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Osteochondroma of the Femoral Neck: A of Sciatic Nerve Compression

by Kimberly Yu, BS; John P. Meehan, MD; Anto Fritz, MD; Amir A. Jamali, MD

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Abstract

A 39-year-old man presented with weakness and a nonmobile mass in the butto Hip flexion was limited to 70°. Strength was diminished for both ankle/foot planta Sensation was decreased on the plantar and dorsal foot. A pedunculated osseo on the posterior femoral neck was seen on plain radiographs and magnetic reso Electromyography showed moderate sciatic neuropathy of the peroneal and tibia underwent excision of the tumor through a posterior approach. Due to the risk of 7.3-mm cannulated screws were passed percutaneously into the head with fluor pathological report indicated the tumor was an osteochondroma. At 22-month fo resolution of the neurologic findings. Postoperatively, the patient reported impro tingling in the leg but continued to have moderate buttock pain. Left hip flexion ir follow-up.

The importance of protecting the medial femoral circumflex artery during approa paramount. In this case, the tumor arose from the central aspect of the quadratu muscle protecting the medial femoral circumflex artery from harm. Although oste cause of mass effect, they should be considered in the differential diagnosis of s this anatomical location.

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Osteochondromas are benign tumors containing both bone and cartilage, usuall a long bone. They are the most common benign primary tumor of bone. Osteoch extra-articular lesions secondary to their common origin from the metaphysis of Osteochondromas of the femoral neck are somewhat atypical as they represent Most osteochondromas are asymptomatic depending on their size and location.

Osteochondromas of the femoral neck may lead to mechanical restriction of hip blocking can occur through direct contact of the widened and enlarged femoral r the acetabular rim.[2] This mechanism can lead to pain and damage to the hip lab articular cartilage. Nonskeletal extrinsic complications can also occur from an os femoral neck. This scenario can result due to mass effect on the adjacent tissue tendons, nerves, and vascular structures. Nerve compression is rare and preser osteochondromas.[3]

Case Report

A 39-year-old man presented with left hip and buttock pain with numbness and t palpable mass in the posterior thigh of 5 months' duration. A non-mobile mass n 8×8 cm was palpable in the left buttock. Hip flexion was limited to 70° by pain. S both ankle/foot plantar and dorsiflexion. Sensation was decreased on the planta Radiographs of the hip showed a pedunculated osseous mass measuring appro to the posterior femoral neck (Figure 1).

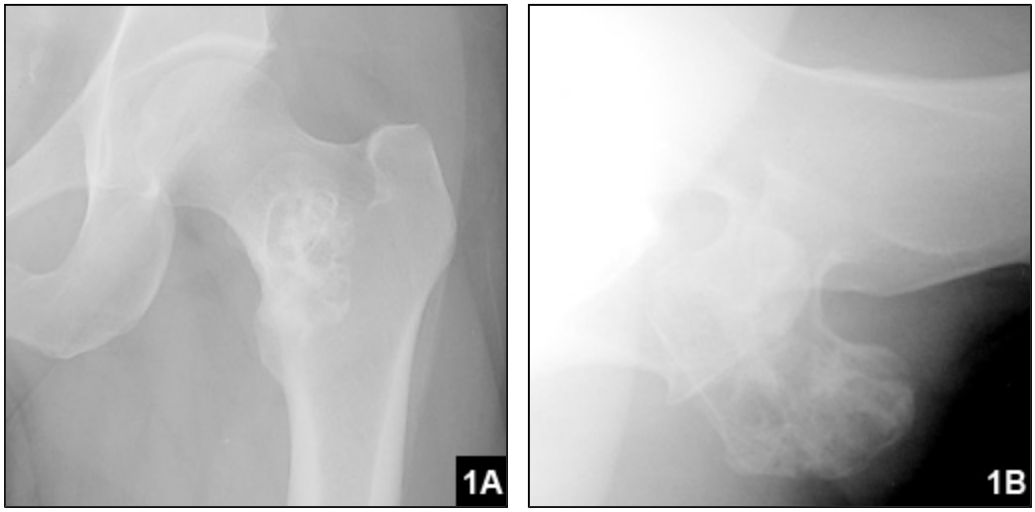

Figure 1: Preoperative AP radiograph of the left hip demonstrates an osteochondroma projected over the proximal femur (A). Preoperative lateral radiograph of the left proximal femur demonstrates an osteochondroma emanating from the posterior aspect of the femoral neck (B).

