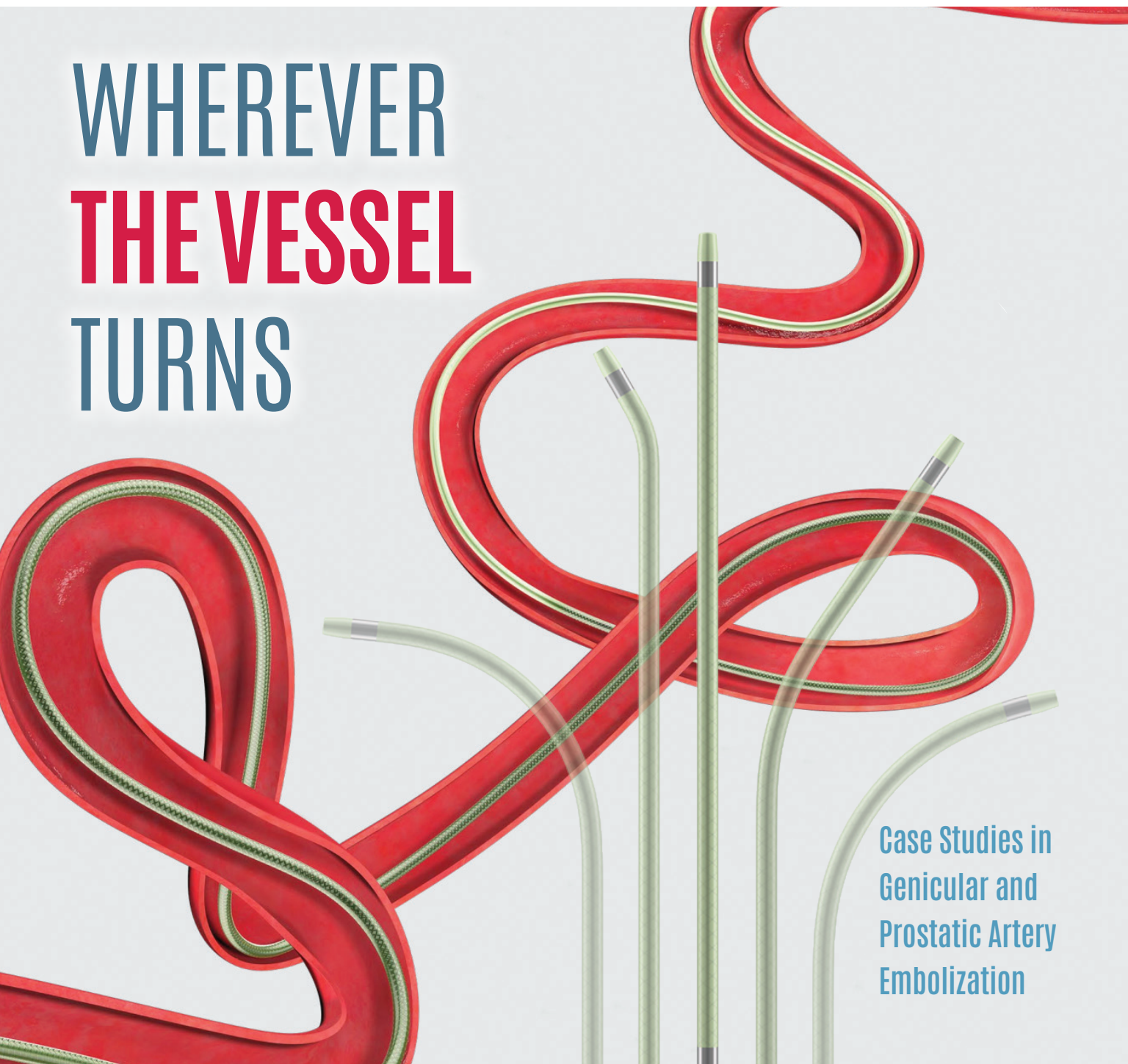
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Endovascular TODAY

November 2026

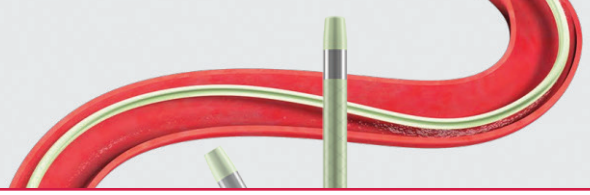
WHEREVER THE VESSEL TURNS



Case Studies in Genicular and Prostatic Artery Embolization

WHEREVER THE VESSEL TURNS

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CASE SPOTLIGHT | Medial Osteoarthritis Treated With Genicular Artery Embolization

By Keerthi Prasad, MD

PATIENT PRESENTATION

A woman in her early 60s presented with chronic, worsening bilateral knee pain, with the left knee being more affected than the right. The pain had been worsening for approximately 8 months and was exacerbated by standing and ambulation, significantly affecting her ability to work at a restaurant. She had previously undergone physical therapy, multiple long-acting corticosteroid injections, and a three-injection viscosupplementation series, but these treatments were no longer providing sufficient relief. A prior x-ray had demonstrated Kellgren-Lawrence grade 3 osteoarthritis (OA) of the left knee. The patient was averse to surgical intervention due to associated lengthy recovery.

Initial pain assessment revealed a visual analog scale (VAS) score of 8/10 and an Oxford Knee Score of 19, indicating severe symptoms and poor function. Physical examination of the left knee revealed no scars, normal muscle tone, and no joint laxity, but there was mild fullness in the popliteal fossa and tenderness to palpation along the superior and inferior aspects of the medial joint. The overall diagnosis was worsening medial compartment OA of the left knee.

PROCEDURAL OVERVIEW

The procedure was performed via a left dorsalis pedis artery approach, where a 4-F, 10-cm pedal sheath was placed under ultrasound guidance using standard technique. A 4-F angled hydrophilic catheter and 0.035-inch-diameter hydrophilic guidewire were used to navigate to the level of the popliteal artery. An angiogram at this level demonstrated a prominent superior medial genicular artery (SMGA) (Figure 1A).

