converted to malignancy detected is a low-grade/grade 1 CS, which is included in current WHO has been assigned the synonymous term "Atypical Cartilage Tumor" (ACT) because low-grade CS/ACT, despite local aggressiveness, rarely metastasizes [5,6]. The pitfall is the incidental detection of enchondroma on MRI performed when diagnosing joint pathology, especially observed on MRI of the knee and shoulder [7-10]. There is a well-known interobserver error by experienced pathologists and radiologists [11].

## Case Report

17 year old male came to the OPD with swelling in his left great toe since 6 months Swelling was associated with intermittent pain which was dull aching type, no aggravating or relieving factors swelling was insidious in onset and gradual in progression.

**\*Address for Correspondence:** Shail Shah, Department of Orthopaedics, Dr. D Y Patil Medical College, Hospital and Research Centre, Pune, India, Tel: + 7016852270; E-mail: shailshah227@gmail.com, ceviod@gmail.com

**Copyright:** © 2022 Patel S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Received:** 02-Jan-2022, Manuscript No. JCRE-22-44162; **Editor assigned:** 04-Jan-2022, Pre QC No. P-44162; **Reviewed:** 18-Jan-2022, QC No.Q-44162; **Revised:** 23-Jan-2022, Manuscript No.R-44162; **Published:** 30-Jan-2022, DOI:10.37421/2795-6172.2022.6.147.

## Physical examination

Mild restriction of motion of left great toe and a regular swelling over the dorsal aspect of left great toe, hard in consistency without any neurovascular impairment no presence of scars, sinuses, pigmentation or any ulceration over the swelling. Palpation of the swelling confirmed the presence of a bony hard swelling, non-pedunculated, smooth surface of size 3 × 3 × 2.5 cm with ill defined margins Swelling was expansile and fixed to skin (Figures 1-3).



Figure 1. X-ray s/o lytic lesions, scalloping of the cortex and whorls of calcification.



Figure 2. MRI suggestive of hyper intense on PDFS, lesion involving the proximal and distal end of phalanx stippled calcifications.

## Surgical Procedure

Dorsal incision was marked along the great toe along the tendon of extensor hallucis longus, extending 2 cm proximal to MTP joint and distally to base of nail bed Complete exposure of the tumour was done and along with excision of proximal phalanx after incising the dorsal aspect of the joint capsule. Swelling was expansile and multiloculated involving whole of the proximal phalanx and inseparable from the skin at some areas. Hence the decision was taken to remove whole of proximal phalanx along with tumour. Gap was filled up with fibular strut graft (Figures 4-6).

HPE of Intra-op sample s/o enchondroma Tumor comprised of lobules of hyaline cartilage separated from bone marrow (Figures 7-9).

After the surgery patient was put on a below knee slab. The patient was put on non weight bearing for 12 weeks (Figures 10-12).

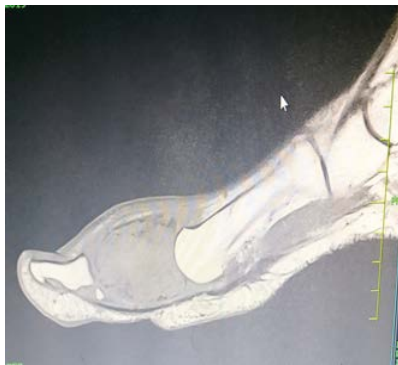


Figure 3. MRI suggestive of expansion of the proximal phalanx of great toe, Hypointense on T1, soft tissue edema and swelling around the proximal phalanx.

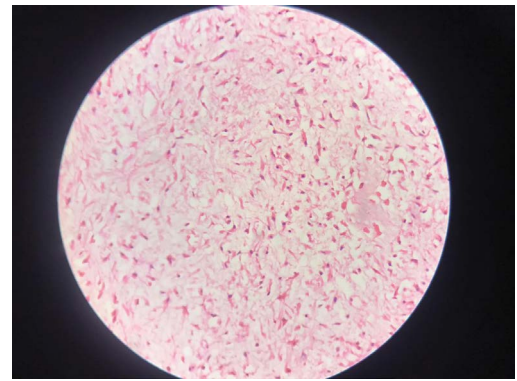


Figure 6. Histopathology of intra operative sample.

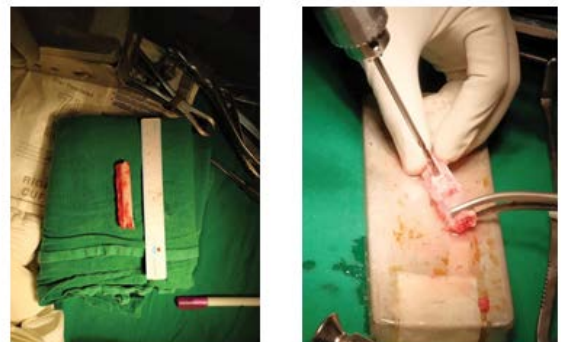


Figure 7. 6 cm FIBULAR STRUT graft was taken.

