

# **Prostatic Artery Embolisation (PAE)**

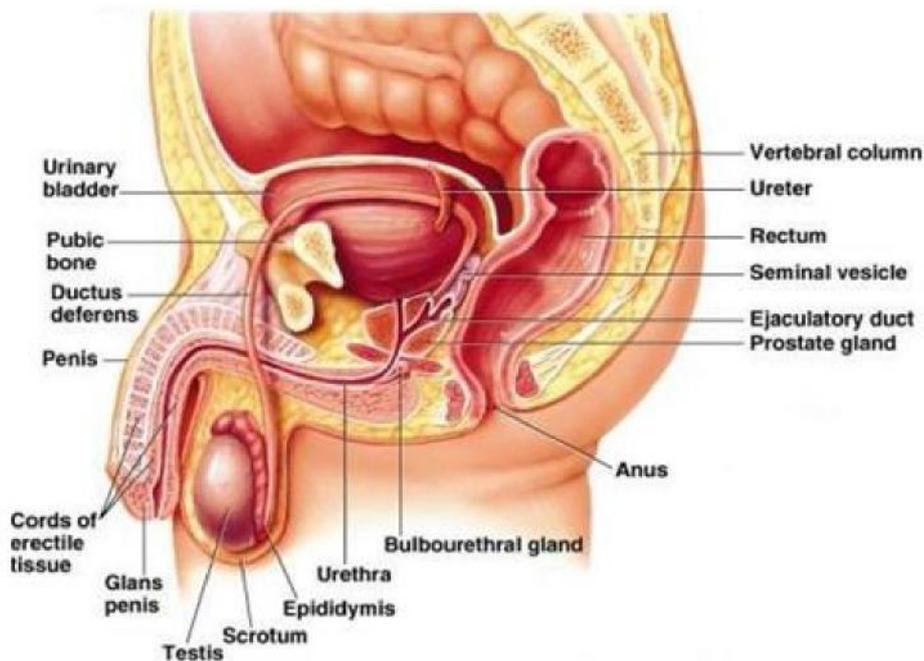
**For Benign  
Prostatic  
Hyperplasia**

**Minimally Invasive Innovative Treatment**

## What is the prostate?

The prostate is an accessory organ of the male reproductive system. Located below the bladder and shaped like a walnut, it produces a slightly thick fluid that helps preserve sperm after ejaculation, helping it to remain viable in the vagina.

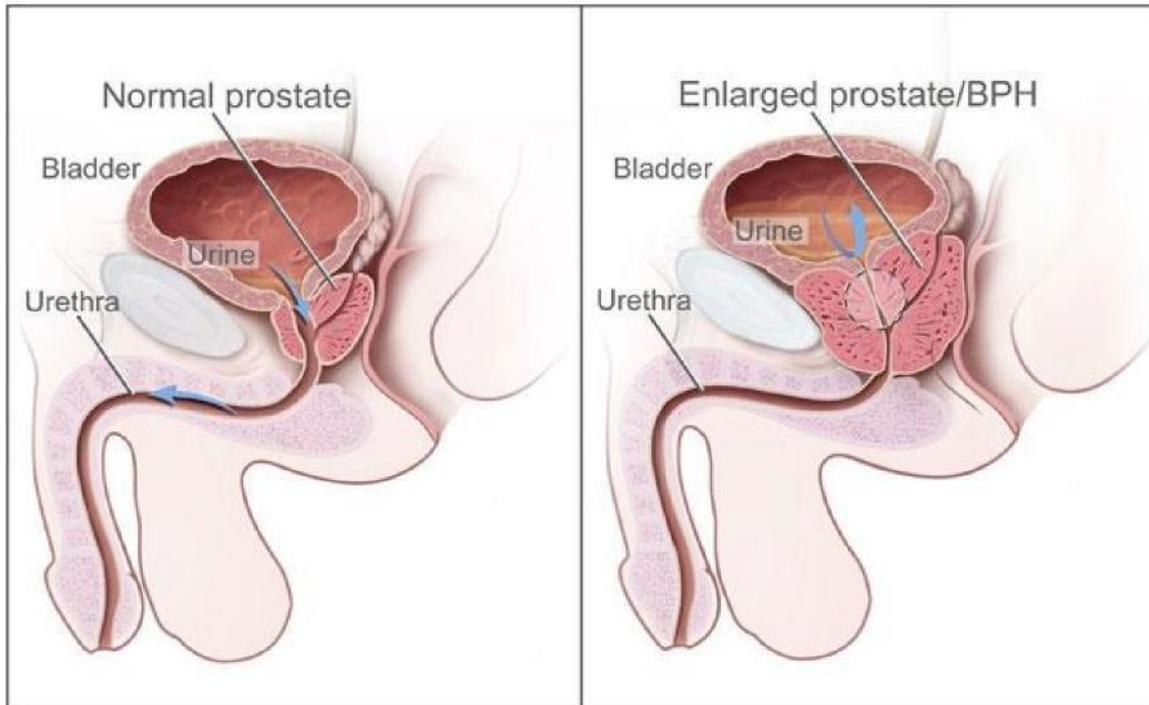
Because the prostate surrounds the urethra, urination can be affected when prostate disease is present.



