

## Glomus Tumour Around the Knee Joint A Case Report and Review of Literature

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**Received:** August 17, 2022**Published:** September 12, 2022© All rights are reserved by **Farid Ghasemzadeh Mojaveri and Aaron Han.****Abstract****Introduction:** Glomus tumours usually is seen in the extremities, especially subungual area of fingers and toes.

Glomus tumours rarely occur around the knee joint and especially in young active people who are prone to different types of knee injuries it can easily be misdiagnosed as a case of internal knee derangement.

**Case report:** In this case report we are presenting a young 33 years old Egyptian gentleman with a history of knee pain for the past 8 years who has done several MRIs and has done unsuccessful several physio therapies with suspicion of internal knee derangement recently even he was offered an arthroscopic knee surgery.

A careful clinical and imaging study revealed a tiny soft tissue mass in anteromedial joint line with exquisite tenderness.

Excision of the mass under local anaesthesia showed the typical purple mass and histology study confirmed the Glomus tumour. He remained completely pain free after the surgery.

**Discussion:** There had been 39 case report of Glomus tumour around the knee joint so far in the literature we have discussed different locations and presentations of this tumour in this case report.**Conclusion:** Lack of experience and awareness about this mostly benign soft tissue tumour can lead to plenty unnecessary work ups and sometimes unnecessary surgeries.**Keywords:** Glomus tumour, Knee joint, knee pain, MRI, Surgery, Glomangioma and extra digital**Introduction**

Glomus tumours were first described by Dr William Wood [1] in 1812, as a painful, subcutaneous, slow-growing tumour susceptible to temperature variations. Only later, in 1901, Grosser described the lesion as arteriovenous anastomoses, associating them with the body temperature regulation [2].

From histological point of view glomus bodies are mainly composed of three type of tissues including Glomus cells, the vascular tissue and smooth muscle cells [2,3].

In 75% of cases they are made of solid glomus cells, in 20% considered glomangioma as they are more vascular and in 5%, they are considered Glomangiomyoma because they have mainly smooth muscle cells [2,3].

These tumours correspond to 2% of all primary soft tissue tumours and to 1%-5% of all soft tissue tumours in the hand. Approximately 75% of glomus tumours occur in the hand, and 60% of them are subungual (a typical location of such tumours) [3,4].

This tumour is rare and most of the time of benign but there had been some reports of malignancy in less than 2% of cases [5,6].

Classically the clinical diagnosis of glomus tumour is based on a triad of subjective pain, exquisite tenderness and hypersensitivity to cold [4].

But the final and definite diagnoses usually is made after histopathologic study.

The presentation in subungual area of hand usually is the classic form with purple bluish discoloration under the nail plate. presentation of this tumour in areas other than hands are very rare.

There have been reports of glomus tumour in the brachial plexus [6], spine [7] elbow [8], chest wall, forearm, feet [9] and in thigh [12].

But glomus tumour around the knee is not very common and until now there had been 38 case reports of glomus tumour around knee joints in the literature [4-18].

The importance of glomus tumour around the knee joint is that it can easily be misdiagnosed as an internal derangement, neurogenic tumours, popliteal fossa mass epidermal cyst lipoma or even sarcoidosis [4-13].

As this tumour happens in young people this adds to the confusion because young people are more prone to have knee injuries in recreational sports activities.

One of the most comprehensive studies about glomus tumours around the knee joint has been published by Yingjie Wang, *et al.* in 2022 [4].

Their study showed that in 20% of glomus tumours around the knee, there is positive history of trauma [4].

Glomus tumour around the knee joint is mostly located in subcutaneous tissue but it has been reported inside the joint cavity and in the soft tissue around the knee including popliteal fossa [20,21], patellar tendon [15], iliotibial band and Hoffa's fat pad [16], gastrocnemius muscle [11] and also have been reported in the subperiosteal layer of distal femur and proximal tibia [21-23].

There has been one report of Glomus tumour around the knee after total knee replacement [19].

The diameter of the lesion in most of the studies has been between 4-65 mm with the average diameter of 21.6 mm [4].

As I mentioned earlier there is a very low risk of malignancy, in the Wang's study there had been one case of malignancy and one suspected to malignancy along all cases around the knee which have been reported [4,5].

The illness duration it means that from the time that the patient felt the pain until the time of diagnosis has been made, could have been between 1 week to 20 years [14], for male the median duration of disease was about 3.5 years and for females it was 2.1 years.

