

Mosaicplasty for symptomatic articular cartilage defects of the knee

Interventional procedures guidance

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www.nice.org.uk/guidance/ipg607

Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful

discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

This guidance replaces IPG162.

1 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. Find out what standard arrangements mean on the NICE interventional procedures guidance page.
- 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 International Cartilage Regeneration and Joint Preservation Society (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

- 2.3 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 9 sources, which was discussed by the committee. The evidence included 1 network meta-analysis, 3 systematic reviews, 1 randomised control trial, 3 case series and 1 non-randomised comparative study, and is presented in [table 2 of the interventional procedures overview](#). Other relevant literature is in additional relevant papers in 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 Patient commentary was sought but none was received.

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.

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Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).