

# Balloon Pulmonary Angioplasty

A patient's guide



Chronic thromboembolic pulmonary hypertension (CTEPH) occurs in approximately 2-4% of patients who are diagnosed with blood clots on the lungs (pulmonary emboli). The best treatment for CTEPH is surgical removal with pulmonary endarterectomy but not all patients are suitable for this and in some patients the surgery does not fully remove the narrowings (webs) in the lung blood vessels (pulmonary arteries).

Balloon pulmonary angioplasty (BPA) is a new procedure that targets these narrowings and has been shown to lower the blood pressure in the lung arteries, improve breathing and increase exercise tolerance in carefully selected patients.

Although experience in this technique is rapidly increasing in Japan and Europe, it remains an unproven treatment option, which can only be considered when definitive therapy by surgical pulmonary endarterectomy is inappropriate or has failed to fully resolve the problem in the lung vessels.

### **How is BPA performed?**

BPA usually involves up to four catheter lab treatment sessions, each lasting up to two hours, spaced four to six weeks apart. The procedure is staged this way to minimise the risk of procedure-related side effects to the kidneys (from the contrast medium used) and lung from reperfusion injury (see explanation below).

The procedure is performed under a light sedation and local anaesthetic; this means that you are given a combination of medicines to help you relax and to block the pain. You may feel very sleepy but will be able to respond to instructions.

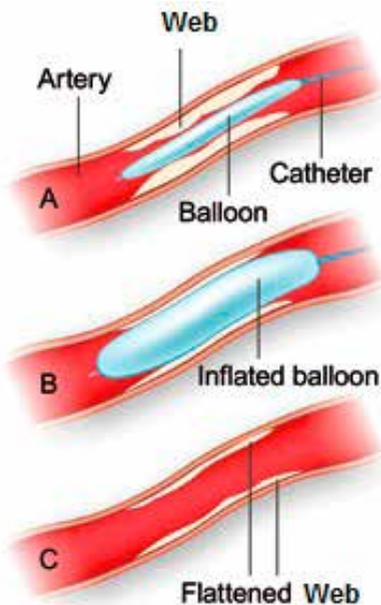
A small tube is placed in a vein in the groin (or in a neck vein) and a second hollow tube is then introduced through this and passed to the lung vessels.

The narrowed vessels are identified by injections of iodine containing contrast medium into individual vessels while performing X-ray imaging.

A very fine wire is then passed

into the vessels to be treated and a balloon guided into position over the wire. The balloon is then inflated for a few seconds to push the blockage aside (see diagram) and restore blood flow to that segment of lung tissue. The balloon is then deflated and removed.

This may be repeated several times and in multiple vessel locations during a single treatment session. You will feel drowsy after the procedure and may not remember much about what happened.



### **Benefits of BPA**

Early use of this technique has demonstrated that BPA can significantly improve breathlessness symptoms, lower lung blood vessel pressures and relieve heart failure. The effects appear to be long lasting although further work is required to confirm these results in the longer term.

### **Risks of BPA**

BPA is associated with a mortality risk (likelihood of death) of around 2% (1 person in 50).

There is also a 2% risk that you may need an emergency operation to support the heart and lungs (called extracorporeal membrane oxygenation - ECMO) if there is major bleeding from a lung blood vessel that cannot be sealed by a balloon or coil. You will be given a general anaesthetic if this is required.

Around 10% (1 person in 10) may experience short term deterioration in breathlessness and may cough up blood or fluid from the treated area of the lung. This is often

termed reperfusion injury and occurs when lung tissue with a poor blood supply is rapidly resupplied with blood.

This can usually be managed with a tight fitting mask supplying oxygen that supports your breathing but occasionally it may require you to be given a general anaesthetic to allow a machine to support your breathing.

The reperfusion injury usually resolves spontaneously, within 24-48 hours. Your breathing will be monitored closely after your procedure for any early signs of this.

There is a 1% (1 person in 100) chance that the contrast medium given may cause damage to the kidneys. This usually responds to supportive measures but rarely (less than 0.1% or 1 person in 1000) may require temporary kidney supportive treatment with dialysis. We may give you fluid to help the kidneys flush out the contrast medium.

There is also a 0.1% (1 person in 1000) chance of contrast medium allergy that may require supportive treatment.

There is a 0.1% (1 person in 1000) risk of vascular damage in the groin or neck vein that may require surgical repair.

It is more common (10% or 1 in 10 patients) to have bruising or a collection of blood called a haematoma after the procedure. This may be painful. You will be asked to lie flat and rest after the procedure while the vessel is compressed to avoid bruising.

You will be closely monitored in the intensive or high dependency unit after your procedure so that if there are any complications these are identified and treated early.

### **Contact details**

If you have queries please contact our pulmonary hypertension specialist nurses on **01480 364826** or via the Papworth Hospital switchboard on **01480 830541** and ask for **bleep 343**.

A pulmonary hypertension consultant is available via the Papworth Hospital switchboard for medical advice if the pulmonary hypertension specialist nurse is unable to answer your query.



**Papworth Hospital NHS Foundation Trust**  
Papworth Everard, Cambridge, CB23 3RE

Tel: 01480 830541

Fax: 01480 831315

[www.papworthhospital.nhs.uk](http://www.papworthhospital.nhs.uk)

A member of Cambridge University Health Partners



**SMOKEFREE**

Papworth Hospital is a smokefree site



Keep in touch with Papworth Hospital and receive a quarterly newsletter. Join our membership free of charge at [www.papworthmembership.com](http://www.papworthmembership.com)

Tel: 01480 364240

Author ID: Assistant Directorate Manager  
Department: PVDU  
Printed: March 2016  
Review due: March 2019  
Version: 1  
Leaflet number: PI 168

© Papworth Hospital NHS Foundation Trust

Large print copies and alternative language versions of this leaflet can be made available on request.