British Society of Interventional Radiology
The Royal College of Radiologists
63 Lincoln's Inn Fields
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Genicular Artery Embolisation for Knee Osteoarthritis (GAE)

Please note that this leaflet is not meant to replace discussion between you and your doctor. You should raise any questions you may have with the doctor who has referred you for, or is performing, the procedure.

What is Genicular Artery Embolisation?

Traditional treatment options for osteoarthritis of the knee include pain medication and steroid injections. However, many patients do not respond to these, but are not yet at the stage of requiring a joint replacement. Around 20% of patients fall into this treatment gap.

Genicular artery embolisation (GAE) is a new minimally invasive treatment option for pain relief. This medical procedure involves blocking (embolising) abnormal blood vessels arising from the genicular arteries, blood vessels that take blood to the knee joint. GAE has previously been used in treating bleeding, for example after knee replacement surgery, and has emerged as a potential treatment for osteoarthritis. By interrupting areas of abnormal blood flow, the procedure aims to alleviate chronic knee pain caused by osteoarthritis.

Why do I need Genicular Artery Embolisation?

If you are experiencing persistent knee pain that has not responded to conventional treatment methods, you may be suitable for genicular artery embolisation. This procedure can provide significant pain relief and improve your overall knee function, allowing you to regain an active and fulfilling lifestyle. Multiple studies have shown that the treatment is safe although we are not sure how effective it is yet and it is still being tested. Current evidence has shown that pain relief can last for up to 2 years.

How do I prepare for Genicular Artery Embolisation?

Initially you will be reviewed in a clinic, where the team will ask you about your symptoms, medical history and review your knee and your scans to decide whether you are eligible for the treatment. Before undergoing genicular artery embolisation, your healthcare team will provide you with specific instructions to ensure a successful procedure. You are normally asked to avoid eating and drinking on the morning of your procedure. You may be asked to stop certain medications.

How is Genicular Artery Embolisation performed?

Genicular artery embolisation is usually performed with local anaesthesia or conscious sedation - not a general anaesthetic. You will usually have this procedure as a day case and be sent home on the same day.

A tiny incision is made in the skin of the groin, enabling access to the artery here (common femoral artery). Under X-ray guidance, a wire and catheter (long plastic tube, specifically designed for the purpose) are carefully navigated into the arteries supplying the knee joint (genicular arteries). Once the catheter is in place, dedicated pictures called angiograms are taken of the knee arteries in order to confirm the areas of abnormal blood flow (hyperaemia). The areas of abnormal blood flow are then injected with a small volume of micro-particles in order to reduce the blood flow, while maintaining flow through the main arteries. The particles used are tiny, in the region of 100-300 microns.

Who performs the procedure and where?

Genicular artery embolisation is performed by a doctor called an Interventional Radiologist. This is a type of doctor that specialises in image-guided minimally invasive procedures. The procedure will usually take place in the Interventional Radiology (IR) department of the hospital in specialised operating theatres with X-ray equipment, also known as IR suites or labs.

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What are the potential risks/complications of Genicular Artery Embolisation?

Genicular artery embolisation is considered a safe procedure, but it carries some risks. The most serious complication is "non-target injury", this means the particles injected to block the abnormal blood vessels going to the wrong place. The most common place they can go is to the blood supply of adjacent skin. Skin discolouration or breakdown/ulceration may then occur. This usually resolves without treatment. Other potential complications may include infection, bleeding, and injury to blood vessels or nerves, damage to bone, and or muscles.

What happens afterwards?

After the procedure, you will be monitored for a short period. It is normal to experience some mild discomfort or bruising at the catheter insertion site. Your doctor will provide post-procedure instructions, which may include pain medications techniques, physical therapy, and a gradual return to normal activities. Follow-up appointments will be scheduled to assess the effectiveness of the procedure and monitor your progress.

Notes