A 2.5-F, 110-cm Cantata® microcatheter (Cook Medical) and an 0.018-inch-diameter wire guide were then used to selectively cannulate the SMGA. A subsequent angiogram showed a hypervascular "blush" in the medial femoral condyle (Figure 1B), and this injection successfully reproduced the patient's typical knee pain, confirming the pathological target.

Embolization was performed with a dilute suspension of 100-µm beads, which were delivered in aliquots of up to 0.2 mL for a total volume of 0.5 mL, to occlude the abnormal neovascularity (Figure 1C). Upon completion, the devices were removed uneventfully, and hemostasis was achieved using ultrasound-assisted compression.

OUTCOME AND FOLLOW-UP

The patient experienced a mild increase in pain on postprocedure day 3. However, by day 20, her pain had significantly improved, with her VAS score dropping to 3/10 and her Oxford Knee Score increasing to 33. This clinical improvement was maintained at her 3-month follow-up, with a VAS score of 3/10 and an Oxford Knee Score of 31.

PHYSICIAN DISCUSSION

This case demonstrates the efficacy of genicular artery embolization (GAE) as a safe and effective nonsurgical option for treating symptomatic knee OA. The procedure successfully targeted the specific hypervascularized area, which was confirmed by reproduction of the patient's pain on injection, leading to significant and sustained pain relief. The use of 100-µm beads effectively reduced arterial inflow, resulting in a marked improvement in the patient's symptoms and quality of life. The Cantata microcatheter was very convenient and useful in this case. The ability to maintain position easily and its shorter available length allowed for comfortable ergonomics. Furthermore, there is no risk of clogging during embolization. GAE is a valuable treatment option for patients who are not candidates for or do not desire surgery. ■

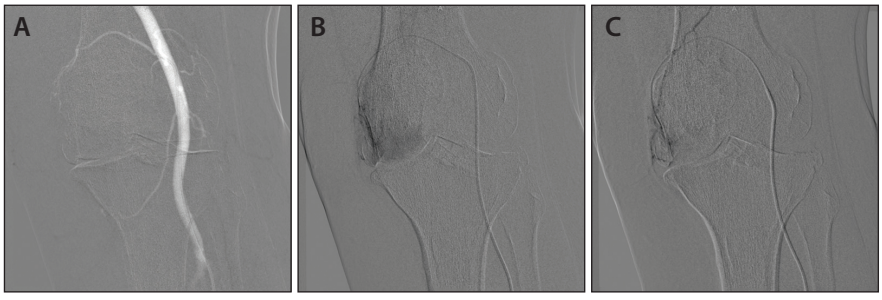
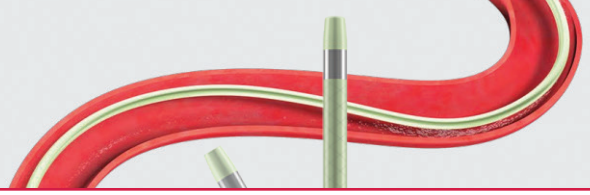


Figure 1. Initial angiogram demonstrating the prominent SMGA (A). Selective angiogram showing hypervascular medial femoral condyle blush and reproduction of the patient's pain (B). Postembolization image after delivery of 100-µm beads (C).



CASE SPOTLIGHT | Genicular Artery Embolization for Chronic Pain After Total Knee Arthroplasty

By Keerthi Prasad, MD

PATIENT PRESENTATION

A man in his mid 70s presented with chronic, dull, aching pain in his left knee. The pain had been progressively worsening over the last 2 years after a left total knee arthroplasty (TKA). He denied any new trauma and had completed physical therapy without relief. A recent x-ray was unremarkable, showing no signs of hardware loosening or other structural issues.

The patient's initial pain assessment revealed a visual analog scale (VAS) score of 7/10 and an Oxford Knee Score of 15, indicating severe pain and poor function. Physical examination of the left knee showed a healed TKA scar, normal muscle tone, and no focal tenderness. The left knee appeared larger than the right. His range of motion was limited, with flexion at 90°. The diagnosis was chronic pain after TKA.

PROCEDURAL OVERVIEW

The genicular artery embolization (GAE) procedure was performed via a left dorsalis pedis artery approach, where a 4-F, 10-cm sheath was placed under ultrasound guidance. A 4-F angled hydrophilic catheter and a 0.035-inch-diameter guidewire were used to navigate to the popliteal artery. An angiogram at this level demonstrated a prominent superior lateral genicular artery (SLGA) (Figure 1A).

Craniocaudal and ipsilateral angulation were utilized to achieve optimal visualization of the SLGA's origin. The origin of the artery was engaged with the catheter.

A 2.5-F, 110-cm Cantata® microcatheter (Cook Medical) was then used to selectively cannulate the SLGA. A microwire guide was not needed. A subsequent angiogram showed a prominent blush consistent with extensive hypervascularity and synovial hypertrophy (Figure 1B).

Embolization was performed with a dilute suspension of 100-µm beads, delivered in 0.2-mL aliquots for a total volume of 1.2 mL (Figure 1C). On completion, the devices were removed uneventfully, and hemostasis was achieved with ultrasound-assisted compression. Completion angiography demonstrated resolution of the abnormal blush (Figure 1D).

OUTCOME AND FOLLOW-UP

The patient reported significant pain improvement as early as day 3 postprocedure. At 14-day follow-up, his pain remained significantly improved, with his VAS score dropping to 2/10 and his Oxford Knee Score increasing to 27. This clinical improvement was maintained at 3-month follow-up, with a VAS score of 1/10 and an Oxford Knee Score of 27. The patient also demonstrated significant improvement in his range of motion.

PHYSICIAN DISCUSSION

This case highlights the effectiveness of GAE in a patient with chronic post-TKA pain. Post-TKA patients often present with chronic pain but typically lack focal tenderness, making diagnosis challenging. Limited options are typically available for this population. The angiographic finding of hypervascularity in this patient's SLGA was a key indicator in this case and consistent with postsurgical synovial hypertrophy.