## What are the most common symptoms of Benign Prostatic Hyperplasia (BPH)?

The most common symptoms include:

- Increased frequency of urination with voiding small amounts of urine, particularly at night
- Weak and/or interrupted urinary stream
- Sensation of incomplete bladder emptying after urination and/or difficulty in starting urination
- Urinary urgency with difficulty controlling urination
- Inability to urinate, resulting in urinary retention and leading to catheterization
- Blood in the urine
- Erectile dysfunction, generally caused by the medication



Multiparametric MRI today is the most accurate and minimally invasive way of investigating the prostate for benign and or malignant disease.

### **Treatment Alternatives**

There are several suggested treatments, according to the severity of the symptoms. For patients with mild symptoms, physicians may choose to follow the “watchful-waiting” approach.

Other medical therapies such as alpha -1 adrenergic blockers (alfuzosin and tamsulosin) or 5-alpha reductase inhibitors (finasteride and dutasteride) are also available to patients with mild BPH symptoms.

Patients with more severe symptoms or those unable to benefit from pharmacotherapy may be candidates for surgery. Although open prostatectomy is rarely performed these days, other less invasive approaches such as a transurethral resection of the prostate (TURP) may be performed if the prostate volume is between 60 to 80 cc.

Other available surgical methods may include laser surgery (HoLEP and Green Light laser), thermotherapy and electrovaporization.

If left untreated, BPH causes urinary retention and can lead to severe complications such as urinary tract infections, bladder stones or diverticula, and renal failure.

## **Prostatic Artery Embolization (PAE)**

Prostatic Artery Embolisation (PAE) is a minimally invasive treatment for BPH and a relatively new application of routine Interventional Radiology techniques.

Embolisation in various conditions, has been performed successfully for several decades. The consumables—catheters, guide wires, and embolic particles – have been used successfully in Interventional Radiology for many years.

This minimally invasive technique and is being performed internationally with promising published results.

The objective of PAE is to interrupt the arterial blood supply to the prostate. PAE targets the central enlarging impinging tissue predominantly. With reduced blood supply the abnormally enlarged prostatic tissue atrophies and this relieves pressure on the urethra and the consequence of this is that lower urinary tract symptoms (LUTS) improve or disappear.

### **Procedural Details**

PAE is normally performed as a day only procedure. The embolisation is performed in an advanced high tech, Interventional Radiology suite, normally in a hospital, under local anaesthesia with or without gentle sedation.

Access to the body's arterial tree is via the groin (femoral) or Left wrist (radial) approach.

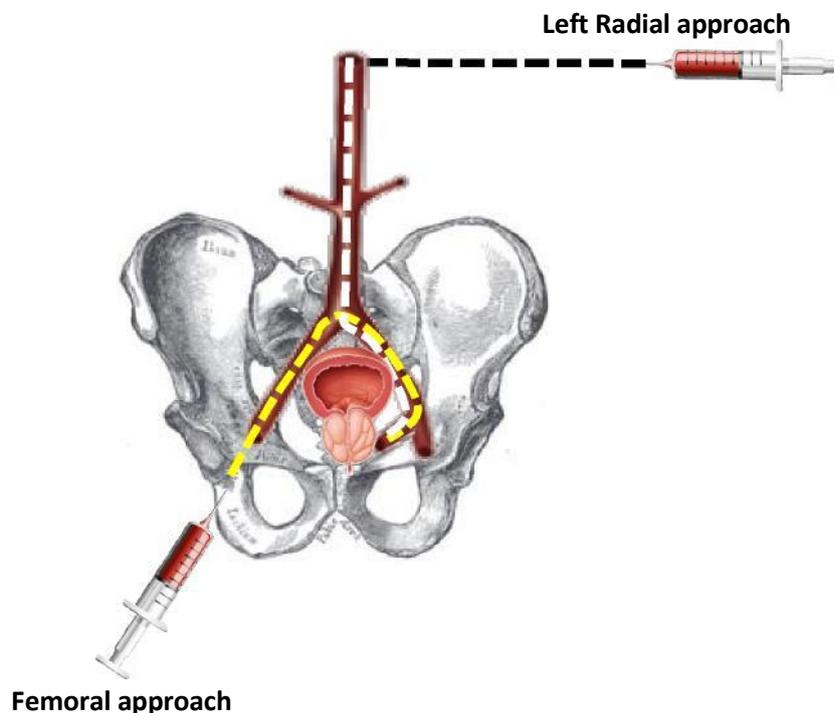
A small plastic tube (catheter) is guided towards the prostatic arteries by using a sophisticated digital x-ray device. Once the catheter engages the origin of the target prostatic artery, a smaller microcatheter is inserted to perform the embolisation. Small embolic particles are then injected into the target prostatic arteries, occluding the branches supplying the enlarged prostatic tissue.