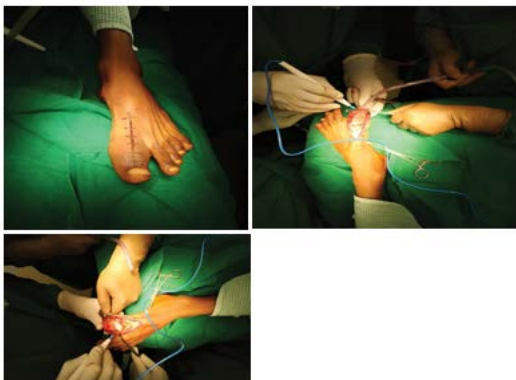


Figure 4. Showing intraoperative pictures showing incision site.



Figure 8. K wire fixation of the fibular strut graft to maintain the length and stability.



Figure 5. Showing intra-operatively showing mass.



Figure 9. Post OP X-ray.





Figure 10. 4 Weeks post OP X-ray.



Figure 11. Post op X-ray at 1 year.



Figure 12. P post op X-ray at 2 year.

## Discussion

This study was mainly undertaken for the management of solitary enchondroma of great toe. Our study confirms the significant prevalence of enchondroma affecting osseous structures. These were confirmed on MRI examinations enchondroma is also commonly painful, a feature previously reported to occur in 40% of lesions and related to associated fracture that may be radiologically occult (3,27,35) [8]. Radiologically, enchondromas are benign appearing tumours with intra leisonal calcification.

Calcification is irregular and described as 'stippled' or 'pop-corn'. In the small bones of hand and feet there may be considerable erosion and

expansion of the overlying cortex. If the patient becomes symptomatic than excision can be done. This case report shows swelling and intermittent pain for which the patient underwent excision Post operatively the patient's lower limb is immobilized in a below knee slab for 6 weeks which was followed by k wire removal which is followed by starting partial weight bearing walking Solitary Enchondromas are if symptomatic than should be excised or extended curettage should be done.

## Conclusion

Solitary enchondromas aggressively increasing in size should be treated surgically. Bone gap caused after removing the tumor can be filled with bone graft or cement depending on the condition of cortex. Proximal phalangeal bone is the most common site for enchondroma of the foot. With appropriate treatment, a good surgical outcome can be expected.

## References

1. Earl W, Brien, Mirra Joseph M and Kerr Roger. "Benign and Malignant Cartilage Tumors of Bone Andjoint: Their Anatomic and Theoretical Basis with an Emphasis on Radiology, Pathology and Clinical Biology." *Skelet Radiol* 26 (1997): 325-353.
2. Mark D, Murphey, Donald J Flemming, Steven R Boyea and John A Bojeskul, et al. "Enchondroma versus Chondrosarcoma in the Appendicular Skeleton: Differentiating Features." *Radiographics* 18 (1998):1213-1237.
3. Murat, Altay, Kenan Bayrakci, Yusuf Yildiz and Selim Erekul, et al. "Secondary Chondrosarcoma in Cartilage Bone Tumors: Report of 32 Patients." *J Orthop Sci* 12 (2007): 415-423.
4. Edmund D, Hong, John A Carrino, Kristy L Weber and Laura M Fayad, et al. "Prevalence of Shoulder Enchondromas on Routine MR Imaging." *Clin Imaging* 35 (2011): 378-384.
5. Diana P, Afonso, Isaac Amanda, Jose Martel Villagran and Joydeep Sinha. "Chondroid Tumors as Incidental Findings and Differential Diagnosis between Enchondromas and Low-Grade Chondrosarcomas." *Semin Musculoskelet Radiol* 23 (2019): 3-18.
6. Leona A, Doyle. "Sarcoma Classification: An Update Based on the 2013 World Health Organization Classification of Tumors of Soft Tissue and Bone." *Cancer* 120 (2014): 1763-1774.
7. Rebecca, Grainger, Stephen Stuckey, Richard O'Sullivan and Susan R Davis, et al. "What is the Clinical and Ethical Importance of Incidental Abnormalities Found by Knee MRI?" *Arthritis Res Ther* 10 (2008): 1-6.
8. Andrew, Horvai and Unni K Krishnan. "Premalignant Conditions of Bone." *J Orthop Sci* 11 (2006): 412-423.
9. Stomp, Wouter, Monique Reijnierse, Margreet Kloppenburg and Renee de Mutsert, et al. "Prevalence of Cartilaginous Tumours as an Incidental Finding on MRI of the Knee." *Eur Radio* 125 (2015): 3480-3487.
10. Michael J, Walden, Murphey D Murphy and Vidal A Jorge. "Incidental Enchondromas of the Knee." *Am J Roentgenol* 190 (2008): 1611-1615.
11. "Skeletal Lesions Inter observer Correlation among Expert Diagnosticians (SLICED) Study Group Reliability of Histopathologic and Radiologic Grading of Cartilaginous Neoplasms in Long Bones." *J Bone Joint Surg Am* 89 (2007): 2113-2123.

**How to cite this article:** Patel, Shivam, Shail Shah, Anurag Anand, Ashwin Deshmukh, et al. "A Solitary Enchondroma of Great Toe in an Adolescent Male: A Case Report." *J Clin Res* 6 (2022): 147.