The Cantata microcatheter was particularly useful in this case due to its ability to maintain position and its shorter length, allowing for comfortable ergonomics. Its soft tip also facilitated distal positioning, beyond nontargeted branches and without concern for perforation. In our experience, these cases often require a larger total volume of embolic material than embolization for osteoarthritis. The 2.5-F microcatheter lumen is very well suited for this purpose. The significant and sustained improvement in pain and function demonstrates that GAE can be a valuable treatment option for patients experiencing persistent pain after TKA. ■

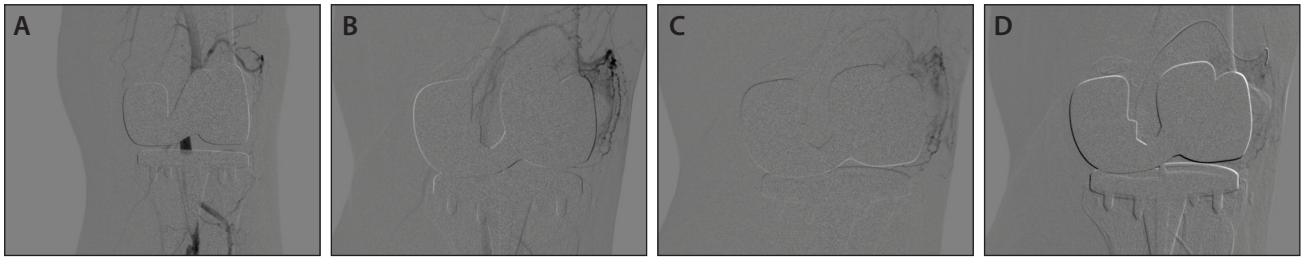


Figure 1. Angiography confirming a prominent SLGA (A). Angiography showing prominent blush, consistent with extensive hypervascularity and synovial hypertrophy (B). Angiography demonstrating embolization of the target lesion with 100-µm beads (C). Completion angiography prior to device removal (D).

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CASE SPOTLIGHT | Beyond the Initial Blush: Recognition and Traversal of Collateral Pathways During Genicular Artery Embolization

By Chong Li, MD, RPVI

PATIENT PRESENTATION

A man in his early 80s presented with long-standing bilateral knee osteoarthritis (OA), with the left knee being more symptomatic. He reported progressively worsening knee pain over several years despite conservative management, including physical therapy, oral analgesics, activity modification, and injection therapy. His symptoms had become lifestyle-limiting, significantly reducing his walking tolerance and interfering with daily activities.

Physical examination demonstrated focal tenderness over the medial compartment of the left knee without significant joint instability or effusion. His baseline Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score was 72, reflecting substantial pain, stiffness, and functional limitation.

Prior x-rays demonstrated moderate-to-severe bilateral knee OA, consistent with his clinical presentation. He did not want knee replacement and elected to undergo genicular artery embolization (GAE) as a minimally invasive alternative for pain relief.

PROCEDURAL OVERVIEW

The procedure was performed through ultrasound-guided antegrade access of the left superficial femoral artery. A diagnostic angiogram demonstrated multiple prominent genicular branches supplying the symptomatic knee, including the descending and superior medial branch. Abnormal synovial hypervascularity involved both the medial and lateral compartments (more prominent in the former), corresponding to the patient's areas of pain.

A 2.5-F Cantata® microcatheter (Cook Medical) was used to selectively catheterize the target genicular branch vessels. Attention was first directed to the descending genicular artery. Selective angiography demonstrated persistent hypervascularity supplying the symptomatic medial compartment (Figure 1A). Embolization with 0.8 mL of imipenem/cilastatin suspension resulted in near-complete resolution of the abnormal blush (Figure 1B).

Next, selective catheterization and embolization of the superior medial genicular artery was performed using 0.6 mL of an imipenem/cilastatin suspension, again resulting in a marked reduction of the abnormal synovial blush.

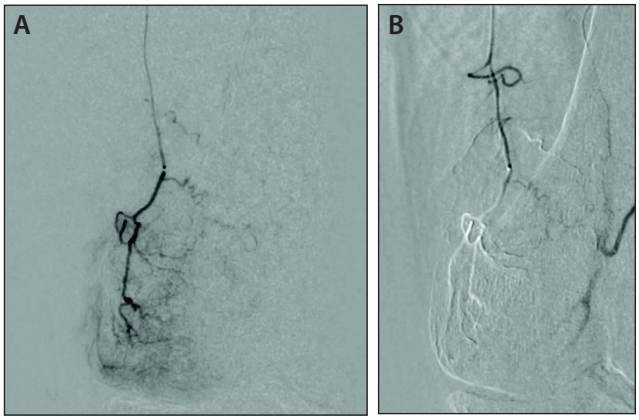


Figure 1. Superselective angiography of the descending genicular artery demonstrating prominent synovial hypervascularity ("blush") corresponding to the patient's symptomatic medial knee compartment prior to embolization (A). Angiography after embolization of the descending genicular artery demonstrating complete resolution of the abnormal hypervascular blush (B).

Repeat angiography then unmasked and opacified a well-developed collateral communicating with the inferior medial genicular artery (IMGA) (Figure 2A). The Cantata microcatheter was advanced through this collateral, and superselective angiography confirmed persistent hypervascularity within the IMGA distribution (Figure 2B). Embolization was then performed using 0.6 mL of imipenem/cilastatin suspension, producing complete resolution of the residual hypervascularity (Figure 2C).

The recurrent genicular artery was subsequently embolized with 1.0 mL of imipenem/cilastatin suspension. Completion angiography demonstrated marked overall reduction of synovial hypervascularity while preserving normal distal arterial perfusion.

Hemostasis was achieved with manual compression following sheath removal, and the patient tolerated the procedure without complications.

