■ ASPECTS OF CURRENT MANAGEMENT

A clinical review of cartilage repair techniques

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Chondral injuries involving the knee are common. In a recent study of 993 consecutive arthroscopies scored using the International Cartilage Repair Society (ICRS) knee evaluation form,[1] articular cartilage pathology was found in 66% of patients, while 11% had localised, full-thickness lesions which might have been suitable for cartilage repair procedures. Another review, of 31 000 arthroscopic procedures, found articular cartilage lesions in 63%[2] and another reported the incidence of localised chondral and osteochondral lesions in 1000 consecutive arthroscopies to be 19%.[3] Debate still persists about the best treatment for symptomatic chondral defects. Here, we discuss the efficacy of the different surgical techniques that may be used to address these lesions.

Natural history of cartilage injuries

The natural history of cartilage injuries is not well understood, but a knowledge of it may help to identify which patients are suitable for treatment. Chondral injuries noted at the time of anterior cruciate ligament reconstruction do not appear to affect clinical outcome at a mean of 8.7 years.[4] Although these defects were small and, in a young population, it may be difficult to extrapolate these findings to patients presenting with symptomatic lesions. In a long-term follow-up of a small group of young patients noted to have chondral defects at arthroscopy, there was a high rate of radiological evidence of osteoarthritis (57%), although most patients had few symptoms.[5]

What can we learn from osteochondral defects? Linden[6] published a long-term follow-up study on osteochondritis dissecans of the femoral condyles and evaluated 76 knee joints (58 patients) at a mean of 33 years after diagnosis. Of the 23 patients who were children at the time of diagnosis, only two (9%) had mild osteoarthritis at follow-up. In contrast, osteoarthritis affected 81% of those with adult-onset osteochondritis dissecans, approximately ten years earlier than for primary osteoarthritis.

From this limited information, it is perhaps reasonable to suggest that only symptomatic, chondral defects should be treated as there is no evidence to suggest that patients with asymptomatic lesions will become symptomatic in the future. Osteochondral defects in adults may warrant more aggressive attention because of the high incidence of early-onset osteoarthritis.

Debridement

Cartilage in and around a symptomatic chondral defect is abnormal. Mechanical overloading results in increased matrix metalloproteinase production[7,8] which has a damaging effect on the opposing surfaces and surrounding cartilage. Simple excision of this damaged cartilage has been shown to improve symptoms for five years or more.[9] Hubbard[9] recommended selection of patients on the basis of a chondral defect combined with local tenderness. His aim at debridement was meticulous removal of all unstable cartilage and to abrade the calcified layer sufficiently for new tissue to form in the base. In this prospective randomised trial, only isolated medial femoral condylar defects were selected and arthroscopic lavage was used as the control. The debridement group had significant improvement when compared with lavage as measured by the Lysholm score.[10] Results gradually deteriorated over the five-year period.

Studies of debridement in osteoarthritis, as opposed to discrete chondral defects, reach conflicting conclusions.[11,12] Opinion is divided as to whether arthroscopic debridement has any place in the treatment of established osteoarthritis although this debate does not apply to the treatment of localised, symptomatic chondral defects.

Microfracture

This procedure was introduced by Steadman et al[13-18] 20 years ago and is a technique in which accurate debridement of all unstable and damaged articular cartilage is performed, down to

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