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Prostate Artery Embolisation with Bead Block Addresses Symptoms of Benign Prostatic Hyperplasia and Improves Patient's Quality of Life

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PRESENTATION

- **83-year-old male with lower-urinary-tract symptoms arising from benign prostate hyperplasia (BPH).**
  - Indwelling urinary catheter required to manage symptoms, leading to multiple episodes of urinary infection.
  - Duodart (alpha-blockers + 5 alpha-reductase inhibitors) over period of >6 months did not improve condition.
  - Patient refused surgery.

Baseline quality-of-life (QoL), functional and clinical scores:

- **Prostate symptom score (IPSS):** Not measurable due to indwelling urinary catheter.
- **Quality of life:** 6 (due to impact of lower-urinary-tract symptoms).
- **Erectile function index (IIEF):** N/A (patient not sexually active).
- **Uroflowmetry (Qmax):** Not measurable due to indwelling urinary catheter.
- **Post-void residual volume (PVR):** Not measurable due to indwelling urinary catheter.
- **Prostate-specific antigen (PSA):** 1.95ng/ml.
- **Prostate volume (PV):** 120ml (measured by ultrasound).

Baseline imaging:

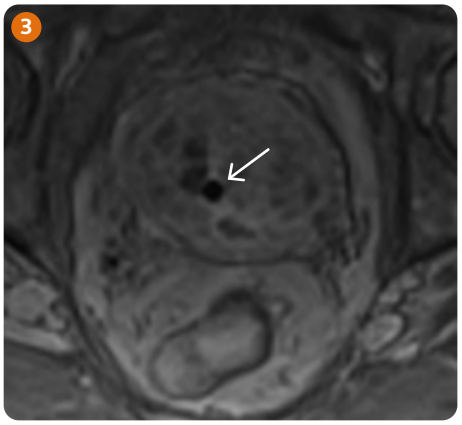
- **CT angiography** showed the permeability of the prostatic arteries and their origin:
  - Left prostatic artery arising from pudendal artery. 1
  - Right prostatic artery arising from accessory pudendal artery. 2
- **Prostate MRI** ruled out the presence of a tumour. 3

DIAGNOSIS

- **Patient with severe lower-urinary-tract symptoms due to BPH.**

Baseline: 3D angiography shows a solitary left prostatic artery (red arrow) arising from the internal pudendal artery (white arrow).

Baseline: 3D angiography shows a solitary right prostatic artery (red arrow) arising from the pudendal accessory artery (white arrow).



Baseline: Axial T1-weighted fat-suppressed contrast-enhanced MRI of the prostate shows it is tumour-free. Note the urinary catheter (white arrow).

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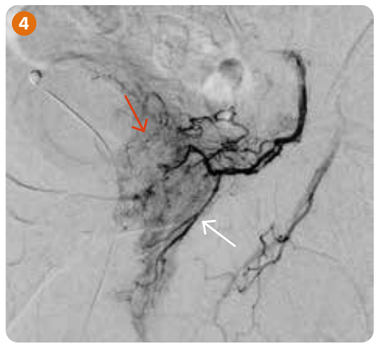
TREATMENT: PROSTATE ARTERY EMBOLISATION (PAE)

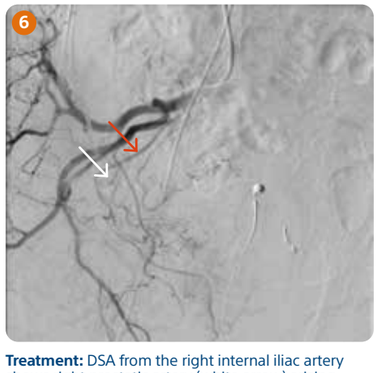
- Under local anaesthetic, a 5F sheath was placed in the right common femoral artery and a 5F hydrophilic uterine catheter was inserted into the contralateral hypogastric artery.
- Digital subtraction angiography (DSA) of the left side of the prostate was performed, which showed the left prostatic artery arising from the pudendal artery.
- A 2.4F microcatheter was introduced to selectively catheterise the left prostatic artery, through which 200µg nitroglycerin was injected to prevent vasospasm.
- DSA from the microcatheter showed distal anastomosis with the rectum, so coil embolisation was performed to redirect the flow into the prostate. 4 5
- Embolisation of the left prostatic artery was performed using Bead Block 300-500µm until complete stasis of blood flow was observed.



