



Anterior knee pain: so common a symptom, so misunderstood

Anterior knee pain (AKP) is the most common reason to consult with an orthopaedic surgeon specializing in the knee. Boling *et al.* (1) found an AKP prevalence of 15% among females and 12% among males. It was also observed that the annual incidence of AKP was 33/1,000 person-years in females and 15/1,000 person-years in males (1). Nevertheless, despite its high incidence and prevalence, the etiology of AKP is often vague and typically multifactorial, which complicates the treatment. Collins *et al.* (2) analyzed 4 intervention conservative protocols, including multimodal physiotherapy, and they revealed that 40% of these patients had an unfavorable recovery at 12 months after the initial diagnosis. Moreover, AKP is not often a self-limiting condition; it is recurrent or chronic in more than 70% of the cases (3). Furthermore, Conchie *et al.* (4) showed that AKP is associated with patellofemoral osteoarthritis (PFOA) during adulthood. That is, AKP and PFOA may form a continuum of the disease. We should not, therefore, look down on or discount this pathologic condition in any way. Sadly, many orthopedic surgeons do not give enough attention to this pathology, which only demonstrates their lack of understanding of its importance.

A proof that this pathology is not well understood, is that an obsolete diagnosis such as “chondromalacia patellae”, described in 1906 by Konrad BÜdinger (5), is still used today by many doctors and physical therapists for any pain in the anterior aspect of the knee. However, not all the patients with AKP suffer from “chondromalacia patellae”, and at the same time many patients with “chondromalacia patellae” do not have AKP (6). van der Heijden *et al.* (7) have not detected any differences in the composition of the patellofemoral cartilage between AKP patients and healthy controls. Moreover, even patients with severe patellofemoral chondropathy may not suffer from AKP (6). Consequently, the International Patellofemoral Study Group is against using this term as a diagnosis and suggests the term “anterior knee pain” as it is only descriptive, without implying anything else. Unfortunately, the term “Chondromalacia Patellae” continues in use by the “International Statistical Classification of Diseases and Related Health Problems (ICD-10, Version 2016)”, being its code M22.4 (8). The following unfavorable 1908 comment of BÜdinger about “*internal derangement of the knee*”, another term historically associated to AKP, might be applied to “chondromalacia patellae”: “[It] will simply not disappear from the surgical literature. It is the symbol of our helplessness in regards to a diagnosis and our ignorance of the pathology” (9).

AKP is a musculoskeletal condition with the worst-known etiopathogenesis, having been involved factors such as the loss of homeostasis as well as functional, mechanical and structural alterations. Thus patients with AKP often undergo treatments with little scientific basis. A plethora of treatment options have been described with different levels of agreement. The great number of variables associated with AKP, most of which lack valid measurement tools, can explain this confusion. Moreover, there is a complete lack of studies that justify the variability of the different therapeutic approaches. One rarely sees so many absurd and baseless treatments in any other condition of the musculoskeletal system as in AKP. An unequivocal proof of the ignorance that many orthopedic surgeons have about this pathology is the use of many treatments for AKP, [e.g., intraarticular injections of platelet-rich-plasma (PRP)] with no medical basis. Many surgeons simply do not wish to take on these cases, because they are unsure of just what they are dealing with. We hope to provide clarity to this condition such that they become more comfortable managing these often, challenging patients.

Indeed, one of the approaches that has caused most damage to AKP patients is the “malalignment theory” (patellar tilt and/or patellar subluxation) strongly supported by many orthopaedic surgeons, with an almost “religious fervor”. This is another proof that this pathology is not well-known. We should beware of dogma! This approach has given this pathology and its treatment a “bad reputation”. We have to be very cautious when recommending surgical treatment in AKP patients. This caution is particularly aimed at those “well-meaning, trigger-happy orthopaedic surgeons” educated in a vision that is purely “structural/anatomical/biomechanical”. Our office is often visited by patients seen and treated by other colleagues, they come with a bag full of MRIs or CTs. As the last option of their treatment they have been advised a surgery to correct a supposed “lateral displacement of the patella” diagnosed with the MRI or CT alone. The most serious issue is that nobody has even performed an adequate physical examination on the patient. The diagnosis and surgical indication has been based only on imaging (often from just reading the radiologist opinion). This approach is a blunder—the patient who began with just mild, intermittent symptoms often becomes even worse. The same condemnation applies to physical therapy that is aggressive and incorrect. We have to beware of structural anomalies. Structural anomalies of the patellofemoral joint observed

with imaging techniques must not deflect our attention. In this way, van der Heijden *et al.* (10) have shown in a study using MRI that these abnormalities are not related to pain. In fact, there is a poor correlation between structural anomalies (i.e., chondropathy, patellar tilt and patellar subluxation) and AKP (6). Therefore, inappropriate or incorrect malalignment-oriented patellofemoral surgery must be avoided.

In the vast majority of cases the loss of both osseous and soft tissue homeostasis is much more important in the genesis of AKP than structural alterations (Paradigm of Tissue/Joint Homeostasis) (11). Our objective should be the achievement and maintenance of joint homeostasis as safely and predictably as possible. But, we cannot be ridged in our thinking and claim that a structural anomaly is never going to be responsible for AKP. The knee is a hypercomplex joint with multiple moving parts that can become symptomatic from altered structural components. Skeletal mal-alignment may be responsible for disabling AKP in selected cases. We must acknowledge that skeletal mal-alignment is not equal to patellofemoral malalignment (patellar tilt and/or patellar subluxation) (12). Skeletal mal-alignment is the mal-alignment of the limb measured in the three planes: transverse, coronal and sagittal (12). For example, rotational osteotomy ought to be considered for that patient with AKP with a significant torsional deformity (transverse plane) of the limb. We must note that this biomechanical approach is compatible with the biological perspective.

To summarize, the high incidence and prevalence of AKP along with the poor long-term prognosis and high disability levels, turns this pathologic condition into an urgent research priority. We wish that with this special issue it will be able to change the perception of the majority of orthopaedic surgeons and physical therapists when it comes to this pathology.

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