OUTCOME AND FOLLOW-UP

The patient experienced progressive improvement in pain and functional capacity during the weeks following

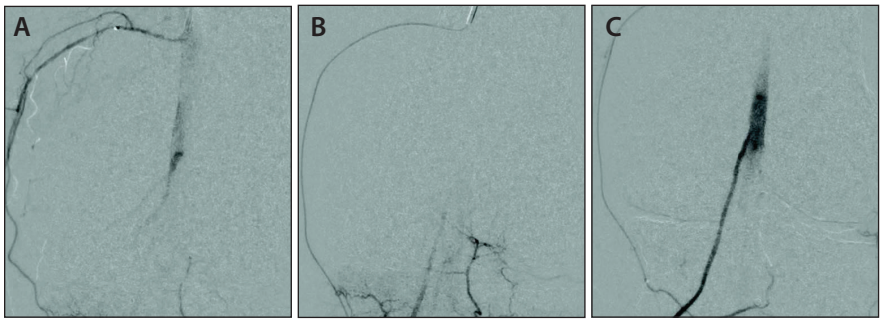


Figure 2. After embolization of the superior medial genicular artery, repeat angiography demonstrated opacification of a robust collateral communicating with the IMGA (A). The Cantata microcatheter was advanced through the collateral into the IMGA; superselective angiography demonstrated persistent synovial hypervascularity within this vascular territory (B). Angiography after embolization of the IMGA through the collateral pathway, demonstrating elimination of the residual hypervascular blush (C).

treatment, and he more easily carried out both daily and leisure activities. At 6-month follow-up, his WOMAC score had improved from 72 preprocedure to 48, representing a clinically meaningful reduction in pain, stiffness, and limitations in daily activities at medium term. He reported improved walking tolerance and expressed a high level of satisfaction with the outcome.

PHYSICIAN DISCUSSION

This case demonstrates the role of GAE as a minimally invasive treatment option for appropriately selected patients with symptomatic knee OA who have failed conservative therapy. Careful angiographic evaluation identified the dominant regions of synovial hypervascularity and allowed selective embolization of the vessels supplying the patient's symptomatic compartments.

An interesting technical aspect of this case was the dynamic angiographic evaluation performed throughout the procedure. After treatment of the dominant superior medial and descending genicular arterial supply, repeat angiography revealed a collateral communicating with the IMGA that became more conspicuous after embolization (Figure 2A). Recognition of this collateral allowed continued interrogation of the symptomatic knee compartment without a separate catheterization, leading to a more complete treatment of the synovial inflammation.

The Cantata microcatheter facilitated this approach by providing stable distal support and predictable navigation through multiple branch orientations, ease of navigation, and trackability. Its shapable distal tip allowed the catheter configuration to be customized for vessels arising at different angles, including superiorly directed branches as well as tortuous takeoffs. Once the collateral was identified, the hydrophilicity and trackability of the catheter allowed advancement through the communicating vessel into the IMGA, where persistent hypervascularity was confirmed (Figure 2B) and successfully treated (Figure 2C).

Although genicular arterial anatomy varies considerably among patients, systematic reassessment after embolization of the dominant target vessels may reveal collateral pathways supplying residual hypervascular synovium. Careful angiographic assessment, combined with a microcatheter capable of navigating complex branch anatomy, can facilitate treatment of these additional vascular territories and may contribute to a more complete embolization while saving procedural and anesthesia time.

At 6 months, the patient's improvement in WOMAC score from 72 to 48 was maintained with a meaningful reduction in pain and functional limitation, supporting the effectiveness of targeted embolization in this appropriately selected patient who underwent a complete embolization. ■

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CASE SPOTLIGHT | Challenging PAE Anatomy: Navigating Severe Pelvic Tortuosity and Achieving Target Embolization

By Zagum Bhatti, MD

PATIENT PRESENTATION

A man in his late 60s presented with severe, progressive lower urinary tract symptoms secondary to benign prostatic hyperplasia. His International Prostate Symptom Score (IPSS) was 26, indicating severely symptomatic disease, with an associated quality of life (QOL) score of 5. Maximum medical therapy, including an α-blocker and a 5-α reductase inhibitor, had failed. Preprocedural ultrasound demonstrated a significantly enlarged vascular prostate gland measuring 120 mL. The patient elected to undergo prostatic artery embolization to achieve symptomatic relief while preserving baseline erectile and ejaculatory function.

PROCEDURAL OVERVIEW

Vascular access was achieved via the right common femoral artery. A flush aortogram showed tortuous bilateral iliac arteries (Figure 1A). A 5-F Carnevale prostate catheter (CPC 15; Merit Medical Systems, Inc.) was used to select the internal iliac arteries.

On the left side, initial angiography suggested a complex type 1 origin of the prostatic artery (Figure 1B), but it was suspected that the prostatic artery could also be arising directly from the anterior division. Rather than attempting to advance the rigid 5-F base catheter deeper into the anterior division (a maneuver that carries a high risk of inducing severe vessel spasm) or converting to an up-and-over long sheath, a 2.5-F, 135-cm Cantata® microcatheter (Cook Medical) was advanced. The microcatheter tip was hand-shaped prior to insertion to precisely match the acute angle of the suspected takeoff. This shapeable tip allowed for catheterization of the prostatic artery by subtly torqueing and hooking the origin of the vessel. Because the Cantata supports high flow rates despite its low outer profile, high-quality digital subtraction angiography (DSA) runs were performed directly through the microcatheter (Figure 1C). This allowed for visualization of the prostatic artery origin while keeping the base catheter safely proximal. The shaped tip then guided the catheter smoothly through multiple acute, consecutive loops into the distal segment of the vessel, where embolization could be performed safely (Figure 1D).

On the right side, a different anatomic challenge was encountered. A prominent, nontarget rectal branch was identified, arising directly from the distal prostatic artery (Figure 1E). While this anatomy often forces operators to downsize to a 2-F catheter or deploy microcoils to protect the rectum, the 2.5-F Cantata exhibited trackability.

