Doi: https://doi.org/10.3329/ewmcj.v14i1.83419

Case Report

SURGICAL INTERVENTION FOR FIBROUS DYSPLASIA IN THE PROXIMAL FEMUR: A CASE REPORT

Mamun MA[1], Akhter M[2], Islam MF[3]

Article History:
Received: 31st July 2025
Accepted: 23rd August 2025

Key words:
Fibrous dysplasia, (FD) proximal femur, pediatric, allograft, trochanteric plate

Abstract

Fibrous dysplasia (FD) is a benign medullary fibro-osseous anomaly that compromises the mechanical strength of bones, especially the long bones that bear strong mechanical stresses. It can lead to an inability to remodel immature bone into mature lamellar bone, resulting in inappropriate bone alignment in response to mechanical stresses. ***Case Summary:*** *A 17-year-old male presented with a 2-month history of persistent right hip pain and abnormal gait, without any neurological symptoms in the limbs or trunk. Physical examination revealed tenderness over the right hip, with normal sensory, motor, and reflex findings. Imaging studies demonstrated a "ground-glass" appearance, cortical scalloping, and expansion involving the right proximal femur and femoral neck, consistent with fibrous dysplasia. A pathological fracture of the right proximal femur was also noted. Surgical intervention was planned based on clinical and radiological findings.* ***Conclusion:*** *Surgeons can successfully treat fibrous dysplasia in the upper femur by using a bone allograft secured with a trochanteric plate. After surgery, the care team should keep a close watch through frequent follow up and routine X-rays to confirm solid healing and catch any new problems early.*

EWMCJ Vol. 14, No. 1, January 2026: 87-90

Introduction

Fibrous dysplasia (FD) is a gentle, non-inherited, genetic problem in bone that shows up as either a lone spot in one bone, called monostotic FD, or as a spread of lesions across many bones, the polyostotic form [1]. Doctors guess it hits roughly 1 person in 5,000 to 1 in 10,000 every year [2]. FD can show up alongside one or more hormone disorders,early puberty, and skin patches of pigment in McCune-Albright syndrome[3]. On X-ray, it normally presents as a sharp, lytic lesion within the marrow that grows unevenly, pushes mildly outward, and is coated by the hazy, ground-glass opacity most radiologists note [4]. On long bones, FD can cause expansion of the bone edges, with cortical thinning and endosteal scalloping. The diaphysis is usually involved, but the metaphysis can also be affected [4]. Doctors usually find the problem in the long, hollow bones, and sometimes the damage shows up everywhere. Roughly 36% of the lesions settle on the femur, 19% on the tibia, while the ribs 10%. When there's no fracture or risk of one, we usually start with conservative treatment. But in most cases, surgery eventually becomes necessary. [5,6,7,8]

Doctors have been using bisphosphonate therapy more often to treat the polyostotic form of the disease. This approach began in the late 1980s with newer types of bisphosphonates. Case reports using Pamidronate have shown that it can help increase bone density and reduce pain.[9]

Case Summary:

A 17-year-old male presented with a 2-month history of persistent right hip pain and abnormal gait, without any neurological symptoms in the limbs or trunk.

1. Dr Md Al Mamun, Associate Professor , Orthopedics,International Medical College,Gazipur,Bangladesh.
2. Dr. Mohsina Akhter, Professor of Forensic Medicine,East West Medical College,Uttara Dhaka.
3. Dr. Md. Faridul Islam, Lecturer, Pathology Department, Noakhali Medical College, Bangladesh.

Address of Correspondence: *Dr.* Dr Md Al mamun, Associate Professor; Orthopedics,International Medical College,Gazipur,Bangladesh. Email : almamunraj701@gmail.com; Phone:

Physical examination revealed tenderness over the right hip, with normal sensory, motor, and reflex findings. Imaging studies demonstrated a "ground-glass" appearance, cortical scalloping, and expansion involving the right proximal femur and femoral neck, consistent with fibrous dysplasia. A pathological fracture of the right proximal femur was also noted. Surgical intervention was planned based on clinical and radiological findings

Case Presentation

Chief complaints

A young male patient aged 17 years complained of persistent pain in the right hip and abnormal gait for 2 month, but without any symptoms in his limbs or trunk, such as, numbness, fatigue.

