

# Glomus Tumours As A Cause Of Severe Localised Pain Around The Knee: A Case Report & Review Of Literature

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## Abstract

Extradigital glomus tumour causing knee pain has rarely been reported in the literature.

We report a case of a glomus tumour presenting with chronic exquisite localised anterior knee pain and complete relief of pain with surgical excision of a tender lump in the pre-patellar region. We also review the 'around-the-knee glomus tumours' reported in the English Literature to date.

We concluded that glomus tumours can occur anywhere the knee and should be included in the differential diagnosis of any localized knee pain. An early diagnosis should be easily reached from the history and examination, aided by MRI imaging and confirmed by histology of the lesion after surgery.

## INTRODUCTION

Since the clinical description of 'painful tubercles' by Wood (1) and the histological analysis of Masson (2), glomus tumours are known as well-circumscribed, small, and usually painful lesions. It is a benign neoplasm arising from smooth muscle cells of the glomus body which is a specialised arteriovenous anastomosis involved in temperature regulation. It is an uncommon tumour with predereliction for fingers and subungual area but reports have been published of cases at many different extra-digital sites including around the knee.

## CASE REPORT

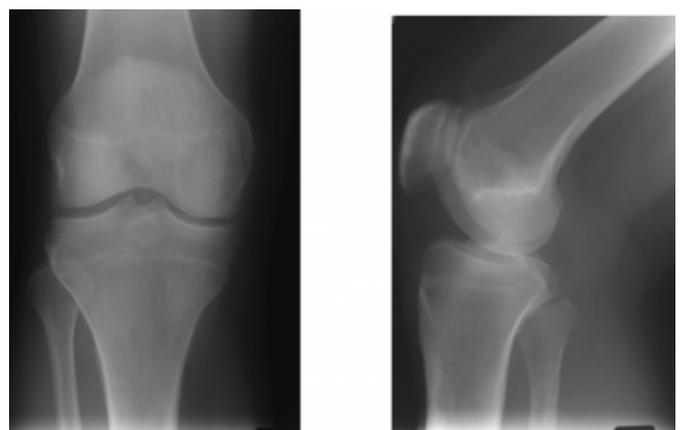
A 69 year old gentleman was seen in our outpatient clinic after referral by his general practitioner for anterior knee pain and a painful patellar lump. The pain started several years previous and gradually increased in severity. The lump manifested the classic triad of aching pain, exquisite tenderness and sensitivity to cold. There was no history of trauma or instability of the knee.

Physical examination revealed a small chronic effusion but no laxity of the joint. The knee had a decreased range of motion due to pain from the lump. The patellar lump, localised by patient, was extremely tender to palpation, to the extent that even gentle stroking of the skin over the lump was very painful. The lump had a slightly blue discolouration to it.

Plain radiographs of the knee shown in Figure 1 revealed only mild degenerative changes and were otherwise normal. MRI scan of the knee shown in Figure 2 showed a well-delineated ellipsoid mass 2 cm in length in the pre-patellar area. This enhanced significantly with contrast shown in Figure 2.

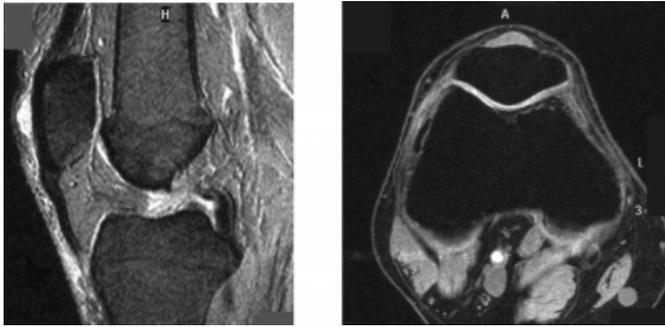
## Figure 1

Figure 1: AP and lateral radiographs of the knee: normal appearances.



**Figure 2**

Figure 2: MRI scans of the knee with contrast: This showed a well-defined enhancing mass in the pre-patellar area.