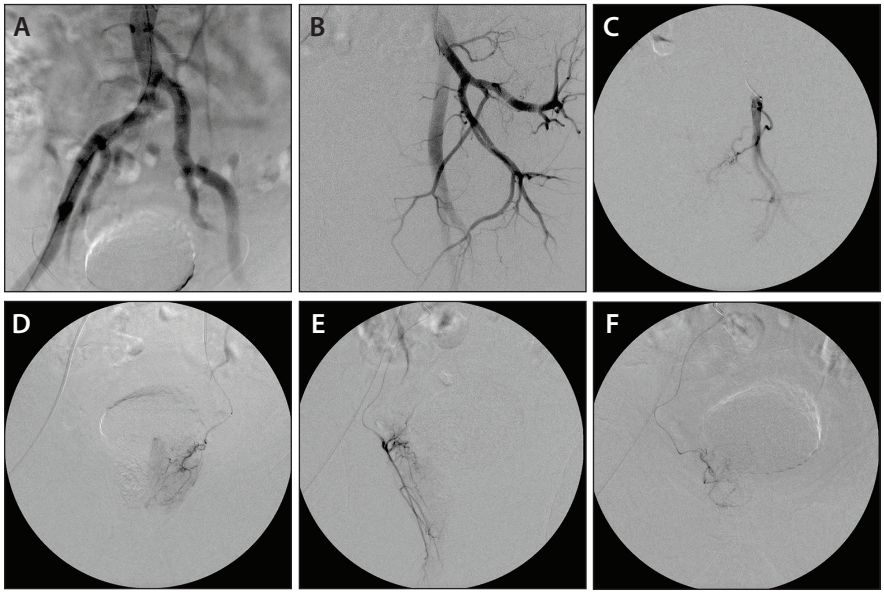
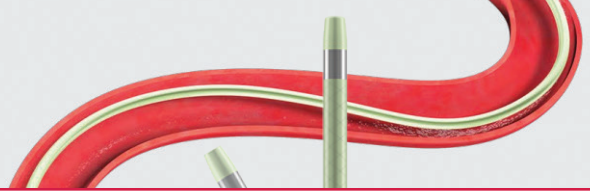


Figure 1. Flush aortography demonstrating tortuous bilateral iliac arteries (A). Initial left-sided angiography showing the suspected prostatic artery origin (B). DSA through the Cantata microcatheter visualizing the prostatic artery origin (C), followed by distal catheterization through tortuous anatomy (D). Right-sided angiography demonstrating a rectal branch arising from the distal prostatic artery (E). Subselective catheterization beyond the rectal branch for safe embolization without coiling (F).



Paired with a 0.016-inch-diameter wire guide, it bypassed the rectal takeoff, tracking subselectively beyond the branch into a secure embolization position, eliminating the need for coiling (Figure 1F).

The embolic regimen consisted of 100–300-µm calibrated microspheres, followed by a customized gelatin sponge slurry to achieve complete stasis. Despite the winding anatomy and the viscosity of the gelatin sponge mixture, the Cantata's large inner diameter allowed for smooth, continuous delivery with no catheter clogging.

OUTCOME AND FOLLOW-UP

At 3-month clinical follow-up, the patient reported dramatic symptomatic improvement. His IPSS score decreased from 26 to 9, and his QOL score improved from 5 to 1. Follow-up imaging demonstrated a 33% reduction in total prostate volume (80 mL), with no adverse events, nontarget embolization, or sexual dysfunction reported.

PHYSICIAN DISCUSSION

This case illustrates that you don't always need to sacrifice inner lumen size and pushability by downsizing to a 2-F catheter when facing extreme pelvic tortuosity or delicate anatomy. The 2.5-F Cantata microcatheter bridges the gap in part due to its hand-shapable tip.

On the left side, the ability to shape the Cantata tip provided the precise steering needed to hook a tricky anterior division origin. Combined with the catheter's high flow rates, the anatomy was mapped via microinjections without risking vessel spasm with a larger base catheter. On the right, the shaped tip allowed deliberate steering past a prominent rectal branch, saving the time and cost of deploying protective coils.

Furthermore, even when curved through these tight configurations, the internal lumen maintains its integrity. Injecting a gelatin sponge slurry can easily clog other catheters in tortuous anatomy, but the Cantata handled the slurry smoothly. ■

CASE SPOTLIGHT | Bilateral Type 4 Prostatic Anatomy: The PErFecTED Technique for Atherosclerotic Reflux and Anastomoses

By Zagum Bhatti, MD

PATIENT PRESENTATION

A man in his early 70s presented with severe lower urinary tract symptoms (LUTS) refractory to medical management, primarily complaining of severe nocturia (4-5 times per night), weak stream, and incomplete emptying. His baseline International Prostate Symptom Score (IPSS) was 28, with a quality-of-life score of 5. Preprocedural transrectal ultrasound and MRI revealed a prostate volume of 112 mL with significant median lobe intravesical prostatic protrusion. Digital subtraction angiography was scheduled for prostatic artery embolization.

PROCEDURAL OVERVIEW

Vascular access was achieved via a standard femoral approach. Initial pelvic angiography demonstrated an aortic bifurcation angle and tortuous iliac arteries (Figure 1A). A 5-F Carnevale prostate catheter (CPC 15; Merit Medical Systems, Inc.) was introduced for selection of the internal iliac arteries.

On the left side, there was a type 4 prostatic artery origin, with the proximal segment of the prostatic artery exhibiting significant atherosclerotic disease with high-grade stenosis (Figure 1B and 1C). The 2.5-F Cantata® microcatheter (Cook Medical) was advanced into the more distal prostatic artery, and embolization was initiated with 100–300-µm microspheres.

Intermittent interrogation of the prostatic perfusion during embolization revealed high-resistance reflux into the left internal pudendal artery. Furthermore, high-resolution angiographic mapping revealed a distal anastomosis between the distal prostatic artery and distal internal pudendal artery (Figure 1D).

