Case Report

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Chondromyxoid Fibroma of the Fibular Shaft: A Case Report

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Introduction

A chondromyxoid fibroma (CMF) is an extremely rare benign tumor of long bones [1]. It usually affects the metaphyseal region of long bones, particularly near the growth plate of the proximal tibia [1]. We report the case of fibular shaft localization.

Case Report

Miss D.K, a 17-year-old girl consulted for a 2-month history of sport trauma. She presented with progressive and slightly painful swelling of the lateral aspect of her left leg. She was previously healthy, and additional signs of illness could not be found.

Physical examination showed a hard, firm, tender swelling on deep palpation and adherent to the fibula of approximately 6 centimeters in length. It was located on the lateral middle third of the left leg. Neither skin lesions nor inguinal lymph nodes were found. No other abnormalities were revealed by the full systemic review.

The X-ray of the leg showed the fibular shaft localization of the tumor. The radiographic appearances were those of a sharply marginated, lytic lesion in an eccentric fashion, cortical expansion and a sclerotic rim **Figure 1**.

Computed Tomography scans showed a large lesion of lytic features and extended into the cortical bone, which appeared thinner and unruptured. The presumptive CT diagnosis was an enchondroma with no signs of malignancy **Figure 2.**

The patient was placed in supine position on operating table and fixed with three supports: pubic, sacral and thoracic. The external approach centered on the external part of one third middle of the fibula was performed. The skin incision began 3 cm below the fibular head and extended distally to the lateral retromalleolar gutter. The incision of the subcutaneous tissue led to the crural fascia which was incised in front of the lateral sural cutaneous nerve (lateral cutaneous branch of the sural nerve) suppling the skin on the posterior and lateral surfaces of the leg.

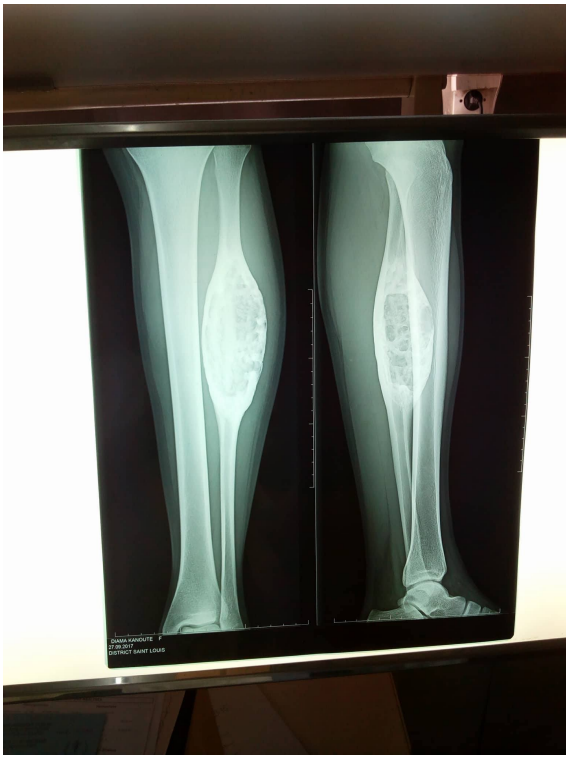

Figure 1: Radiographs of the left leg showing a radiolucent slightly lobulated lytic lesion of fibular shaft with a widened medullary cavity, coarse trabeculae, and cortical thinning without rupture.

At the lower part of the incision, the attention was paid to the superficial fibular nerve which perforates the crural fascia at the lower third of the leg. The approach of the fibular shaft was between the long fibular muscle in front and the soleus muscle behind. Since the entire circumference of the fibula was needed, the long flexor muscle of the hallux was removed from the posterior part. We remained in contact with the interosseous membrane so as not to injure the posterior vascular-venous trunks. We then proceeded to the section with the tumor free margin of 1 cm on both sides of the tumor. The fibula was

thereafter tunneled before being cuffed with the acrylic cement to stimulate the induced membrane.