Treatment: DSA from the left prostatic artery showing prostate gland opacification (red arrow). Note anastomosis with the rectum (white arrow).

Treatment: DSA from the left prostatic artery after coil embolisation (white arrow) of the anastomosis to the rectum to redirect the flow into the prostate.

- DSA of the right side showed the prostatic artery arising from the accessory pudendal artery. 6
- A 2.4F microcatheter was introduced to selectively catheterise the right prostatic artery, through which 200µg nitroglycerin was injected to prevent vasospasm. 7
- Embolisation of the left prostatic artery was performed using Bead Block 300-500µm until complete stasis of blood flow was observed.

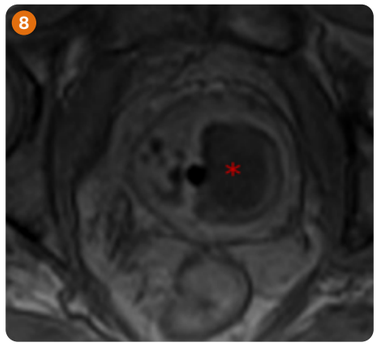


Treatment: DSA from the right internal iliac artery shows right prostatic artery (white arrow) arising from the accessory pudendal artery (red arrow).

Treatment: Selective DSA from the right prostatic artery shows good prostate gland opacification, without anastomosis to rectum or penis.

OUTCOME

- Bilateral prostatic embolisation was technically successful and there were no adverse events.
- At one-month follow-up, MRI showed large ischaemic zone in the left lobe with smaller ischaemic areas in the right lobe. 8
- Six weeks after the procedure, the indwelling urinary catheter could be removed, which resulted in a significant improvement in the patient's quality of life and in functional parameters (Table 1).
- Six-month follow-up MRI showed a 36% decrease in prostate volume. 9



One month after PAE: Axial T1-weighted fat-suppressed contrast-enhanced MRI shows large ischaemic zone in the left lobe (red star), with smaller ischaemic areas in the right lobe. Note the indwelling urinary catheter is still *in situ*.

Six months after PAE: Axial T1-weighted fat-suppressed contrast-enhanced MRI after removal of urinary catheter shows decrease in prostate volume and ischaemic area (white arrow).

Table 1: Quality-of-life and functional parameters

	QoL	IPSS	Qmax	Prostate volume	PVR	IIEF
Baseline	6	–	–	120	–	0
6 weeks	2	9	10	105	170	0
3 months	1	5	14	82	59	0
6 months	1	4	14	77	19	0

CONCLUSION

- Removal of the indwelling urinary catheter six weeks after the PAE procedure significantly improved the patient's quality of life. An improvement in Qmax and reductions in PVR and prostate volume were also observed.
- PAE is an effective and safe technique for treating BPH patients who are ineligible or unwilling to undergo surgery.

> ***"Six weeks after PAE, the indwelling urinary catheter was removed, significantly improving the patient's quality of life. His Qmax also improved, with a reduction in PVR and prostate volume."***

BEAD BLOCK™
Microspheres

SIZES & CODES			INDICATION		
Bead Block Size Range	**Product Code**	**Label Colour**	**Hypervascular Tumours and Arteriovenous Malformations**	**Uterine Fibroid Embolisation (UFE)***	**Prostatic Artery Embolisation (PAE) for BPH***
100-300µm	EB2S103	 Yellow	✓ Yes	✗ No	✓ Yes
300-500µm	EB2S305	 Blue	✓ Yes	✗ No	✓ Yes
500-700µm	EB2S507	 Red	✓ Yes	✓ Yes	✗ No
700-900µm	EB2S709	 Green	✓ Yes	✓ Yes	✗ No
900-1200µm	EB2S912	 Purple	✓ Yes	✓ Yes	✗ No

* Size restrictions apply to this indication as shown in table.

Abbreviations:

BPH: Benign prostatic hyperplasia
CT: Computed tomography
DSA: Digital subtraction angiography
IIEF: International index of erectile function
IPSS: International prostate symptom score
MRI: Magnetic resonance imaging
PAE: Prostate artery embolisation
PSA: Prostate-specific antigen
PV: Prostate volume
PVR: Post-void residual volume
Qmax: Maximum urinary flow rate
QoL: Quality of life

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Images provided courtesy of Dr Iñigo Insausti, Clínica Universidad de Navarra, Spain.
Results from case studies are not necessarily predictive of results in other cases. Results in other cases may vary.
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