To achieve therapeutic devascularization of the prostate while preventing catastrophic nontarget embolization to the pudendal territory, execution of the PErFecTED (proximal embolization first, then embolize distal) technique was mandatory. This required advancing the Cantata microcatheter subselectively through the atherosclerotic stenosis and beyond a highly challenging, tight vascular loop distal to the anastomosis. Cantata's shapable tip was configured with a tight distal angle to facilitate advanced tracking. The Cantata crossed the loop

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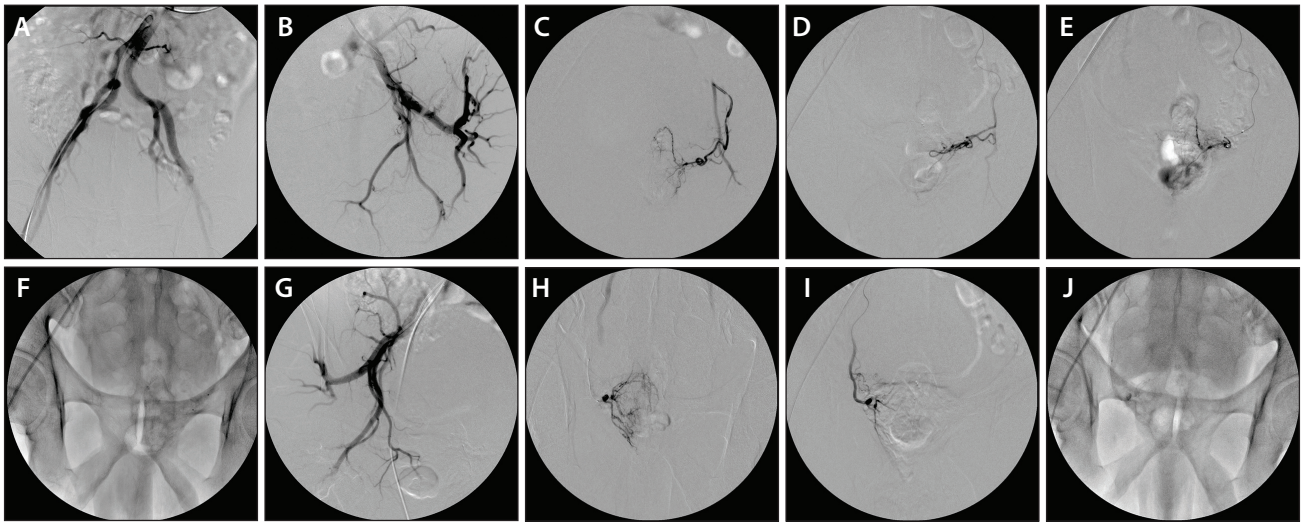


Figure 1. Initial pelvic angiography demonstrating the aortic bifurcation angle and tortuous iliac arteries (A). Left-sided angiography showing a type 4 prostatic artery origin and significant proximal atherosclerotic disease with high-grade stenosis (B, C). Distal anastomosis between the prostatic artery and internal pudendal artery (D). Advancement of the Cantata microcatheter through a tight vascular loop distal to the anastomosis (E). Postembolization fluoroscopy confirming dense, localized embolic staining of the left hemiprostate (F). Right-sided angiography demonstrating a type 4 prostatic artery origin (G). Distal prostatic artery catheterization and angiography during embolization (H, I). Postembolization imaging confirming embolic staining of the right hemiprostate (J).

successfully, maintaining structural integrity and stability (Figure 1E). Embolization was then safely resumed, and postprocedural spot fluoroscopy confirmed dense, localized embolic staining of the left hemiprostate (Figure 1F).

Moving to the right side, a matching type 4 origin was identified (Figure 1G). Upon advancement of the microcatheter into the distal prostatic artery (Figure 1H), embolization was initiated using 100–300-µm beads. To optimize deep particle penetration throughout the large right lobe and actively safeguard the bladder base from nontarget embolic drift (Figure 1I), the PErFecTED technique was performed on this side as well. The microcatheter was advanced into the prostate to complete the lobar devascularization, and excellent embolic staining of the right hemiprostate was confirmed postembolization (Figure 1J).

OUTCOME AND FOLLOW-UP

At the patient's 3-month clinical follow-up, he reported dramatic improvement in LUTS, with his IPSS dropping to 8 and nocturia reducing to one time per night. Follow-up imaging demonstrated excellent volume reduction of the median lobe and an overall prostate volume reduction to 78 mL.

PHYSICIAN DISCUSSION

Type 4 pelvic anatomy paired with severe proximal atherosclerosis is a test of a microcatheter's engineering. In this case, the left proximal prostatic artery stenosis and distal internal pudendal anastomosis complicated matters. The PErFecTED technique was necessary to tackle this safely, and the technique demands a catheter capable of navigating highly tortuous, distal anatomy without kinking or backing out. The microcatheter's torque control and column strength maintain pushability even when navigating past a high-grade atherosclerotic lesion.

On the right side, the catheter's trackability allowed for easy mirroring of the PErFecTED technique, pushing deep into the prostatic tissue to maximize bead penetration while safely isolating and protecting the bladder base. ■

CASE SPOTLIGHT | Overcoming Post-Radiation Vascular Friability in a Catheter-Dependent Stage IV Colorectal Cancer Patient

By Zagum Bhatti, MD

PATIENT PRESENTATION

A man in his mid 70s with a complex oncologic history presented with chronic, complete urinary retention and Foley catheter dependency. The patient's oncologic history was significant for stage IV colorectal cancer diagnosed in 2020. He underwent surgical resection for an intestinal obstruction, followed by multiple systemic chemotherapy regimens and three distinct courses of pelvic radiation therapy (including one course of 17 fractions) for a pelvic recurrence in 2022. He is currently undergoing palliative chemotherapy.

