Osteochondromatosis and osteochondroma involving bilateral patella and patellar tendon: a case report

Sankaralingam Pandian, Thiyageswaran Jayaraman, Chakravarthy Rajendiran
Department of Orthopaedics, Meenakshi Medical College, Kanchipuram, Tamil Nadu, India

ABSTRACT
We present a 22-year-old man with osteochondromatosis and osteochondroma involving bilateral patella and patellar tendon with restriction of joint movement and severe arthritis.

Key words: osteochondroma; osteochondromatosis; patellar ligament

INTRODUCTION
Osteochondroma is the most common bone tumour and accounts for 10 to 15% of all bone tumours and 20 to 50% of all benign bone tumours. Osteocartilaginous exostosis is usually detected during childhood and adolescence. Osteochondromatosis is an inherited disorder that alters the enchondral bone during growth and is characterised by multiple osteochondromas. It is connected with the parent bone and arises from the metaphysis and has a cartilage cap. Modification during growing of the growth plate produces histologically disorganised spongy bone covered by cartilaginous coating.

Osteochondroma rarely involves the patella. It may arise from the synovium of the joint or tendon sheath and is rarely outside the synovial compartment. In joints with a large capsular space such as the patellofemoral joint, osteochondroma can remain intra-articular. Diagnosis of osteochondroma is predominantly made by radiology, but it may be discovered incidentally by palpation of a mass that causes pain. This pain is caused by direct trauma to the mass, or by the inflammatory process triggered by the lesion.

Osteochondroma in the knee may cause tendinitis, joint locking, limitation of flexion and extension, degenerative arthritis, and, rarely, neurovascular compression. Patients may have abnormal scar formation. Fracture may occur in approximately 5% of bones with osteochondroma. We present a 22-year-old man with osteochondromatosis and osteochondroma involving bilateral patella and patellar tendon with restriction of joint movement and severe arthritis.

CASE REPORT
In May 2014, a 22-year-old man presented with
multiple hard swellings in the spine, right forearm, and both knees and feet since childhood and restricted movement of both knee joints associated with pain. The patient had a fixed flexion contracture of 45º on the left knee and 2 cm shortening of the left leg with limping. The symptoms on the right side were less severe. The erythrocyte sedimentation rate, C-reactive protein, and routine biochemistry were within normal range. Radiographs revealed bony swelling arising from the patella and patella tendon with intra-articular extension (Fig. 1), as well as osteochondromas in the spine, right forearm, and right foot. Computed tomography and magnetic resonance imaging suggested an osteochondroma involving the patella and patellar ligament with intra-articular extension. Biopsy of the left knee had been performed elsewhere and reported osteochondroma. Differential diagnosis includes osteochondroma, para-articular osteochondroma (also known as extraosseous osteochondroma, intracapsular chondroma, and intraarticular osteochondroma) without intramedullary congruity with the host bone, and dysplasia epiphysealis hemimelica (Trevors disease) with osteocartilaginous masses arising from the epiphyses.

Total knee arthroplasty with repeat biopsy was planned for the left knee owing to severe arthritis. Through a midline incision, the skin flap was elevated. A medial parapatellar incision was attempted but the patella could not be everted due to involvement of the patellar tendon. The mass bridging the patellar tendon, proximal tibia, and patella was debulked, but the patella still could not be everted. Thus, the quadriceps was turned down, but the knee joint was not visualised from the anterior view. The patellar tendon together with the patella and the mass was standing like a pillar and was not mobile. All bone cuts were made using a free-hand technique. The implant used was the Buechel-Pappas knee system because of its long survival up to 20 years.

Histology of the excised tumour mass showed features of an extra-osseous osteochondroma–like soft-tissue mass with secondary bone formation similar to normal endochondral growth (Fig. 2). Postoperatively, the patient became pain-free by day 5. The fixed flexion deformity and shortening was corrected, and the patient was able to walk unaided without limping and had flexion up to 90º. He was advised to avoid deep knee bending of >110º or sitting on the floor cross-legged or squatting.

**DISCUSSION**

Osteochondromas usually involve the knee region and grow away from joints. Only a few intra-articular osteochondromas involve the anterior or, rarely, posterior joint space. An intra-articular osteochondroma of the hip was reported to displace the femoral head laterally.

![Image Caption](image-url)
osteochondroma in the patellofemoral joint causing pain and clicking sounds was treated with arthroscopic resection; the patient was diagnosed with multiple osteochondromatosis and had undergone surgery for osteochondroma around the knee previously. Hereditary multiple exostoses is an autosomal-dominant disorder characterised by the development of benign tumours or multiple osteochondromas (exostoses) growing outward from the metaphyses of long bones. Its prevalence is estimated to be one in 50 000, and the severity of the disease varies. It is associated with mutations in the EXT1 or EXT2 genes, which are tumour suppressor genes.

DISCLOSURE

No conflicts of interest were declared by the authors.

REFERENCES