NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Interventional procedures consultation document

Mosaicplasty for symptomatic articular cartilage defects of the knee

Articular cartilage covers the end of the bones in a joint (such as the knee) and stops them rubbing together when you move. It can be damaged because of injury, disease (such as osteochondritis, which is inflammation of the cartilage or bone), or wear and tear. This can cause pain and further damage to the joint, and affect mobility. Mosaicplasty is done by open or keyhole surgery. Healthy cartilage is taken from a donor site at the edge of the joint, which bears less weight, and is inserted into drilled tunnels in the damaged site. The aim is to encourage cartilage healing and produce a more durable joint surface.

The National Institute for Health and Care Excellence (NICE) is looking at mosaicplasty for symptomatic articular cartilage defects of the knee. NICE's interventional procedures advisory committee has considered the evidence and the views of specialist advisers, who are consultants with knowledge of the procedure.

The committee has made draft recommendations and we now want to hear your views. The committee particularly welcomes:

- comments on the draft recommendations
- information about factual inaccuracies
- additional relevant evidence, with references if possible.

This is not our final guidance on this procedure. The recommendations may change after this consultation.

After consultation ends:

- The committee will meet again to consider the original evidence and its draft recommendations in the light of the consultation comments.
- The committee will prepare a second draft, which will be the basis for NICE's guidance on using the procedure in the NHS.

Issue date: November 2017

For further details, see the Interventional Procedures Programme process guide.

Through our guidance, we are committed to promoting race and disability equality, equality between men and women, and to eliminating all forms of discrimination. One of the ways we do this is by trying to involve as wide a range of people and interest groups as possible in developing our interventional procedures guidance. In particular, we encourage people and organisations from groups who might not normally comment on our guidance to do so.

To help us promote equality through our guidance, please consider the following question:

Are there any issues that require special attention in light of NICE's duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations between people with a characteristic protected by the equalities legislation and others?

Please note that we reserve the right to summarise and edit comments received during consultations or not to publish them at all if in the reasonable opinion of NICE, there are a lot of comments, of if publishing the comments would be unlawful or otherwise inappropriate.

Closing date for comments: 22 December 2017

Target date for publication of guidance: March 2018

1 Draft recommendations

1.1 Current evidence on the safety and efficacy of mosaicplasty for knee cartilage defects is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit.

1.2 The procedure should only be done by surgeons experienced in cartilage surgery and with specific training in mosaicplasty for knee cartilage defects.

1.3 Clinicians should enter data from all patients having the procedure onto the ICRS Patient Registry.

2 The condition, current treatments and procedure

The condition

2.1 Chondral damage (that is, localised damage to the articular cartilage) in the knee can be caused by injury or arthritis, or it can occur spontaneously (a condition called osteochondritis dissecans). It can also occur because of knee instability, muscle weakness or abnormal unbalanced pressures, for example, after an injury to a ligament or meniscal cartilage. In young people, the most common cause of cartilage damage is sporting injuries. Symptoms associated with cartilage loss include pain, swelling, instability, and joint catching and locking, and may lead to degenerative changes in the joint (osteoarthritis).

Current treatments

2.2 There is no uniform approach to managing cartilage defects in the knee. Treatment options depend on the size of the defect and its location. There are 2 main categories of procedure: those intended primarily for symptom relief and those that also try to re-establish the articular surface. Interventions that aim to re-establish the articular surface include marrow stimulation techniques (such as abrasion arthroplasty, Pridie drilling and microfracture), mosaicplasty (also known as osteochondral transplantation) and autologous chondrocyte implantation (in which chondrocytes harvested from the knee are cultured and implanted into the damaged cartilage). Interventions that aim to relieve symptoms include knee washout (lavage) with or without debridement, osteotomy and knee replacement.

The procedure

Mosaicplasty (also called osteochondral autologous transfer mosaicplasty) is a technique for creating an osteochondral autograft. Small cylindrical osteochondral plugs are harvested from the periphery of the patellofemoral area (because it bears less weight) and inserted into drilled tunnels in the affected weight-bearing part of the knee joint. The procedure is done in a single sitting, commonly by open surgery but sometimes arthroscopically when perpendicular access to the harvesting and implantation sites is feasible. The harvesting and implantation process is repeated until about 70% of the defective area is filled, with minimal spacing between plugs. The number and size of plugs used may vary depending on lesion size and mosaicplasty technique. A drain may be needed postoperatively, and the patient is advised not to weight bear for 4 to 8 weeks depending on the size and location of the treated defect. Passive mobilisation after surgery is done for 2 to 4 weeks, progressing to active mobilisation and physiotherapy that is continued for several months.

3 Committee considerations

The evidence

3.1 To inform the committee, NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 8 sources, which was discussed by the committee. The evidence included 1 network meta-analysis, 3 systematic reviews, 1 randomised control trial, 2 case series and 1 non-randomised comparative study, and is presented in table 2 of

the interventional procedures overview ***[add URL]***. Other relevant literature is in appendix A of the overview.

3.2 The specialist advisers and the committee considered the key efficacy outcomes to be: restoration of functional hyaline cartilage in weight-bearing areas, improved mobility, return to usual activities, less pain including in the long term, and a reduction in subsequent joint degeneration and need for revision surgery.

3.3 The specialist advisers and the committee considered the key safety outcomes to be: infection, thrombosis, donor-site morbidity (including acceleration of wear at the donor site), procedure failure and joint stiffness.

3.4 This guidance is a review of NICE's interventional procedures guidance on mosaicplasty for knee cartilage defects.

Committee comments

3.5 The committee noted that earlier mobilisation may lead to better outcomes.

3.6 Most of the evidence was from patients aged between 16 years and 30 years.

3.7 Outcomes are better and donor-site morbidity is less when the procedure is used to treat smaller defects.

Tom Clutton-Brock
Chairman, interventional procedures advisory committee
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