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Patellar clunk syndrome: A rare cause of painful knee after total knee arthroplasty

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Abstract
Although total knee arthroplasty is a successful procedure, postoperative residual knee pain after total knee arthroplasty is still the major factor that contributes to patient dissatisfaction.
Even after resurfacing the patella, residual anterior knee pain is the most frequent complaint. Numerous etiologies have been associated with residual pain, including mid-flexion instability, aseptic loosening, infection, and patellar maltracking due to component malalignment.
Other rare etiologies like patellar clunk syndrome could also cause residual knee pain after total knee arthroplasty.
Through this case report of a patellar clunk syndrome successfully treated with arthroscopic resection, we discuss the etiopathogeny, diagnostic challenge, and treatment of this rare entity.

Keywords: Arthroplasty, knee, clunk syndrome, arthroscopy

Introduction
In orthopedic surgery, Total knee arthroplasty (TKA) is one of the most successful surgeries. However, in terms of patient satisfaction, TKA is considered to be inferior to total hip arthroplasty [1]. Knee pain after TKA is the most common complaint. Usually it is the consequence of an infection or an aseptic loosening [2]. Sometimes, biological and radiological findings are normal, then a soft tissue impingement of different pathological entities, like the patellar clunk syndrome (PCS) should be suspected.

Case report
A 65-year-old man underwent right TKA in our orthopedic department for severe Knee osteoarthritis. Surgery was performed through a medial parapatellar approach under tourniquet control. Femoral, tibial and patellar components were cemented. Good patellar tracking was per-operatively obtained. The post-operative radiographs showed well-positioned components with good patellofemoral alignment on the skyline view.
He had an uneventful post-operative recovery and the rehabilitation started immediately following surgery. At 8 weeks of follow-up he was satisfied with the clinical results with a good range of motion (0° to 120°) and a smooth patellar tracking.
However, at 6 months of follow-up, he was feeling a clunk when he was trying to extend his knee around 30°. The symptomatology started about four months post-operatively beginning with a catching sensation that became a clunk over the next two months.
At the clinical study, when extending the knee, a clunk was felt at 30° of flexion. Biology was within normal limits (white blood cells and c-reactive protein). Plain radiographs of the right knee showed well-positioned components without loosening or any evidence of instability.
Arthroscopy was performed under general anesthesia, showing a fibrous nodule at the articular side of the junction between the quadriceps tendon and the resurfaced patella (Fig. 1). The nodule was resected arthroscopically using a shaver (Fig. 2). After debridement there was complete disappearance of the nodule and smooth patellar tracking without any clunk (Fig. 3).
The patient was immediately relieved following the arthroscopy. At the last follow-up of 2 years he was completely satisfied, painless, with a good range of motion and no recurrence.

Discussion

PCS was first described in 1989 by Hozack in a case series of patients treated with the first generation postero-stabilized (PS) component prothesis [3].

PCS was traditionally associated with PS implants. It is the result of impingement during extension of the knee. The formation of a proliferative fibrous suprapatellar nodule on the articular side, that is entrapped in the intercondylar notch of the femoral component when the knee is flexed and displace during extension, causing the clunk [4].

A lot of etiologies have been reported such as previous knee surgery, femoral component designs with high intercondylar box ratio, reduced patellar tendon length, reduced patella-patellar component composite thickness, thinner patellar components, and smaller femoral components [5].

First of all, other etiologies of post-operative knee pain after TKA should be eliminated. If biological and radiological findings appear normal, the diagnosis of PCS is easily made on physical examination by feeling the knee during extension and listening to the clunk [4].

A recent study shows that ultrasonography can also be a useful tool for the diagnosis of clinically suspected PCS after TKA. It can directly visualize the fibrous nodule and dynamically prove its causative association with the symptoms of the patient [6].

Most patients with PCS are completely unaware of the problem having no or minimal symptoms and no treatment is necessary. Only few patients complain of knee pain, then arthroscopic debridement should be indicated [2, 7].

It is mainly a simple procedure, only the "refraction" or "mirror" aspect during arthroscopy after TKA can disorient the surgeon, but it is a minor difficulty.

After resection of the fibrous nodule, immediate disappearance of the symptoms is usually observed with good functional outcome [2, 7].

Preventative measures have been reported including debridement of the fibro-synovial suprapatellar soft tissue at the time of TKA, choice of femoral components with a reduced intercondylar box ratio, avoidance of over-resection of the patella, and use of thicker patellar components [5].

Conclusion

PCS is a relatively rare, but it is a significant complication of total knee arthroplasty. Arthroscopic debridement is an effective treatment option with a good long-term functional outcome. Simple preventive measures should be taken into account during TKA to avoid occurrence of PCS.

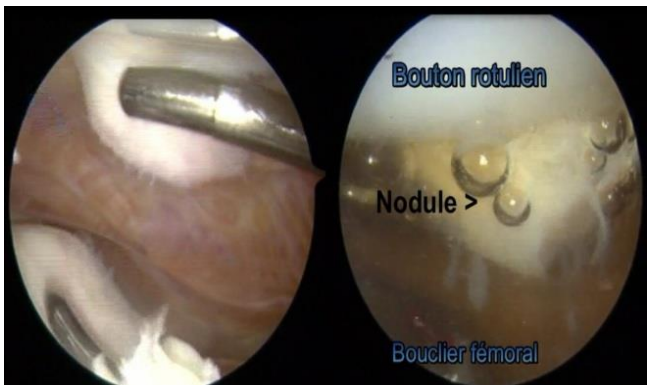

Fig 1: Arthroscopic images showing a fibrous nodule at the articular side of the junction between the quadriceps tendon and the resurfaced patella.

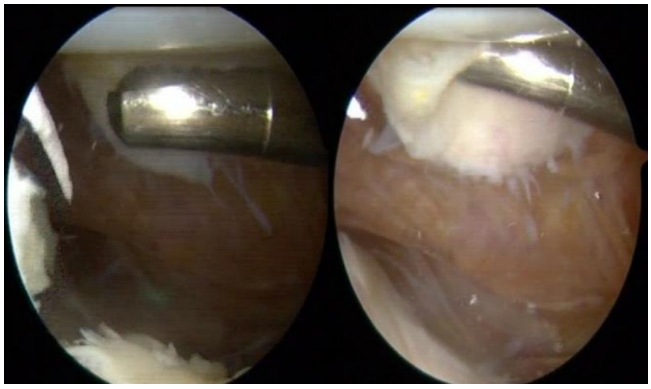

Fig 2: Arthroscopic images showing the resection of the nodule using a shaver.

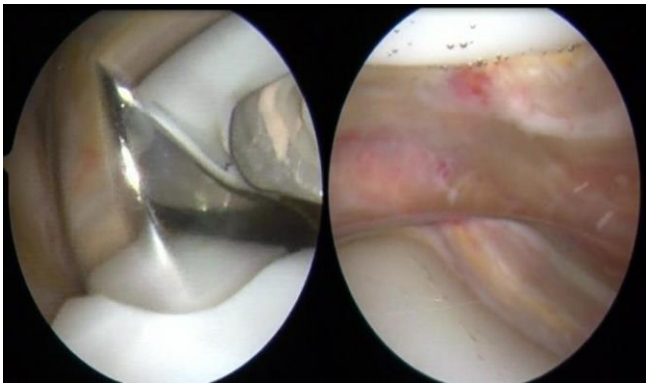

Fig 3: Arthroscopic images after resection showing complete disappearance of the nodule with smooth patellar tracking.

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