Glomus tumour is slightly more common in female than in male. Other than clinical suspicion and physical findings the imaging study of choice is MRI which shows low to intermediate signal in T1 and high vascular signal in T2, in the ultrasound glomus tumour represent as a very round or ovoid hyperechoic mass, x-ray usually does not show any abnormality. The classic therapy for glomus tumour is complete surgical excision.

The rate of recurrence after complete surgical excision is low but it has been reported between 7-10% in multiple studies.

In recurrent cases or in places that surgical excision is not feasible radiotherapy has been reported to be useful.

## Case Presentation

The patient was a young 33-year-old Egyptian gentleman who has been suffering from pain on his left knee in the past 8 years.

He recalls a history of direct impact injury during nonprofessional football. As the area of pain and tenderness was exactly anteromedial to joint line on the medial border of patella so it was believed that it might be from medial meniscus or patellofemoral joint and he was referred to several sessions of physical therapy and has been given several courses of painkillers and at last was offered an arthroscopic knee surgery.

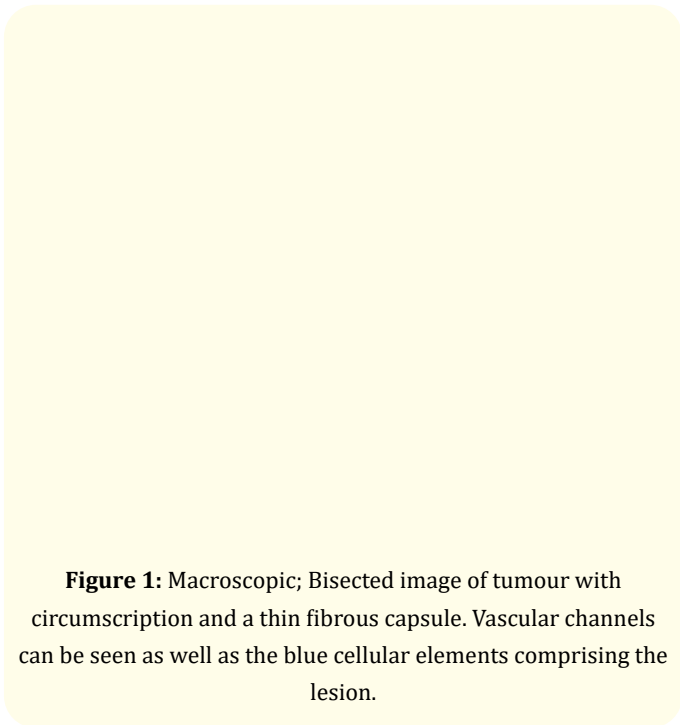
In physical examination there had been a small palpable mass medial to inferior pole of patella near the joint line it was exquisitely tender, the size of the mass on the MRI has been 9 X 10 X 10 millimetre in subcutaneous tissue it was low to intermediate signal in T1 and high and bright signal in T2.

After considering that the mass might be the reason of his complain and suspecting that it might be glomus tumour he was operated.

The mass was excised under local anaesthesia with a small transverse incision.

### Gross description of the mass

It was a nodular purple piece of tissue measuring 10x10x8 mm with past fatty tissue bisected to reveal haemorrhagic cut surface (Figure 1).



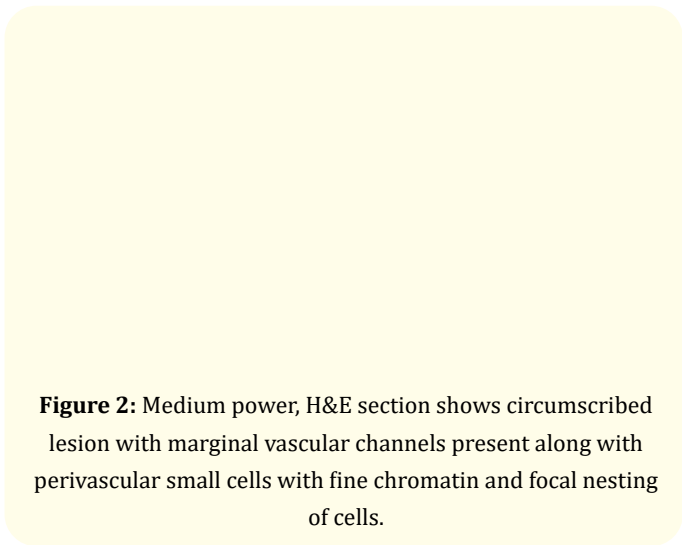
**Figure 1:** Macroscopic; Bisected image of tumour with circumscription and a thin fibrous capsule. Vascular channels can be seen as well as the blue cellular elements comprising the lesion.

