



## Glomus tumour eroding the medial facet of the patella : A case report

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Glomus tumours are benign lesions occurring essentially in the hand, with a predilection for the subungueal area. Even though they have been reported in literature, extradigital localisations of glomus tumours are frequently misdiagnosed ; they never lead to bone osteolysis. We report the case of a patient who presented with a typical patellofemoral syndrome due to a glomus tumour that eroded the medial facet of the patella. MRI, which is the gold standard for the diagnosis, showed a well-delineated spherical tumour with enhancement after Gadolinium injection. CT Scan excluded an osteoid osteoma and showed the erosion of the patella. The lesion was surgically resected and the histological examination established the definitive diagnosis.

**Keywords :** glomus tumour ; bone erosion ; patella.

### INTRODUCTION

Glomus tumours are rare benign neoplasms that arise from a neuromyoarterial structure called a glomus body (10). The normal glomus (Latin for "ball" or spherical mass) was first described by Hoyer in 1877 (6). Histologically it is a specialized vascular anastomotic complex surrounded by nerve elements. In 1924, Masson provided the first definitive clinical description of the glomus tumour (11). The most common site is the hand (70%) followed by the foot. It is typically located below the fingernails (50%). Even though reported in the literature, an extradigital glomus tumour remains an exceptional cause of knee pain. Glomus tumours report-

edly never affect the bone. We report what is, to the best of our knowledge, the first case of a glomus tumour causing an erosion of the superomedial side of the patella.

### CASE REPORT

A 31-year-old female patient presented at our outpatient clinic after referral by her general practitioner for chronic left knee pain. Most of her symptoms were suggestive of a classic patellofemoral syndrome, but as typically reported for vascular tumours, she complained of aching night pain, exquisite tenderness and sensitivity to cold. On clinical examination, the pain was elicited by local pressure of the medial retinaculum next to the medial facet of the patella. A small nodule was palpated.

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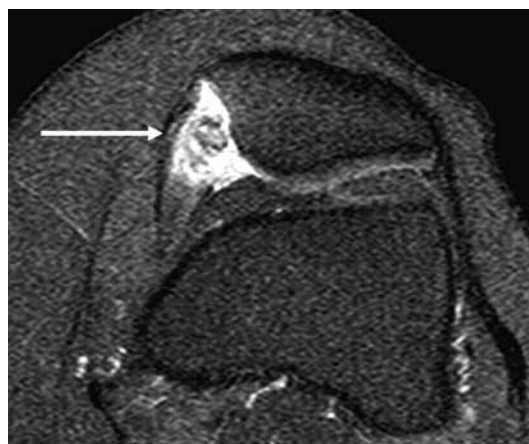
All blood tests were within normal values without any suspicion of infection. Knee radiographs showed a bony erosion of the medial facet of the patella ; there was no history of trauma or knee surgery in the past. A CT scan was made to further evaluate the bony erosion and to exclude the presence of calcification which would suggest an osteoid osteoma. The MRI scan gave us the suspected diagnosis with a hypervascularized well delineated parapatellar tumour. A Doppler-ultrasound confirmed the vascular nature of the lesion.

Since the patient was complaining about cold sensitivity and patellofemoral pain, surgical resection was proposed. A medial skin incision was made centered on the tumour. A 4 cm medial parapatellar arthrotomy was performed and the eroded medial border of the patella facet was found. Following close dissection next to the medial erosion of the patella, the medial border of the fat pad, in which the tumour was supposed to be, was accessed. The fat pad surrounding the tumour was then resected in one piece. The tumour was indeed identified within the resection specimen, which was about 3 cm in diameter. The postoperative period was uneventful and all symptoms had disappeared at three months follow-up. Histological examination confirmed the diagnosis of glomus tumour.

