

## Treating blocked coronary arteries via a catheter using a laser

*NICE 'HealthTech  
guidance' advises  
the NHS on when  
and how new  
procedures can be  
used in clinical  
practice.*

This leaflet is about when and how using a laser via a catheter can be used in the NHS to treat people with blocked coronary arteries. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence).

This HealthTech guidance makes recommendations on the safety of a procedure and how well it works. An interventional procedure is a test, treatment or surgery that involves a cut or puncture of the skin, or an endoscope to look inside the body, or energy sources such as X-rays, heat or ultrasound. The guidance does not cover whether or not the NHS should fund a procedure. Decisions about funding are taken by local NHS bodies (primary care trusts and hospital trusts) after considering how well the procedure works and whether it represents value for money for the NHS.

This leaflet is written to help people who have been offered this procedure to decide whether to agree (consent) to it or not. It does not describe blocked coronary arteries or the procedure in detail – a member of your healthcare team should also give you full information and advice about these. The leaflet includes some questions you may want to ask your doctor to help you reach a decision. Some sources of further information and support are on page 7.

### What has NICE said?

This procedure can be offered routinely as a treatment option for carefully selected patients with blocked coronary arteries for whom conventional angioplasty would be unsuitable, provided that doctors are sure that:

- the patient understands what is involved and agrees to the treatment, and
- the results of the procedure are monitored.

*This procedure may not be the only possible treatment for blocked coronary arteries. Your healthcare team should talk to you about whether it is suitable for you and about any other treatment options available.*

### Treating blocked coronary arteries via a catheter using a laser

The medical name for this procedure is ‘Percutaneous laser coronary angioplasty’.

The procedure is not described in detail here – please talk to your doctor for a full description.

Coronary artery disease (also called coronary heart disease) occurs when vessels carrying blood to the heart (coronary arteries) become narrowed or blocked by the build-up of fatty deposits. This can cause problems such as angina (chest pain), heart attack or heart failure.

Treatments for severe cases include drugs to break down blood clots (thrombolysis), temporarily inserting and expanding a small balloon via a catheter in the blood vessel to widen it (balloon angioplasty), inserting a self-expanding metal mesh tube into the vessel via a catheter, or coronary artery bypass grafting.

This procedure aims to remove the fatty deposits that can’t be dealt with using standard techniques. A flexible tube (a catheter), connected to a

laser, is inserted into an artery in the leg (the femoral artery). It is moved upwards to the site of the blockage under X-ray guidance and the laser is then used to burn through the deposits. This procedure is usually done with other techniques to help remove the deposits and/or keep the blood vessel open. It is often used together with balloon angioplasty and followed by angiography (a technique to view blood vessels using X-ray) to record the results.

### **What does this mean for me?**

NICE has said that this procedure is safe enough and works well enough for use in the NHS. If your doctor thinks using a laser to treat blocked coronary arteries is a suitable treatment option for you, he or she should still make sure you understand the benefits and risks before asking you to agree to it.

### **You may want to ask the questions below**

- What does the procedure involve?
- What are the benefits I might get?
- How good are my chances of getting those benefits? Could having the procedure make me feel worse?
- Are there alternative procedures?
- What are the risks of the procedure?
- Are the risks minor or serious? How likely are they to happen?
- What care will I need after the procedure?
- What happens if something goes wrong?
- What may happen if I don't have the procedure?

*You might decide to have this procedure, to have a different procedure, or not to have a procedure at all.*

## **Summary of possible benefits and risks**

Some of the benefits and risks seen in the studies considered by NICE are briefly described below. NICE looked at 9 studies on this procedure.

### **How well does the procedure work?**

A study of patients who had the laser treatment reported 'lesion success' in around 90% of patients. In a study in which 55 patients were assessed, the block in the artery decreased from 83% to 49% for patients who had laser angioplasty, and to 38% in those who also had balloon angioplasty. In a large study of 9222 patients, serious cardiac events were more frequent in the laser group than in those who had balloon angioplasty, up to 1 year after surgery.

In a study of 1862 patients, 71% had an improvement in their angina symptoms, 13% had unchanged symptoms and 16% had worse symptoms at around 6 months after the procedure.

A study of 9222 patients reported that restenosis (where the blood vessels become narrowed again after treatment) occurred more frequently after laser angioplasty than after balloon angioplasty, between 3 months and 1 year. In 2 other studies, at around 6 months after treatment, 54% out of 797 patients and 55% out of 161 patients had restenosis. In a study of 96 patients treated by laser angioplasty combined with balloon angioplasty, 52% reported restenosis compared with 47% of patients treated by balloon angioplasty alone at 163 days after the procedure.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. The advisers said that success factors are success of the procedure and of the appearance of the blood vessel on angiography, quality-of-life scores, restoration of blood flow, and heart enzyme levels after surgery.

## **Information about NICE HealthTech guidance 250**

## **Risks and possible problems**

In the study of 9222 patients there was no difference in the rate of heart attack between patients who had the laser treatment and those who had balloon angioplasty at 30 days after treatment. A study of 3012 patients looked at patients previously treated with a stent and who then had restenosis followed by further treatment. The rate of serious adverse cardiac events was 35% for laser angioplasty, 29% for balloon angioplasty and 31% for stent-in-stent treatment.

The study of 8932 patients reported that 5 out of 242 patients who had laser treatment, 11 out of 7905 in the group who had balloon angioplasty, and none out of the 116 who had a procedure using mechanical rotation to unblock the artery had arterial perforation.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. The advisers said that possible complications could include tearing of the coronary artery, the blood vessel closing quickly, heat damage to the vessel, the blood vessel narrowing again, and death.

## **More information about coronary heart disease**

NHS Choices ([www.nhs.uk](http://www.nhs.uk)) may be a good place to find out more. Your local patient advice and liaison service (usually known as PALS) may also be able to give you further information and support. For details of all NICE guidance on coronary heart disease, visit our website at [www.nice.org.uk](http://www.nice.org.uk)

## About NICE

NICE produces guidance (advice) for the NHS about preventing, diagnosing and treating different medical conditions. The guidance is written by independent experts including healthcare professionals and people representing patients and carers. They consider how well an interventional procedure works and how safe it is, and ask the opinions of expert advisers. This guidance applies to the whole of the NHS in England, Wales, Scotland and Northern Ireland. Staff working in the NHS are expected to follow this guidance.

*To find out more about NICE, its work and how it reaches decisions, see [www.nice.org.uk/aboutguidance](http://www.nice.org.uk/aboutguidance)*

*This leaflet is about 'Percutaneous laser coronary angioplasty'. This leaflet and the full guidance aimed at healthcare professionals are available at [www.nice.org.uk/guidance/HTG250](http://www.nice.org.uk/guidance/HTG250)*

*You can order printed copies of this leaflet from NICE publications (phone 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) and quote reference N2418). The NICE website has a screen reader service called Browsealoud, which allows you to listen to our guidance. Click on the Browsealoud logo on the NICE website to use this service.*

*We encourage voluntary organisations, NHS organisations and clinicians to use text from this booklet in their own information about this procedure.*

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