Management of Patellofemoral Chondral Injuries

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KEYWORDS

- Articular cartilage • Patellofemoral • Autologous chondrocyte implantation
- Osteochondral allograft • Microfracture • Patellofemoral chondral defects
- Tibial tubercle osteotomy • Articular cartilage techniques

KEY POINTS

- Proper clinical indications is the keystone to successful outcomes in patellofemoral cartilage lesion treatment.
- Overlooking an unloading or realignment osteotomy may lead to clinical failure.
- There is limited data to recommend microfracture of the patellofemoral joint.
- Improved reliability in surgical treatment is seen with: low BMI, pain for less than a year, objective effusions, and no prior surgery.

INTRODUCTION: NATURE OF THE PROBLEM

Patients can develop patellofemoral pain for several reasons, including acute trauma and overuse injuries. The underlying cause may be rooted in a chondral defect. In the professional athlete, the prevalence of patellofemoral defects was 37%, with 64% of these being patellar.[1] Similar findings have been described in patients undergoing routine knee arthroscopy, with patellar lesions present in 36% of knees.[2]

Despite the relatively high prevalence of incidental lesions, no data exist to support prophylactic treatment. Although chondral lesions may progress in size,[3] clinicians should focus on short-term improvement in patient symptoms, including objective findings, such as swelling.

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Although patellofemoral defects are commonly associated with valgus malalignment or patellar instability, this review focuses on the treatment of the defect itself. Associated osteotomies and their role are also included; however, the general treatment of patellar dislocations is not covered.

HISTORY

Successful treatment hinges on accurate diagnosis, which can be obtained from a thorough history and physical examination. Factors that can modify patient outcome are workers' compensation status, and previous surgery. Body mass index (BMI, calculated as weight in kilograms divided by the square of height in meters) may not have the same role in progression of patellofemoral defects as it does in tibiofemoral defects.[4] Typically, patients complain of anterior knee pain that is deep to the patella, and patients gesture with 1 finger to the patella or describe a band inferior to the patella adjacent to the infrapatellar fat pad. Trochlear lesions can also cause posterior knee pain. Symptoms are exacerbated by going down stairs, which requires the most knee flexion of activities of daily living. Stairs also place the largest load on the patellofemoral joint, causing symptom flares. Running, jumping, kneeling, and squatting also exacerbate pain. Patients also describe the movie theater sign, in which anterior knee pain is increased after prolonged sitting. Symptoms are typically not worsened with walking on level ground.

Although these are classic symptoms, a history of knee swelling and symptoms caused by a traumatic event is more focal and indicates a true lesion. The duration of pain should be evaluated, because patients with more acute onset and shorter duration of symptoms are more likely to have predictable pain relief. Catching, popping, or clicking that is not associated with true mechanical symptoms or pain isolated to these events are nonspecific and unlikely to be addressed successfully with surgery.

If the patient has a history of patellar instability, the clinician should be diligent to determine if pain and discomfort are present when the knee is stable or only when dislocation/subluxation events occur. If it is the former, there is a possibility that a chondral defect is the culprit. However, our preference is not to treat lesions that are found incidentally in patients with symptoms related only to instability events. This history is not always clear; therefore, using a patellar stabilization brace can aid patients in determining if instability is the inciting factor. Similarly, a positive yet transient response to an intra-articular injection can correlate with improved response to foretell the response that a patient might have to a cartilage procedure.

Nonoperative management should include injections and bracing, as discussed earlier. However, the mainstay of treatment is physical therapy, which includes quadriceps strengthening, peripatellar mobilization, core strengthening, abductor strengthening, and physiotaping. Antiinflammatories in conjunction with an injection can also decrease the effect of the inflammatory cascade. This treatment should be continued for 6 weeks to 6 months, depending on the patient's response. Continued pain in the setting of normal range of motion and symmetric thigh circumference are concerning for failure of nonoperative management.

PHYSICAL EXAMINATION

- General
  - Gait (antalgic, Trendelenburg, in-toeing)
  - Lower extremity alignment