Magnetic resonance imaging (MRI) of the hip confirmed the mass as an osteochondroma that did not demonstrate any soft tissue extension or malignant degeneration but displaced the adjacent muscles and the sciatic nerve (Figure 2). An electromyography study showed moderate sciatic neuropathy of the peroneal and tibial branches.

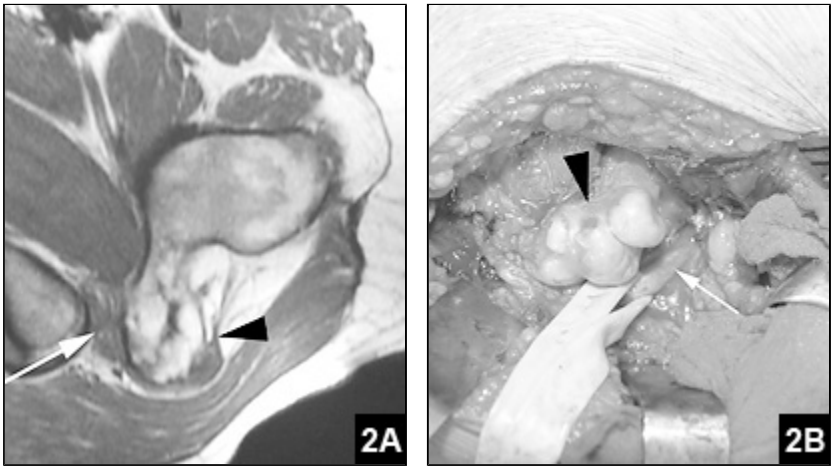

Figure 2: Axial FSE (TR/TE 817/16) MRI of the left lower extremity at the level of the ischial tuberosity demonstrates the osteochondroma (black arrowhead) compressing the sciatic nerve (white arrow) in contact with the ischial tuberosity (A). Intraoperative photograph of the patient in the lateral position with the head toward the right of the image with a posterior approach to the hip demonstrates the intimate contact between the osteochondroma (black arrowhead) and the sciatic nerve (white arrow) (B).

The mass was excised through a posterior approach in the right lateral decubitus position. The nerve was dissected from the osteochondroma. A Gigli saw was then passed around the stalk of the tumor to excise it (Figure 3). Due to the risk of weakening the neck, two 7.3-mm cannulated screws (Synthes, Paoli, Pennsylvania) were passed percutaneously into the head with fluoroscopic guidance.

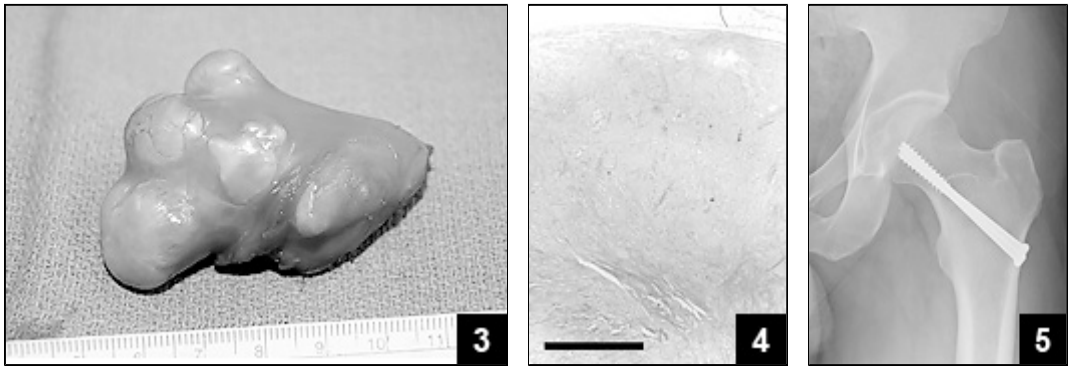

Figure 3: Intraoperative photograph is notable for the multifaceted cartilaginous cap of the osteochondroma. Figure 4: Decalcified hematoxylin-eosin stained section of the cartilage cap demonstrates the paucicellular matrix of the cap (bar=1000 microns). Figure 5: AP radiograph of the hip at 22-month follow-up indicates no evidence of osteoarthritis or avascular necrosis of the femoral head.

