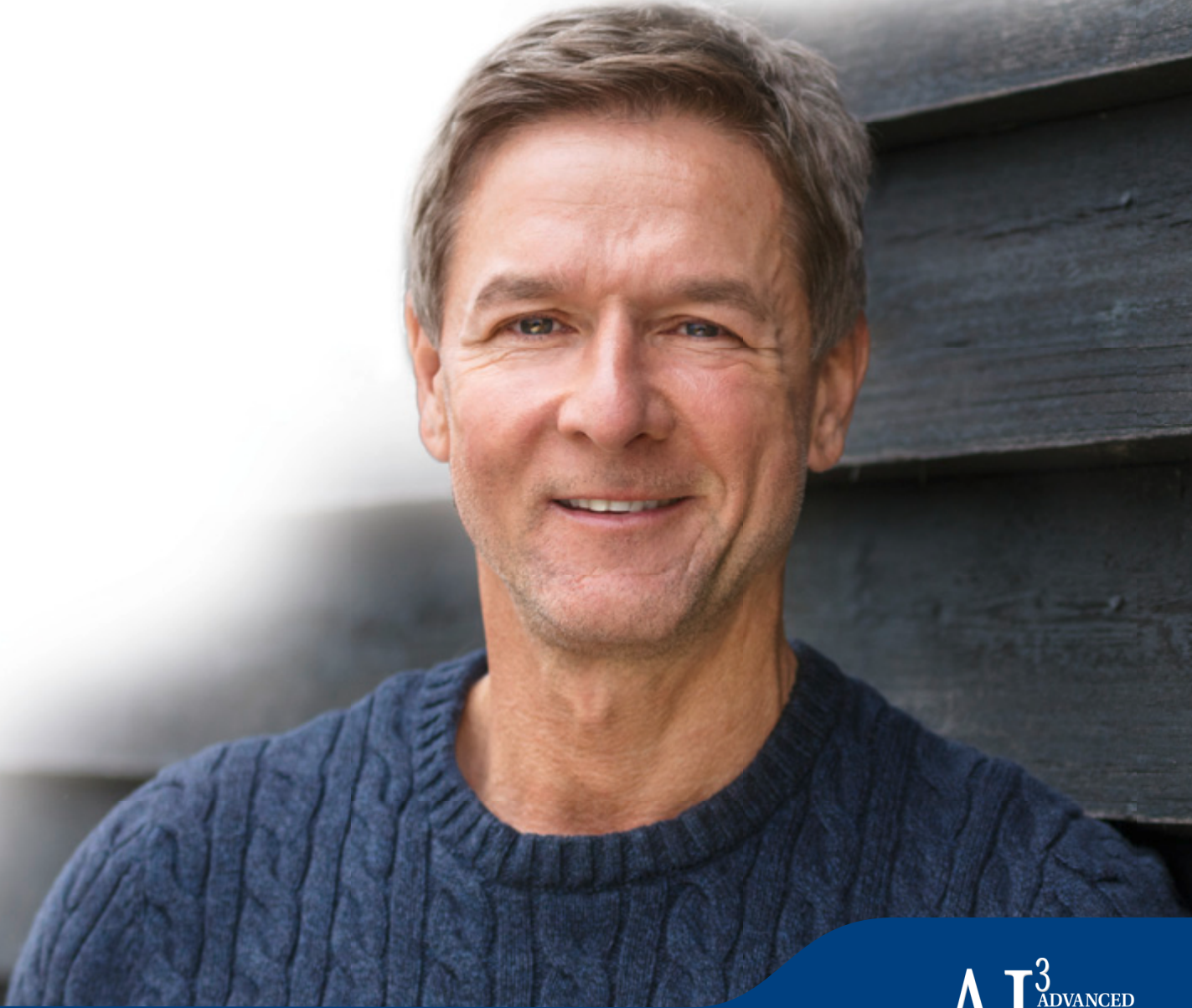


# Prostatic Artery Embolisation (PAE) for Benign Prostatic Hyperplasia

An Innovative Treatment



Courtesy of Boston Scientific



## Advanced Imaging & Interventional Institute

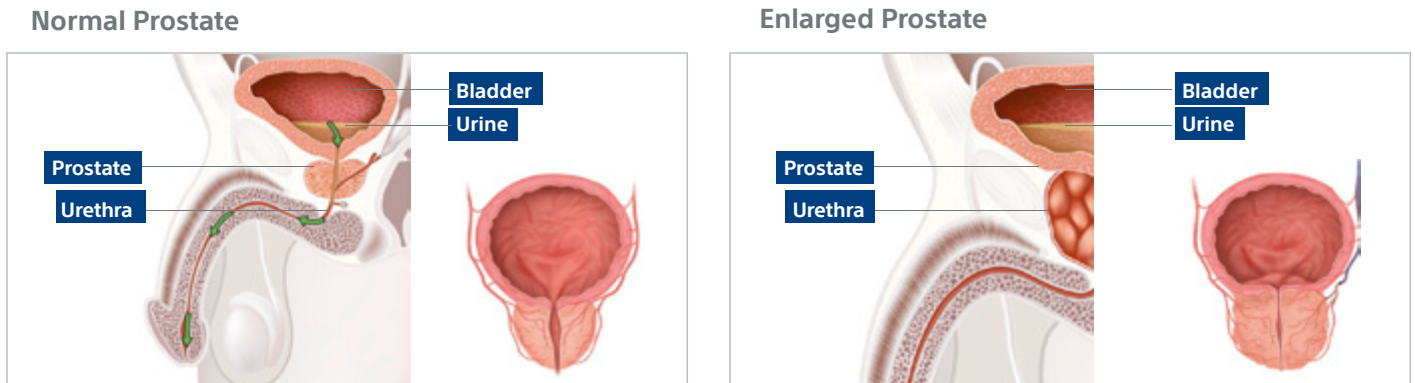
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# WHAT IS BENIGN PROSTATIC HYPERPLASIA?

BPH is a **non-cancerous increase of prostate volume**, and commonly **causes obstruction** of the bladder outflow. Benign Prostate Hyperplasia (BPH) is the most common disease of the prostate and is very **common in middle-aged and elderly men**. It can affect 50 % of men at age 60, and 90 % of those aged over 85 years.<sup>1</sup>

The condition can cause very debilitating symptoms that have an impact on the quality of life. Some men may remain asymptomatic and require no active treatment, despite of having significant prostatic enlargement.



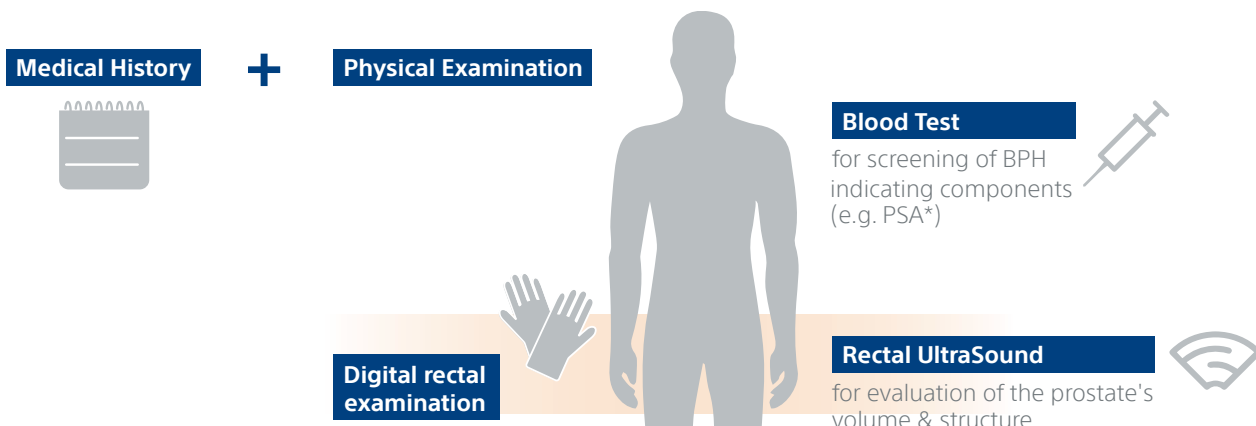
## WHAT ARE THE MOST COMMON SYMPTOMS OF BPH?