Secondary to his severe benign prostatic hyperplasia and postradiation tissue changes, the patient experienced intractable urinary retention, requiring three separate emergency department visits. He failed maximum medical therapy (tamsulosin and dutasteride) and previously underwent palliative prostatic urethral stent placements with subsequent exchanges. However, multiple trials of voiding failed, with complete urinary retention recurring shortly after Foley catheter removal. Preprocedural imaging demonstrated a prostate measuring 37 mL. Given his stage IV disease and extensive pelvic radiation history, he was deemed a poor candidate for formal surgical prostatectomy. Prostatic artery embolization (PAE) was requested to alleviate his severe lower urinary tract symptoms (International Prostate Symptom Score, 28; quality of life [QOL], 5), improve catheter comfort, and potentially achieve catheter independence.

PROCEDURAL OVERVIEW

Vascular access was achieved via a right common femoral artery (CFA) approach (Figure 1A). Interrogation of the pelvic vasculature was severely challenged by extensive postradiation changes, diffuse atherosclerosis, and highly friable small-caliber vessels.

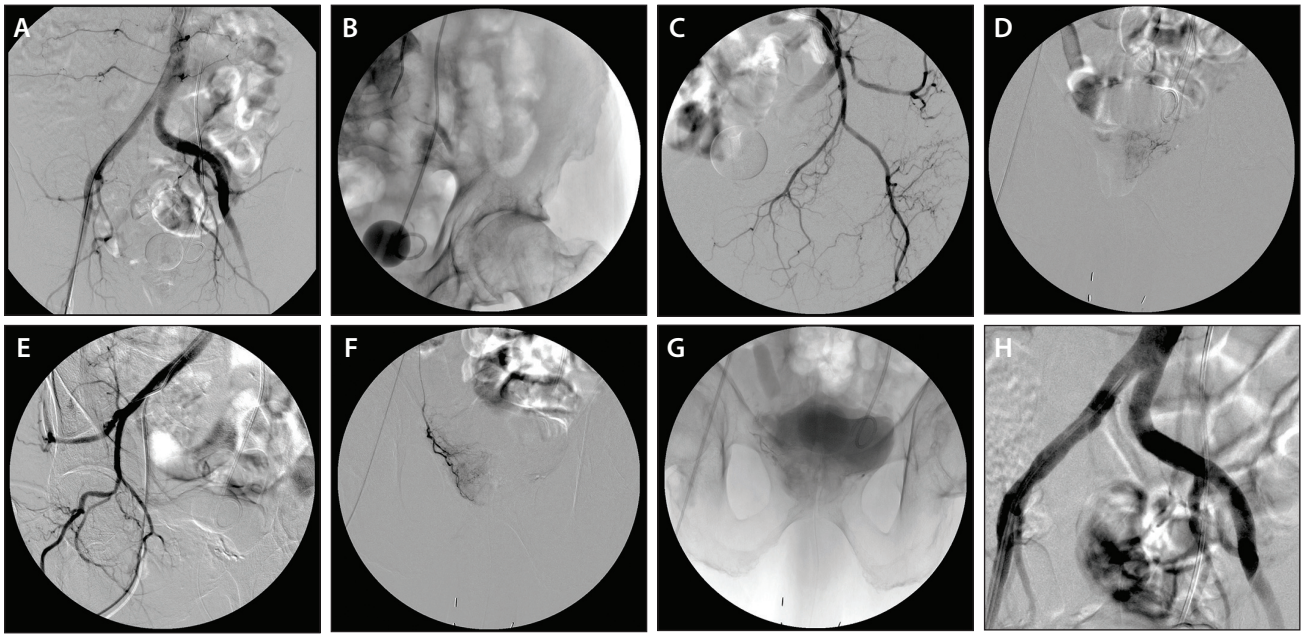


Figure 1. Right CFA access (A). Left common iliac artery dissection (B). Small diseased prostatic arteries (C, E). Distal catheterization using the Cantata microcatheter (D). Right-sided PAE (F). Postembolization parenchymal staining and bead retention (G). Resolution of dissection without stenting (H).

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During initial selection of the left internal iliac artery using a 5-F Carnevale prostate catheter (CPC 15; Merit Medical Systems, Inc.), the highly friable nature of the irradiated vessel wall resulted in a small flow-limiting dissection within the left common iliac artery (Figure 1B). The diagnostic base catheter was immediately withdrawn proximally, and the dissection subsequently resolved without requiring stenting (Figure 1H).

A 2.5-F, 135-cm Cantata® microcatheter (Cook Medical) was utilized. The target prostatic arteries were found to be exceptionally small, narrowed, and diseased from prior radiation (Figure 1C and 1E). Despite these diminutive vessels and fixed takeoffs caused by radiation-induced tissue scarring, the Cantata's shapable tip allowed the operator to gently torque and track deep into the distal prostatic parenchymal network (Figure 1D). Securing this ultra-distal position was critical: It allowed for a highly localized, high-density delivery of 100–300-µm calibrated microspheres directly into the tissue while mitigating the risk of nontarget embolic reflux into pelvic collaterals. The right-sided PAE was completed in an identical, highly controlled fashion (Figure 1F). Postembolization fluoroscopy confirmed excellent bead retention and dense parenchymal staining within the prostate gland (Figure 1G) with resolution of dissection without stenting (Figure 1H).

OUTCOME AND FOLLOW-UP

There were no postprocedural nontarget embolic or ischemic complications. At clinical follow-up, the patient successfully passed a trial of voiding and achieved complete catheter independence for the first time in several months. He reported an entirely unobstructed voiding stream, no further episodes of urinary retention, and a dramatic improvement in pelvic comfort, significantly enhancing his overall QOL while continuing his systemic oncologic therapies.

PHYSICIAN DISCUSSION

This case represents the extreme of clinical and anatomic complexity in PAE. Pelvic radiation completely alters tissue planes and leaves behind small and very friable vessels that are prone to spasm and mechanical injury. The small common iliac dissection created by the diagnostic catheter early in the case underscored just how fragile this patient's vasculature was. When you are forced to navigate such complex vessels, microcatheter choice is of the utmost importance. You cannot afford a rigid catheter. The hand-shapable tip of the 2.5-F Cantata microcatheter allowed me to give the catheter a very soft, custom configuration. It allowed for easy navigation of this patient's small, diseased prostatic vessels, steering smoothly around fixed angles without snagging the intima or causing further dissection.