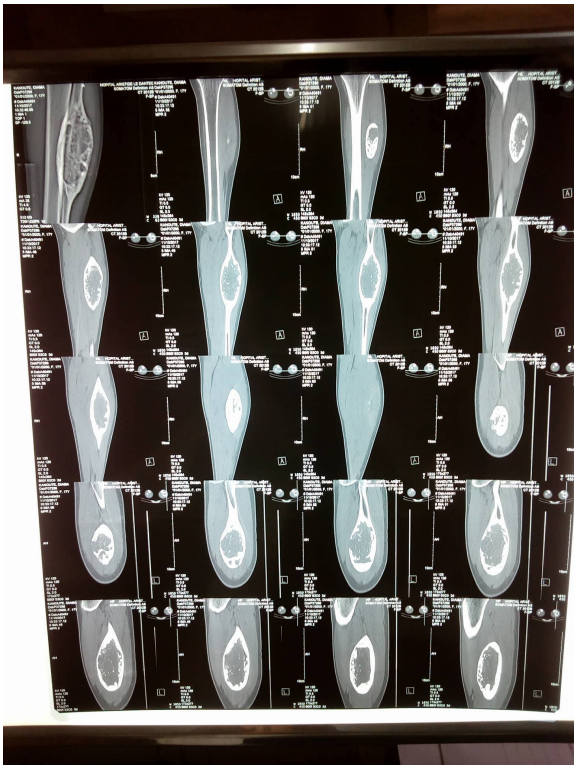

Figure 2: Computed tomography showing erosion of the inner cortex (endosteal scalloping), sclerotic margin, and expansion of the medullary cavity of the fibular shaft without soft tissue expansions.

The patient underwent en bloc marginal resection of the tumor and osseous cementation with the acrylic cement as well as fixation with an intra-medullary Krischner wire of the fibula **Figures 3 and 4**.

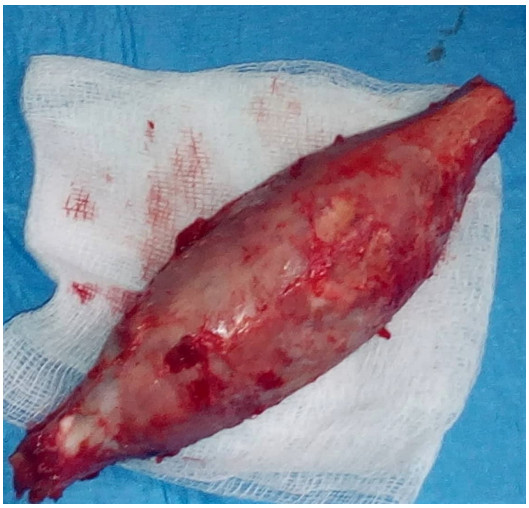

Figure 3: Surgical specimen after en bloc tumor-free margin resection.

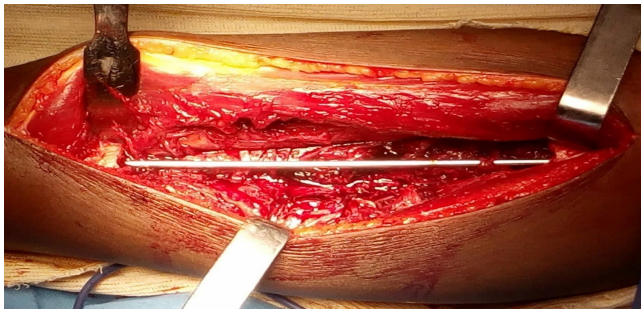

Figure 4: Intra-operative view showing intramedullary K-wiring of the fibula.

The surgical specimen was sent to the pathology. The report from the anatomopathological examination concluded that this was the chondromyxoid fibroma. No histological signs of malignancy were found **Figures 5 and 6**.

The patient was reviewed three months postoperatively, and the gait was normal without limping. There were no abnormalities detected at the external one third middle of the leg. The incision was with primary healing. The patient made an eventful recovery of all her daily activities.

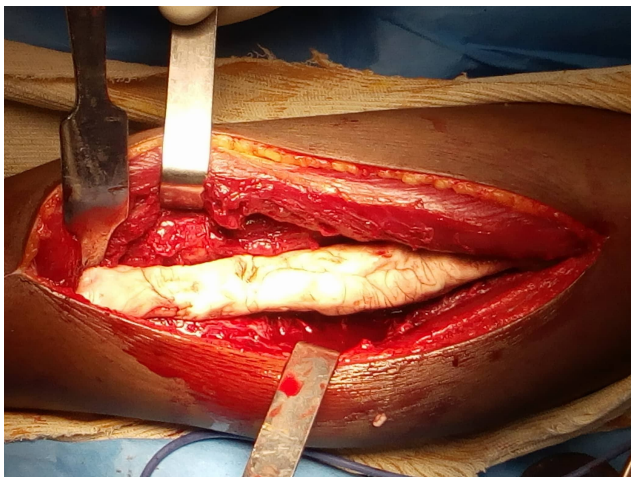

Figure 5: Intra-operative view showing cavity filling with acrylic cement around the K-wire.