### Microscopic description

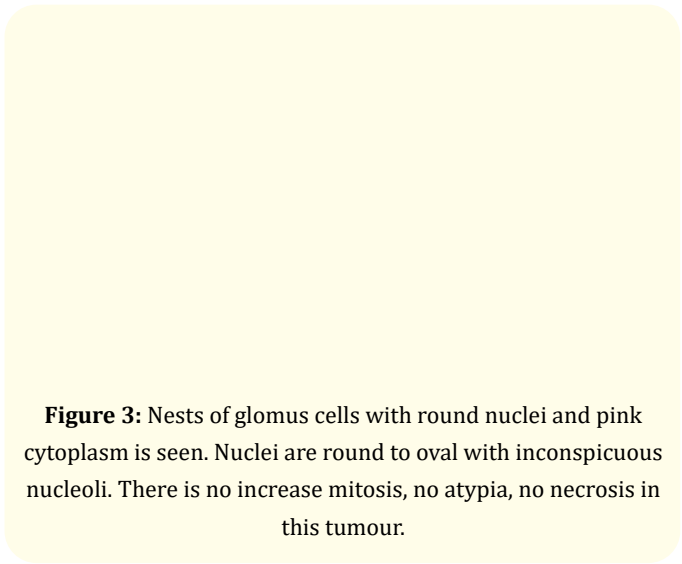
Circumscribed lesion with margin vascular channels present with perivascular small cells with fine, tingling and focal nesting.

No atypia, no mitoses. Consistent with glomus tumour (Figure 2 and Figure 3).

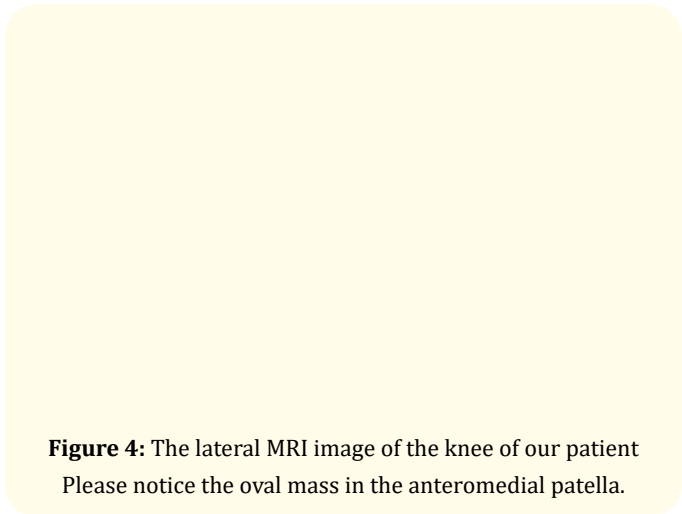
The moment after the surgery the patient felt happy and the pain never came back again.



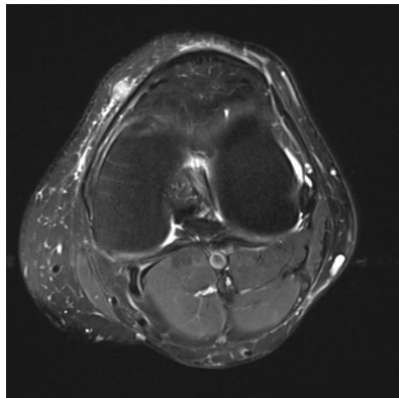
**Figure 2:** Medium power, H&E section shows circumscribed lesion with marginal vascular channels present along with perivascular small cells with fine chromatin and focal nesting of cells.



**Figure 3:** Nests of glomus cells with round nuclei and pink cytoplasm is seen. Nuclei are round to oval with inconspicuous nucleoli. There is no increase in mitosis, no atypia, and no necrosis in this tumour.



**Figure 4:** The lateral MRI image of the knee of our patient. Please notice the oval mass in the anteromedial patella.



**Figure 5:** Typical MRI presentation very similar to our case [24].

### Conclusion

The Important challenge for glomus tumour is its early diagnosis.

Most of the patients have been delayed in diagnosis and have done several unnecessary investigations and sometimes unnecessary and ineffective managements.

Increasing the knowledge and awareness about this tumour especially around the knee joints where is the location for different types of pathologies and injuries is very important especially for young surgeons.

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