Physical examination

Physical examination revealed tenderness over the right hip, with normal sensory, motor, and reflex findings

Imaging:

Preoperative xray, magnetic resonance imaging (MRI) showed ground-glass appearance with cortical scalloping and expansion of the right proximal femur and femoral neck . pathological fracture of the right proximal femur was observed.

Final Diagnosis

Pathological examination by preoperative FNAC revealed fibrous dysplasia of the right proximal femur

Treatment

The patient underwent treatment using an allograft along with a trochanteric plate to support the affected area. The patient was placed in a supine position and a right straight lateral incision was made to expose the femoral neck, trochanter, and proximal femur. An additional allogenic cancellous and cortical bone was inserted into the lesion to ensure adequate bone graft. The patient was encouraged to complete postoperative functional exercises in bed. After 1 month, he was gradually mobilized using two crutches and partial weight-bearing. A gradual increase in weight-bearing was allowed after 6 wk based on evaluation by plain radiography that showed consolidation of the fixation and graft. Postoperative biopsy examination revealed fibrous dysplasia .

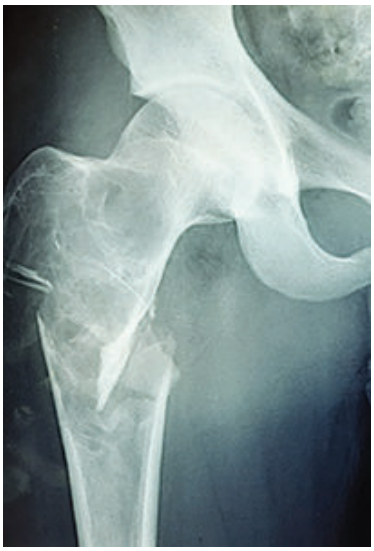

Figure 1: *Osteolytic lesion, ground-glass appearance, pathological fracture in proximal femur*

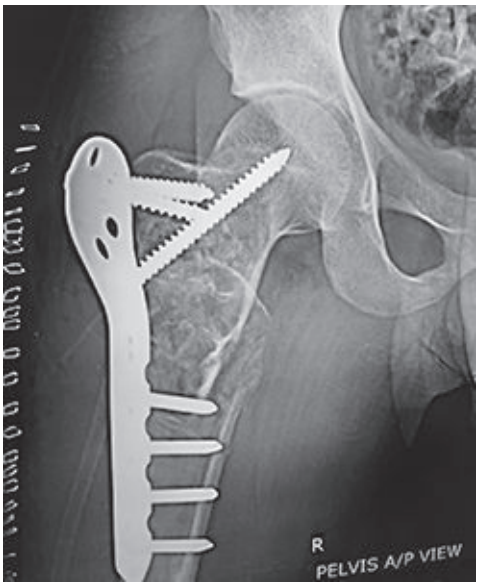

Figure 2: *Post-operative x-ray with allograft*

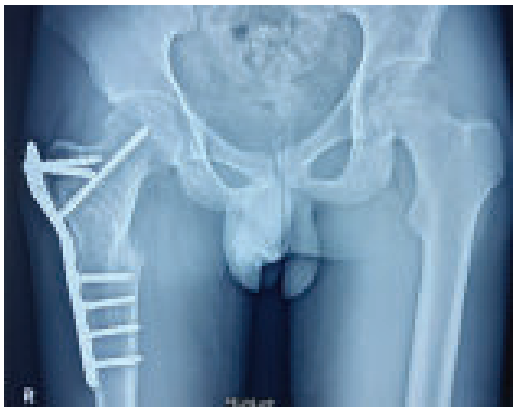

Figure 3: *14 month post operative follow up x-ray*

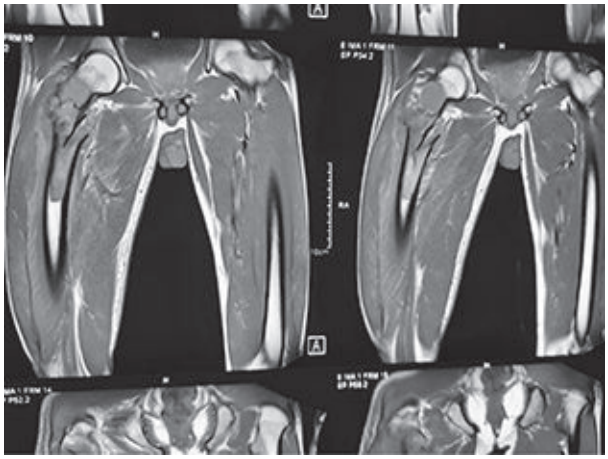

Figure 4: *MRI of proximal femur, ground-glass matrix, no periosteal reaction, edema*