- 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 in controlling urination.
- Inability to urinate, resulting in urinary retention and leading to catheterisation.
- Blood in the urine.
- Erectile dysfunction, generally caused by the medication.



## HOW IS BPH DIAGNOSED?

The diagnosis is made base upon the patient's medical history and a detailed physical examination, including:



# WHAT ARE THE TREATMENT OPTIONS OF BPH?

There are several suggested treatments, according to the severity of the symptoms:

## "Watchful-waiting approach" & lifestyle changes

Patients with **mild symptoms**



## Drug therapy

Patients with **moderate symptoms**



## Surgery

Patients with **severe symptoms / not able to benefit from drug therapy**



### Surgical treatment options are:

- prostatectomy (rarely performed)
- transurethral resection of the prostate (TURP)
- laser surgery (HoLEP and Green Light laser)
- thermotherapy
- electrovaporization

➤ Alternative non-surgical treatment:  
**Prostatic Artery Embolisation (PAE)**

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

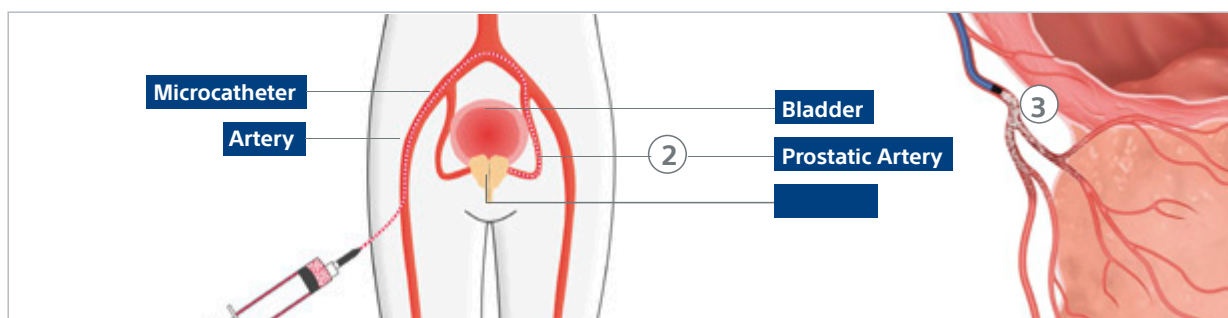
## PROSTATIC ARTERY EMBOLISATION (PAE): PROCEDURAL DETAILS

PAE is a **minimally invasive technique** and represents an alternative treatment for BPH (NICE\*\*<sup>2</sup> recommended). It is a relatively new application of a longstanding technology. Embolisation has been performed successfully for several decades in Interventional Radiology.

PAE **resolves the problem rapidly**, is **long lasting**, and **preserves the prostate**. The objective of PAE is to partially stem the blood flow supplying the prostate. Without blood flow the abnormally enlarged prostatic tissue decreases and symptoms improve or disappear.<sup>3,4</sup>

Embolisation is performed under local anesthesia and involves no blood loss.