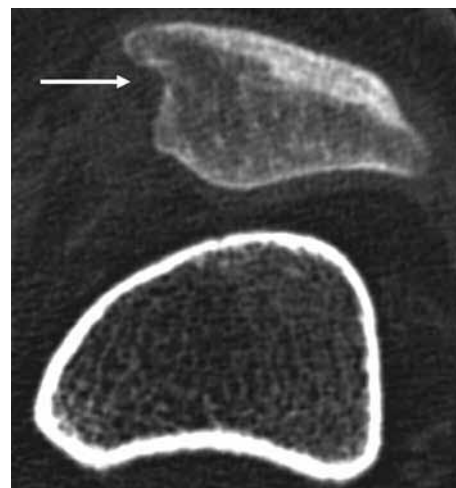
### Imaging findings

MRI has proved valuable as a noninvasive and accurate tool for the early diagnosis of glomus tumours (4). The MRI scan, particularly the post-gadolinium and fat saturation T1-weighted images as shown on Fig. 1 show a well-delineated spherical mass, about 1 cm in diameter, on the medial facet of the patella with a sulcus eroded by the long-standing tumour. The glomus tumour is a vascular entity, with a typically black appearance on T1 and a bright MRI appearance on T2-weighted images. With gadolinium, the tumour showed a slow pattern of hypervascularisation compared to the arteriolar pattern.

CT scan clearly showed the eroded facet of the patella (Fig. 2). In the differential diagnosis of tumours around the knee, osteoid osteoma was excluded because of the extraosseous localisation



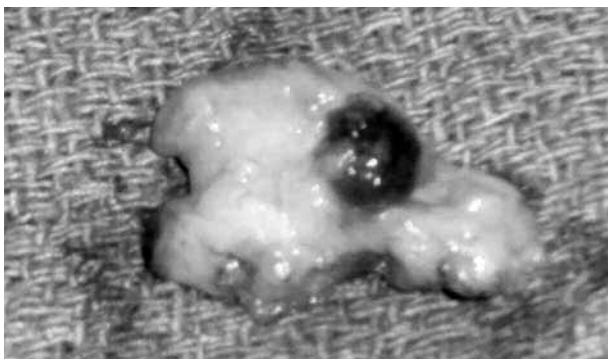
*Fig. 1.* — Post Gadolinium injection and fat saturation T1-weighted MRI image showing the hypervascularized lesion (white arrow).



*Fig. 2.* — CT-scan showing the erosion on the odd facet of the patella (white arrow).

and the absence of calcification within the lesion on CT-scans (15). Doppler ultrasonography may show the vascular nature of the lesion but the results are inconsistent (8).

The specimen resected surgically was dark brown in colour and measured 12 × 8 mm (Fig. 3). Microscopy revealed a tumour formed of cells with uniform rounded nuclei with many conspicuous vascular spaces ; no mitotic activity was found. The sample stained heavily with smooth muscle. All these findings confirmed the diagnosis of a glomus tumour.



**Fig. 3.** — Macroscopic view of the glomus tumour : a typical small limited nodule with dark brown surface surrounded by fat.

## DISCUSSION

Glomus tumour is a benign neoplasm arising from smooth muscle cells of the glomus body which is a specialised arteriovenous anastomosis involved in temperature regulation (3). It is clinically characterized by its small size and the severity of the pain and disability which it produces. The classic location of this tumour is the hand. When extradigital, it rarely causes knee pain. Classically, this vascular tumour develops in a fat surrounding environment. More exceptional is the location of the tumour within bone (16). Due to their benign nature, glomus tumours rarely cause bone erosions and do not metastasize. The erosion on the medial side of the patella in our case is probably due to its position and the complex motion pattern of the patella that permitted the tumour to create the erosion by local friction. The glomus tumour eroded the odd facet of the patella which is known to be softer as this facet probably impinged on the tumour in deep flexion.

Even though the extradigital location of the glomus tumours is very rare, several cases have been reported. Most reported locations included the subcutaneous tissue at the lateral aspect of the knee joint (13), the patellar ligament (9), the quadriceps muscle (12), the vastus lateralis (1), a Baker's cyst (14), the infrapatellar fat pad (5), the medial collateral ligament (17), beneath the plica synovialis (7) and one was reported after a total knee arthroplasty (2).

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