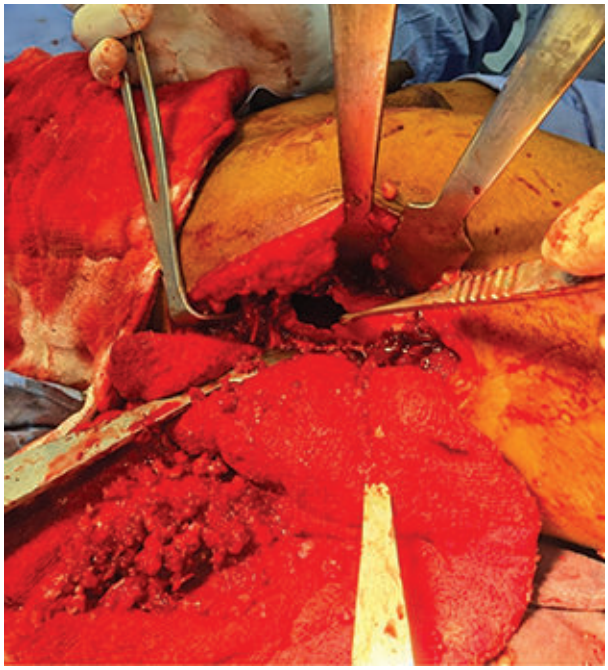

Figure 5: *Per-operative*

Discussion

FD is a pathological condition that leads to an inability to remodel immature bone into mature lamellar bone, resulting in inappropriate bone alignment in response to mechanical stresses (6).

FD is classified into two types: the monostotic form affects a single bone, while polyostotic FD is characterised by the involvement of multiple bones.

Polyostotic FD is frequently accompanied by manifestations of syndromes such as McCune–Albright syndrome [3] or Mazabraub syndrome [10], where it is associated with endocrine abnormalities and overproduction of melatonin in the skin or with intramuscular myxomas , respectively. Most endocrinopathies present during FD revolve around hyperthyroidism, hyperparathyroidism, acromegaly, diabetes mellitus, and Cushing syndrome. FD is the result of a mutation in the guanine-nucleotide alpha stimulating-GNAS gene.As a rule, when either monostotic or polyostotic FD occurs

in long bones, such as the tibia, femur or humerus,

. Fibrous dysplasia most often affects the middle or end parts of the bone (diaphysis or metaphysis) and generally does not involve the joint area (epiphysis). When the epiphysis is affected, it usually depends on the patient's age. Research shows that as children grow, these bone lesions can expand and may eventually reach the epiphysis once the growth plates close in adulthood. However, it's rare to see the epiphysis involved before puberty—only seven cases in children have been reported so far.it is now recognised that femurs affected with FD in their proximal third will develop coxa vara deformities, leading to the characteristic "shepherd's crook" deformity [11,12,13].

Further radiological monitoring essential because cystic changes are occasionally seen in FD lesions,with secondary transformations into aneurysmal bone cysts . Even worse, FD lesions can degenerate into high-grade sarcoma, with an incidence of 0.5% in monostotic FD and 4% in McCune–Albright syndrome [14,15]. The most common forms of malignant degeneration, in decreasing order of frequency are osteosarcoma, fibrosarcoma and chondrosarcoma. MRI is important for assessing bone and soft tissue invasion and for guiding a percutaneous biopsy for a final diagnosis.

Fibrous dysplasia (FD) is a disorder in which immature bone fails to remodel into mature lamellar bone, causing the skeleton to bend or bow incorrectly under normal forces. FD comes in two broad forms: monostotic, in which only one bone is affected, and polyostotic, where several bones show the disease at once.

polyostotic FD frequently appears alongside syndromic features such as those seen in McCune-Albright or Mazabraud syndromes, the first producing

skin spots and hormonal excesses and the second involving myxomas in muscle. Clinical hormone imbalances linked to FD tend to include hyperthyroidism, hyperparathyroidism, acromegaly, diabetes, and Cushing disease. The condition is traced to a mutation in the GNAS gene that codes for the stimulatory G-protein alpha subunit.