The final pathological report indicated the tumor as an osteochondroma (Figure 4). Postoperatively, the patient reported improvement in numbness and tingling in the leg but continued to have moderate buttock pain. Left hip flexion increased to 115° at latest follow-up.

At 22-month follow-up, the patient had full resolution of his sciatic nerve sensory and motor findings but had persistent tenderness to palpation in the region of the greater trochanter. This was felt to be related to prominent hardware and residual muscle deconditioning. Radiographs of the hip showed no evidence of osteoarthritis or avascular necrosis of the hip (Figure 5).

Discussion

The differential diagnosis for sciatic nerve compression is substantial and can be divided into intraspinal, extraspinal, pelvic, and extrapelvic categories of anatomical etiology.[4] Lumbar disk herniation and spinal stenosis are the most common causes of sciatic nerve compression.[5] Other potential sites include the hip joint such as acetabular paralabral cysts,[6] the pelvis as seen in impingement by the obturator internus muscle, pelvic bone tumors such as osteochondromas, as in this case, and in females, endometriosis and leiomyomas.[7] Other less common causes of sciatic nerve compression include vascular malformations, infectious disease,[7] and tumors of the bone and soft tissue.[5,8]

Hereditary multiple exostoses is a rare, autosomally dominant inherited condition that causes extraneous bony overgrowths and has been shown to cause nerve compression at multiple peripheral nerve sites including the sciatic nerve.[3] Hereditary multiple exostoses, also known as osteochondromatosis, causes multiple bony projections with a cartilaginous cap. These bony exostoses have the potential to cause compression neuropathies, but actual reported cases are rare.[3]

Paik et al[3] reported a case of a 33-year-old man with a previous diagnosis of hereditary multiple exostoses who presented with left sciatic pain and weakness due to nerve impingement from an exostosis that had transformed to a chondrosarcoma. The patient underwent 2 surgeries to remove the retroperitoneal mass: first through an anterior approach and then 1 month later through a posterior approach to remove the chondrosarcoma.[3]

Turan Ilica et al[9] reported a case of a 34-year-old man with a femoral neck osteochondroma that was causing sciatic nerve compression. Computed tomography (CT) and MRI were used to determine size, origin, and extent of the osteochondroma and to plan strategies for surgery.[9] In that case, the patient also demonstrated signs of sciatic nerve compression including weakness of toe and ankle dorsiflexion and a diminished Achilles tendon reflex. The osteochondroma in that case as seen on 3D CT and MRI had a sessile structure and extended outward broadly in the region of the lesser trochanter. This contrasted with the osteochondroma presented here, which was substantially more pedunculated, larger, and extended directly from the posterior femoral neck. Although Turan Ilica et al[9] discussed treatment strategies such as "early removal" to provide relief, they did not discuss the treatment of the presented patient nor did they discuss surgical approach and potential complications such as avascular necrosis.

Siebenrock and Ganz[2] have described 4 patients with osteochondromas around the femoral neck. Their patients had restriction of hip motion as well as a positive Trendelenburg sign in 3 patients. Two of the patients had solitary osteochondromas and the others had multiple osteochondromas (multiple hereditary exostoses). These authors used a well-described surgical dislocation approach for exposure of the osteochondromas. This approach is based on study of the vascular anatomy of the medial femoral circumflex artery and its major contribution to the femoral head. In cases with a posterior extension of an osteochondroma, the authors developed the interval between the gemellus inferior muscle and the superior border of the obturator externus and quadratus femoris muscle, taking care to protect the medial femoral circumflex artery.[2]

Despite the similar diagnoses, the cases presented by Siebenrock and Ganz[2] are substantially different than the case presented here. Their patients did not demonstrate any evidence of sciatic nerve compression.[2] In the images presented in their article, the lesions appear somewhat smaller and more sessile than the large pedunculated osteochondroma presented here.[2] Furthermore, in our case, the pedunculated osteochondroma was located posteriorly.

The importance of protecting the medial femoral circumflex artery during approaches to the hip is paramount. However, in our case, the tumor arose from the central aspect of the quadratus femoris, with the superior muscle protecting the medial femoral circumflex artery from harm. Furthermore, we used a Gigli saw to avoid the risk of iatrogenic damage to the vessel with an osteotome. The patient presented here did not demonstrate any signs of intraarticular pathology such as cartilage delamination or labral damage, eliminating the need for trochanteric osteotomy and surgical hip dislocation.

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