The embolisation is then repeated for the prostatic artery on the opposite side.

The partial interruption of prostate arterial blood supply causes the abnormal enlarged tissue to atrophy, shrinking in size.

Generally, the technique takes between 1.5 and 2 hours. The patient remains conscious and can even see the treatment on a large operating computer screen. Once the embolisation is complete the groin or wrist sheath is removed, and manual compression is then performed at the access site, and a small compression dressing is applied.

The patient ambulates almost immediately after the PAE if the wrist approach is used alternatively after 4hrs if the groin approach is used. The patient is encouraged to pass urine. Medical personnel are constantly checking the patient's recovery. Usually the patient is discharged the same day based on the Interventional Radiologist's recommendation.



## **How long do I have to remain in hospital?**

In general, the patient is admitted 1 to 2 hours before the embolization and is discharged on the same day 2 to 6 hrs after the procedure.

## **What are the risks associated with PAE?**

Most patients experience no symptoms during the procedure, After the procedure some may experience mild pain, burning, frequency which are easily controlled by the appropriate medication and last usually no more than 7 days. Other complications are those typically associated with any type of arterial catheterisation, the most common being haematoma or bruising at the puncture site. Uncommon complications include minor blood in the urine or UTI, which is easily avoided by the prophylactic use of antibiotics prior to and after the procedure. Very rare complications include temporary blood in the sperm (haemospermia).

However, after a few days almost all of these adverse symptoms disappear spontaneously. Occasionally, patients with severe BPH, may require the placement of a urinary catheter, which can usually be removed on the day or a few days after attending trial of void clinic.

## **Can I be treated regardless of the size of my prostate?**

Prostatic Artery Embolization (PAE) will only be performed if there are symptoms of Benign Prostatic Hyperplasia (BPH). These procedures may be performed even in very large prostates with a volume exceeding 200cc. if your prostate's volume is less than 40cc, you may not qualify for treatment.

## **Will my sexual function be affected?**

Based on studies to date, patients treated with PAE for BPH have not experienced a decline in sexual function. Sexual

dysfunction is mostly associated with the side effects of the prescription medication therapy that patients used to treat BPH, prior to the PAE procedure.

### **What happens to the prostate after embolization?**

Embolization results in a gradual reduction of prostate size, ranging between 10% and 50%. However, around 20% of patients experience improvements without any changes in prostate size – there may be reduced intraglandular pressure (under investigation). Embolization is performed to improve the symptoms of BPH and not specifically to reduce the prostate volume, although this does occur in the majority of patients as a consequence of atrophy of the abnormal central gland.

### **Can my BPH be treated by PAE?**

Yes it may, under the following guidelines:

1. The patient is symptomatic
2. The patient qualifies for surgery
3. The prostate volume is greater than 40 cc
4. Urinary flow is less than 12 mL/sec
5. There are no other contraindications

### **What are the contraindications for PAE?**

Before embolization, patients must be examined to rule out the presence of a malignant tumour, which contraindicates a PAE. Other contraindications include atherosclerosis and a tortuous (twisted) pelvic and/or prostatic vessel anatomy, as demonstrated by CT (computed tomography) angiography. Regardless of prostate enlargement, the patients must be symptomatic to qualify for PAE surgery.

## How to go about receiving PAE treatment?

After scheduling an appointment with the treating Interventional Radiologist & Urologist, several tests will be ordered. Patients will be asked to fill out Prostate Symptomatology Questionnaire (IPSS form), Quality of Life and Sexual Function surveys.

During a consultation with the Interventional Radiologist and Urologist, more specific tests will be performed. These could include Ultrasound, and a pressure study known as Urodynamic Flow study. After evaluating the results of these tests a decision can be made on the possibility of moving forward with a PAE.

If embolization is considered, you will need an MRI of the prostate and high quality CT angiography to evaluate the pelvic vessels and determine whether or not you are a candidate for PAE treatment. The Left arm vasculature will also be evaluated. After undergoing these examinations, you will be contacted by the Interventional Radiologist team and inform the patient of the expected procedure date.

### What are the advantages of PAE?

- A modern minimally invasive, non-surgical procedure under local anaesthetic.
- Safe and effective treatment, clinically proven
- Short term hospital stay and convalescence
- Quick return to normal activity



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