When long bones such as the humerus, femur or tibia are involved, deformity and pain usually develop in the shaft or metaphysis while the joint surface remains spared. Rarely the epiphysis shows disease, and whether that occurs may depend on the patients age. Studies indicate that as children grow, expanding lesions can creep toward the epiphysis and, in some cases, occupy it when skeletal maturity arrives.

Conclusion

Fibrous dysplasia can be successfully treated in the upper femur by using a bone allograft secured with a trochanteric plate. After surgery, the care team should keep a close watch through frequent follow up and routine X-rays to confirm solid healing and catch any new problems early.

References

1. Kushchayeva YS, Kushchayev SV, Glushko TY, Tella SH, Teytelboym OM, Collins MT, et al. Fibrous dysplasia for radiologists: beyond ground glass bone matrix. Insights Imaging. (2018) 9(6):1035–56. doi: 10.1007/s13244-018-0666-6
2. Tafti D, Cecava ND. Fibrous dysplasia. In: StatPearls. Treasure Island, FL: StatPearls Publishing (2024). Available online at: http://www.ncbi.nlm.nih.gov/ books/NBK532947/ (cited July 29, 2024).
3. Albright F, Butler A, Hampton A, Smith P. Syndrome characterized by osteitis fibrosa disseminate, areas of pigmentation and endocrine dysfunction, with precocious puberty in females: report of 5 cases. N Engl J Med. (1937) 216:727–46. doi: 10.1056/NEJM193704292161701
4. Lädermann A, Stern R, Ceroni D, De Coulon G, Taylor S, Kaelin A. Unusual radiologic presentation of monostotic fibrous dysplasia. Orthopedics. (2008) 31(3):282. doi: 10.3928/01477447-20080301-25
5. Maldonado I, Catalano E, Reginato AJ: Pathologic fracture of the femoral neck in a female soccer player. J Clin Rheumatol 2002, 8(1):30-4.
6. Durand S, Hamcha H, Pannier S, Padovani JP, Finidori G, Glorion C: Fibrous dysplasia of the proximal femur in children and teenagers: surgical results in 22 cases. Rev Chir Orthop Reparatrice Appar Mot 2007, 93(1):17-22.
7. Shih HN, Chen YJ, Huang TJ, Hsu KY, Hsu RW: Treatment offibrous dysplasia involving the proximal femur. Orthopedics 1998, 21(12):1263-6.
8. Keijser LC, Van Tienen TG, Schreuder HW, Lemmens JA, Pruszczynski M, Veth RP: Fibrous dysplasia of bone: management and outcome of 20 cases. J Surg Oncol 2001, 76:157-66.
9. Weinstein RS: Long-term aminobisphosphonate treatment of fibrous dysplasia: Spectacular increase in bone density. J Bone Min Res 1997, 8:1314-5.
10. Mazabraud A, Semat P, Roze R. [Apropos of the association of fibromyxomas of the soft tissues with fibrous dysplasia of the bones]. Presse Med (1893). (1967) 75(44):2223–8.
11. Funk FJ, Wells RE. Hip problems in fibrous dysplasia. Clin Orthop Relat Res. (1973) 90:77–82.
12. Connolly JF. Shepherd's crook deformities of polyostotic fibrous dysplasia treated by osteotomy and zickel nail fixation. Clin Orthop Relat Res. (1977) 123:22–4.
13. Freeman BH, Bray EW, Meyer LC. Multiple osteotomies with zickel nail fixation for polyostotic fibrous dysplasia involving the proximal part of the femur. J Bone Joint Surg Am. (1987) 69(5):691–8. doi: 10.2106/00004623-198769050-00009
14. Montalti M, Alberghini M, Ruggieri P. Secondary aneurysmal bone cyst in fibrous dysplasia of the proximal femur. Orthopedics. (2009) 32(5):363. doi: 10. 3928/01477447-20090501-10
15. Mattei TA, Mattei JA, Ramina R, Aguiar PH. Fibrous dysplasia in combination with aneurysmal bone cyst presenting as a subarachnoid haemorrhage. Neurol Sci. (2005) 26(3):178–81. doi: 10.1007/s10072-005-0458-x

Peer-Review History:
The peer review history for this paper can be accessed here: https://ewmch.com/review/