Discussion

Chondromyxoid fibroma is the least commonly occurring bone tumor, accounting for approximately 0.5% of all biopsied primary bone tumors and 2% of benign tumors [1]. Jaffe and Lichtenstein first described the condition [2].

As reported in our study and through literature review, the symptomatology had no particularity compared to other benign bone tumors. Clinically, the main symptoms are pain, swelling or tenderness and pressure.

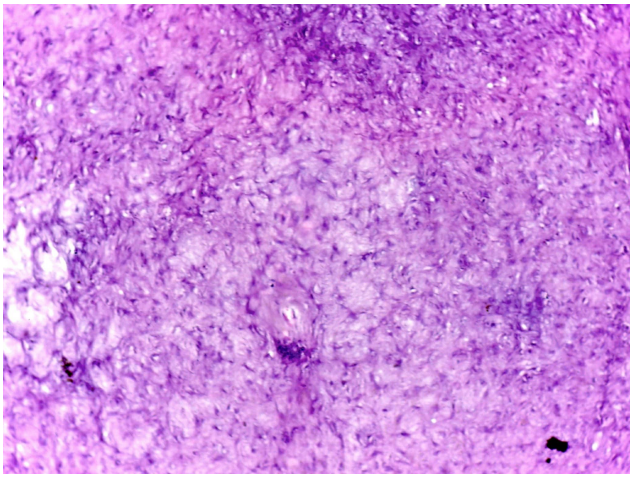

Figure 6: Microscopic view sowing features of CMF.

In our case, the age of predilection of this tumor was in the second decade of life [1]. There is a controversial sex predilection. Schajowicz and Gallardo [3] as well as Rahimi et al. [4] and Debra et al. [5] in their respective series found no significative differences between the two sexes. Hence, there is no relationship between sex and CMF.

The most common site of the tumor is the metaphysis of the long bones [6]. However, other bone sites may be involved much as proximal tibia, distal femur, pelvis, and foot [6-8]. The particularity of our case was the fibular shaft location of the tumor without involvement of the proximal and distal epiphyses. It was a form that has never been reported before. The literature reported chondromyxoid fibromas of the fibula located in the metaphyseal region and the epiphyseal line and rarely the articular surface [3,4,6].

Both plain film radiographs and CT scan were initially indicative of an enchondroma. Medical imaging patterns were an expansile ovoid lesion with a radiolucent center, well-defined sclerotic margins, septations, and a bulging, thinned, overlying cortex. However, all these aspects should suggest other tumors such as chondrosarcomas and chondroblastomas as macroscopic features may often lead to the misdiagnosis of chon-drosarcoma.

MRI would demonstrate the exact soft-tissue expansion of this well-structured lesion (vessels, nerves, muscles and the periosteum) especially in case of malignant process as it was reported in the literature. However in our patient; we did not notice neither vascular nor nervous injuries on examination.

Whatever the case may be, histological examination remains the gold standard for diagnosis [9]. It has shown us the classic anatomopathological aspects of CMF.

For the management, as it was a benign lesion without clinical and imaging features of malignant degeneration, and despite the histological diagnosis of CMF has been made; we have opted for en bloc tumor-free margin resection and osseous cementation and intra-medullary K-wiring of the fibula. We wanted to broaden the indications of the Masquelet technique of the induced membrane.

Treatment options for chondromyxoid fibroma in most of the reported cases consist of intralesional curettage alone which however have a high recurrence rate. However; curettage with or without bone grafting and polymethacrylate filling, and en bloc excision is often performed and advocated by many investigators [10]. Hence, the best technique would be one that would allow the en bloc marginal resection of the tumor and the cavity filling with acrylic cement in the short or medium term.

Conclusion

Chondromyxoid fibroma is a benign tumor usually affecting the metaphyseal region of long bones of patients in their second decade of life. Its definitive diagnosis is made by histological examination. The preferred treatment, where possible, is an en bloc excision with tumor-free margins.

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