- ① A **small opening measuring 1.5 mm in diameter** is made in the groin, through which a thin catheter is inserted into the artery.<sup>2</sup>
- ② The catheter is guided towards the **prostatic arteries**, while the radiologist watches the progress of the procedure using a moving x-ray (fluoroscope).<sup>2</sup>
- ③ **Tiny microspheres**, the size of grains of sand, **are injected into the artery** that is supplying blood to the prostate, cutting off the blood flow.<sup>2</sup>
- ④ The embolisation is then **repeated** for the prostatic artery on the **opposite side**, through the **same opening** and using the **same catheter and microcatheter combination**.<sup>2</sup>



\*\* NICE: National Institute for Health and Care Excellence (UK)

The advantages of Prostatic Artery Embolisation are:

- A non-surgical procedure performed under local anesthesia.
- Safe and clinically proven treatment
- Low rate of side effects
- Effective and long-lasting treatment solving urination problems and other debilitating symptoms
- Erectile and sexual functions are maintained



Complications are those typically associated with any type of vascular intervention:

- Hematoma at the puncture site.
- Bruising affecting the groin and upper thigh.
- Blood in the urine and urinary tract infection (uncommon, in 10% of treated patients): easily avoided by the pro-phylactic use of antibiotics prior to the procedure.
- Blood in the sperm or faeces (very rare, in 2% of treated patients).

After a few days many of these adverse reactions disappear spontaneously. Occasionally, patients may require the placement of an urinary catheter, which can usually be removed before hospital discharge.



#### References

1. Early Results from a United States trial of Prostatic Artery Embolization in the Treatment of Benign Prostatic Hyperplasia. Sandeep Bagla et al., J Vasc Interv Radiol 2013; 09.010.
2. NICE Guidance: Prostate artery embolisation for lower urinary tract symptoms caused by benign prostatic hyperplasia. Published: April 2018. ISBN: 978-1-4731-2935-1, <https://www.nice.org.uk/guidance/ipg611>.
3. Can prostate artery embolisation (PAE) reduce the volume of the peripheral zone? MRI evaluation of zonal anatomy and infarction after PAE. Yen-Ting Ling et al., Eur Radiol 2016; 26:3466-3473.
4. MRI Findings After Prostatic Artery Embolization for Treatment of Benign Hyperplasia. Nathan E. Frenk et al., AJR 2014; 203:813-821.
5. Medium- and Long Term Outcome of Prostate Artery Embolization for Patients with Benign Prostatic Hyperplasia: Results in 630 Patients. Joao M. Pisco et al., J Vasc Interv Radiol 2016; 27:1115-1122.

## FREQUENTLY ASKED QUESTIONS (FAQs)

### 1 **When is PAE the best option for me?**

PAE represents the best treatment option for you if you suffer from common symptoms caused by an enlarged prostate gland. It is also indicated if you do not benefit from drug therapy, cannot have general anesthesia and/or show prostate dimensions not suitable for surgical treatment. The results of the tests your urologist ordered (Prostate Ultrasound with rectal probe, PSA level, Uroflowmetry, and sometimes cystoscopy and pressure study, known as Urodynamic) need to qualify you for embolisation. If embolisation is indicated, you will need a CT angiography to evaluate the pelvic vessels and determine whether or not you are a candidate for PAE treatment. After undergoing this examination you will be contacted by the medical team and informed about your expected degree of treatment success.

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

Before embolisation, patients must be examined to rule out the **presence of a malignant tumor**, 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.

### 3 **Who will be doing the procedure?**

PAE is done by specially trained doctors called interventional radiologists (= Image-guided surgeons). They have special expertise in using X-ray equipment, and also in interpreting the images produced. They look at these images while carrying out the procedure. Interventional radiologists are the best trained people to insert needles and catheters into blood vessels, through the skin, and place them correctly.

### 4 **How do I prepare for prostate artery embolisation?**

On the day of treatment, you will need to show up 1 hour before your procedure. You should not eat after midnight before PAE. You will receive a twilight sedative to relieve anxiety. As the procedure is generally carried out using the artery in the groin, you will be asked to put on a hospital gown. It is very important that you inform your doctor about any allergies you might have and/or previous allergic reactions to contrast medium.

### 5 **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.<sup>5</sup>