For an oncology patient with stage IV disease who was already enduring palliative chemotherapy, removing a Foley catheter and restoring normal voiding was a massive win for patient QOL. The Cantata gave me the precise tracking control and stability needed to turn a highly precarious, complicated case into a safe, life-changing technical success. ■

Cantata® 2.5 and 2.8 Microcatheters and Cantata® 2.5 and 2.8 Duo Microcatheters
CAUTION: U.S. federal law restricts this device to sale by or on the order of a physician (or properly licensed practitioner).
INTENDED USE: The Cantata 2.5, Cantata 2.8, Cantata 2.5 Duo, and Cantata 2.8 Duo Microcatheters are intended for use in small vessel or superselective anatomy for diagnostic and interventional procedures including peripheral and coronary use.
CONTRAINDICATIONS: None known
WARNINGS: Damage to the catheter may result from exposure to heat or steam. • Do not exceed maximum dynamic or static pressures. Exceeding indicated pressures may result in microcatheter damage. • If resistance is felt between the vessel and microcatheter, or between the microcatheter and wire guide, verify the cause of resistance by fluoroscopy or remove the microcatheter and wire guide as a unit. Damage may occur to the microcatheter and/or wire guide. • If microcatheter occlusion is suspected, do not flush the microcatheter. Over-pressurization may occur, resulting in microcatheter rupture.
PRECAUTIONS: This product is intended for use by physicians trained and experienced in small vessel access and interventional procedures. Standard techniques for placement of percutaneous microcatheters should be employed. • The Cantata 2.8 and Cantata 2.8 Duo Microcatheters fit through any angiographic catheter that accepts a 0.038 inch wire guide. • The Cantata 2.5 and Cantata 2.5 Duo Microcatheters fit through any angiographic catheter that accepts a 0.035 inch wire guide. • To avoid vascular trauma, maintain a wire guide in the microcatheter lumen and beyond the distal tip of the microcatheter during manipulation. • When using the microcatheter for infusion of embolic agents, thrombolytic therapies, or other agents, refer to the appropriate manufacturer's suggested Instructions for Use for proper use guidelines. • The potential effects of phthalates on pregnant/nursing women or children have not been fully characterized and there may be concern for reproductive and developmental effects.
See Instructions for Use for full product information.

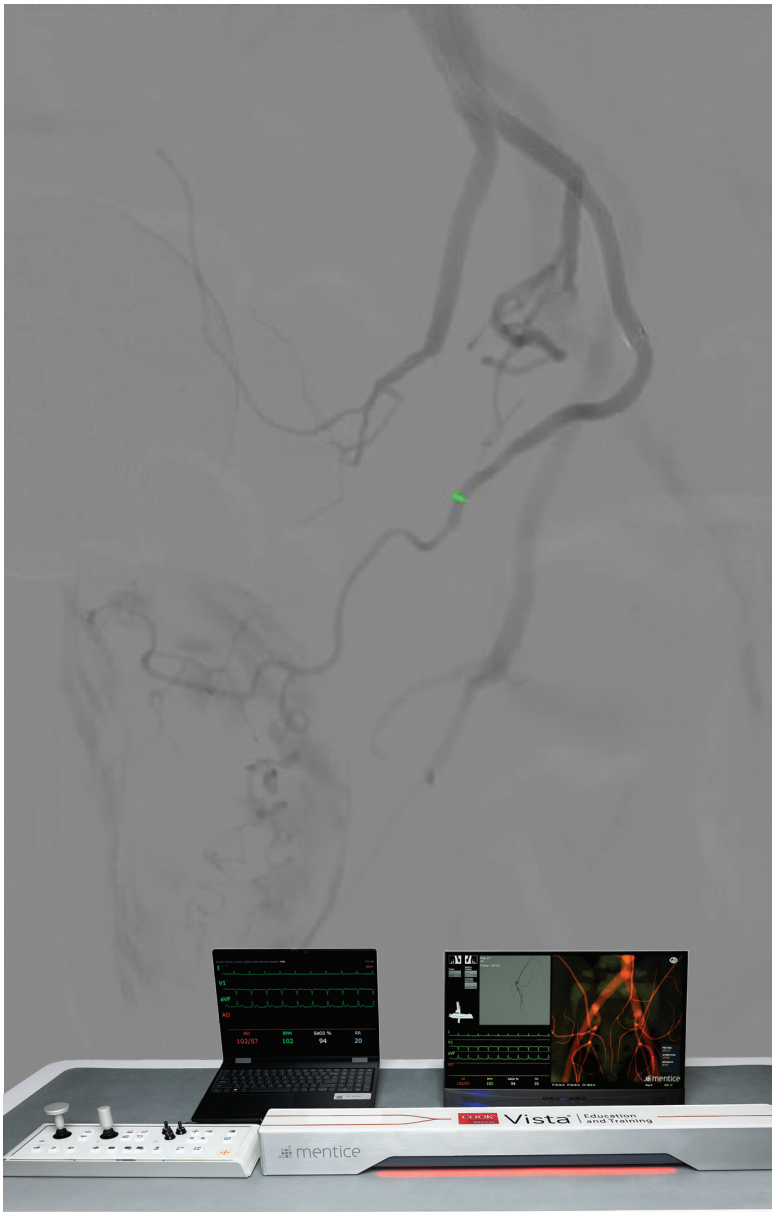
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- The system supports practicing device navigation in complex pelvic vascular anatomy.
- The system shows what happens during embolization, including the risk of non-target embolization, and gives visual cues for safe deployment.
- In addition to catheter navigation, the module supports training in aspects such as equipment selection, flush catheter techniques, radiation management, crossing the aortic bifurcation, and handling tortuous and stenotic anatomy.

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