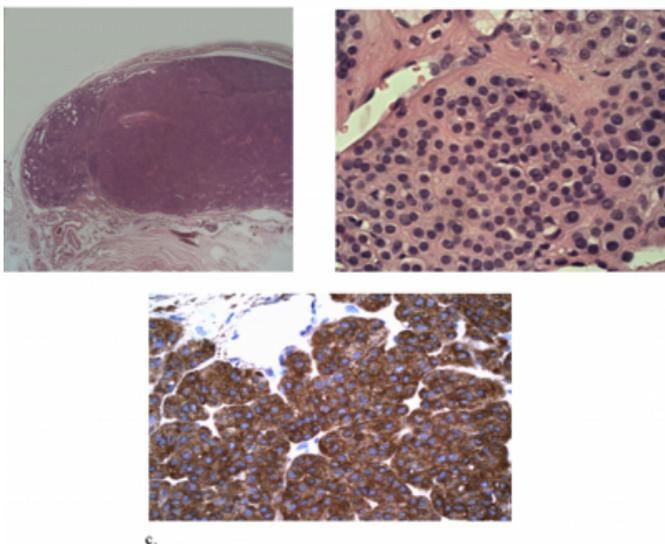
At surgical excision through an anterior midline incision, an encapsulated hemangiomas swelling was found arising from the patellar surface which was excised in full.

The specimen was dark brown in colour and measured 32 x 15 x 7 mm. Microscopy revealed an encapsulated tumour 11 mm in length formed of cells with uniform rounded nuclei with many conspicuous vascular spaces (Figure 3). No mitotic activity was found. The sample stained heavily for smooth muscle (Figure 3). These findings are consistent with a diagnosis of a glomus tumour.

**Figure 3**

Figure 3: Histology slides of the excised lesion showing a discrete encapsulated tumour (top left), the typical appearance of very regular rounded cells (top right) and the characteristic staining for smooth muscle (below centre).

T MRI scans of the left knee, with contrast. Note the well-defined enhancing mass in the pre-patellar area.



The pain resolved immediately after the operation. At 2, 6, 12 and 18 months follow-up, the patient was pain-free, had a full range of motion in the knee and had resumed normal

activities.

**DISCUSSION**

A typical glomus tumour of the hand, accounting for 1% to 5% of hand tumours, is readily diagnosed. Its rarity in extra-digital sites presents a diagnostic dilemma. Its small size and possible deeper location such as in striated muscle makes localisation difficult and may delay treatment. The symptoms and signs may raise the possibility of diagnosis.

The quality of the pain is suggestive of the diagnosis. Episodes of acute pain characteristically radiate from the lesion and are elicited by changes in temperature, such as exposure to cold, or even by minor tactile stimulation. The tumour may assume a bluish hue during an attack of pain. The pain can sometimes be accompanied by hyperesthesia or muscle atrophy. In the past, prior to more accurate methods of diagnostic imaging the severe symptoms often lead to radical treatment. Ottley reported two patients in whom the correct diagnosis was made after amputation had been performed (3). An important finding is that the patient can often locate the lesion precisely.

Additional investigations such as real-time ultrasonography, computed tomographic scanning, or magnetic resonance imaging help in the diagnosis. King et al. reported the results of ultrasonography were inconsistent (4). In contrast, CT scans and magnetic resonance imaging have yielded outstanding results. High resolution MRI is the gold standard for the imaging of glomus tumours giving more detail of the lesion and its relationship to the adjacent structures allowing complete removal by excision. Marked enhancement with contrast makes even small deep lesions quite easy to see on MRI.

A review of the glomus tumours occurring around the knee had revealed several published sites in the English literature. Most reported locations included the subcutaneous tissue at the level of the lateral joint line (6), patellar ligament (7), the quadriceps muscle (8), the vastus lateralis (9), a Baker's cyst (10), the infrapatellar fat pad (11), medial collateral ligament (12) and Hoffa's ligament (13). In some of these articles, authors reported difficulties in the final diagnosis due to misdiagnosis or because symptoms mimic other pathology.

In the present article, physical examination revealed the patellar lump that was localised by the patient. MRI scans of the knee showed a well-delineated ellipsoid mass 2 cm in length in the pre-patellar area. These findings are consistent

of a soft tissue mass in the pre-patellar subcutaneous tissue that normally requires an excision biopsy. There were no misdiagnoses involved in this case report. Although this was an uncommon location for a glomus tumour, there were no difficulties in the final diagnosis and a complete excision of the lesion resolved the problem

### **CONCLUSION**

We concluded that glomus tumours can occur anywhere the knee and should be included in the differential diagnosis of any localized knee pain. The diagnosis is reached from the history and examination, aided by MRI imaging and confirmed by histology of the lesion after surgery.

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