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# A Rare Case of Arteriovenous Malformation: Pelvic Wall AVM in Male

## Case Report

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**Abstract**

Congenital pelvic arteriovenous malformation (AVM) is an uncommon vascular anomaly characterized by direct connection between arteries and veins, encompassing a malformed vascular network, or nidus. Due to its infrequent occurrence and the nonspecific nature of its symptoms, congenital pelvic AVM in males has been seldom explored. In this case study, we discussed a 64-year-old male who visited the gastroenterology outpatient department at Apollo Multispecialty Hospitals, Kolkata, reporting a mild, dull aching pain on the right side of his abdomen for the past five months. A high-flow pelvic wall AVM was identified through CECT whole abdomen. Absenceof any other contributing pathologyindicated congenital origin of AV malformation.

**Keywords:** Arteriovenous Malformation; Pelvic Wall AVM; Vascular Malformation; Venous Malformation; Interventional Radiology

## Abbreviation

AVM: Arteriovenous Malformation; CECT: Contrast Enhanced Computed Tomography; USG: Ultrasonography; MIP: Maximum Intensity Projection

## Introduction

Arteriovenous malformation (AVM) represents a vascular anomaly characterized by the connection of arteries and veins through a nidus of dysplastic vascular channels [1]. Among these, pelvic wall AVMs are particularly uncommon, with an even rarer occurrence in male patients [2,3]. The majority of pelvic AVMs arise secondary to trauma, previous surgeries, or tumours, making congenital pelvic AVMs in males exceedingly rare [4]. These malformations typically involve bone and soft tissues of the pelvic wall, draining into the branches of the internal iliac veins. Over time, as they grow, arteries and veins from the pelvic organs may also become involved. In addition to collateral from adjacent visceral branches, pelvic wall AVMs are usually fed by a multitude of vessels including branches of pudendal, obturator, and gluteal arteries, potentially reaching substantial sizes and flow rates.The clinical presentation of pelvic AVMs is varied and nonspecific [5-8]. Some individuals may remain asymptomatic, with the diagnosis only made incidentally during cross-sectional imaging of the pelvis for unrelated reasons.

This case report details a rare presentation of a congenital pelvic AVM in a male patient, who reported nonspecific symptoms such as dull aching abdominal pain. A CECT of the whole abdomen ultimately revealed a high-flow arteriovenous malformation on the right side of the pelvic wall.

## Case Presentation

A 64-year-old male visited the gastroenterology outpatient department at Apollo Multispecialty Hospitals, Kolkata, reporting a mild, dull ache on the right side of his abdomen. The pain was persistent for last five months. An ultrasound of the whole abdomen, previously performed at an external peripheral centre, showed no significant findings. Physical examination did not uncover any notable


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abnormalities, and his vitals were stable. The patient had a history of type 2 diabetes mellitus for which he was under medication. He also mentioned self-administering over-the-counter pain relievers for his abdominal discomfort, though these did not provide any noticeable relief. A whole abdomen CECT was advised. It revealed, a high-flow pelvic arteriovenous malformation on the right side, with an ill-defined nidus just adjacent to the right seminal vesicle. It wasfed by multiple very small calibre arterial channels arising from the anterior branch of the right internal iliac artery, with a large dilated, tortuous draining vein, showing early opacification and ending into the right internal iliac vein (Figure 1).

## Discussion

Pelvic congenital arteriovenous malformations (AVMs) in males are notably rare. In 2002, Game et al. documented two cases of pelvic congenital AVMs in male patients and reviewed an additional 15 cases previously reported in the literature, with only a handful more cases identified since then [9]. We discuss a scarce instance of a male patient diagnosed with a congenital pelvic AVM via CECT of the whole abdomen. In AVMs, the nidus, a malformed vascular plexus formed by remnants of the capillary network, acts as an intermediary between arterial and venous systems. While AVMs can develop in any body part, they are most commonly found in the brain, neck, kidneys, and lungs, with pelvic AVMs, particularly in males, being exceedingly uncommon [10,11].

The symptoms associated with pelvic AVMs lack specificity and range from subtle to vivid, potentially leading to lethal outcomes. They include flank, abdominal, or pelvic pain, hematuria, hemospermia, impotence, dysuria, and dyspnea due to high-output heart failure, among others [12,13]. Additionally, foot drop resulting from nerve compression and lower extremity edema caused by proximal iliac vein compression have been described [5-8]. The rarity of the condition, combined with the nonspecific nature of its symptoms, complicates early clinical diagnosis. Significant indicators of pelvic AVM include palpating a pulsatile mass and detecting loud or harsh noises upon physical examination, though deep pelvic AVMs are not palpable. In contrast to previous literature, few studies showthe application of Doppler and USG is also a potential tool of solid diagnostic value for congenital pelvic AVM in males [14,15]. In the case we present, the patient experienced mild, dull aching pain on the right side of his abdomen for several months. Initial physical examinations and an ultrasound of the whole abdomen showed no abnormalities. A CECT of the whole abdomen was performed to exclude any sinister pathology, revealing a high-flow pelvic arteriovenous malformation, presumed to be congenital due to the absence of other significant contributory pathologies.

Treatment for congenital pelvic AVM in males varies based on the severity of symptoms. Lesions that are asymptomatic or mildly symptomatic may not require intervention. In this case, the patient was presented with various treatment options if his symptoms would intensify. Treatments for AVM in males have included ligation of afferent arteries, lesion excision, embolization, and surgical approaches. Surgical intervention often leads to complications such as haemorrhage, damage to adjacent organs, and recurrence, making it less favourable. Embolization, offering lower morbidity, mortality, and invasiveness, is preferred.Slow-flow VMs (venous and lymphatic

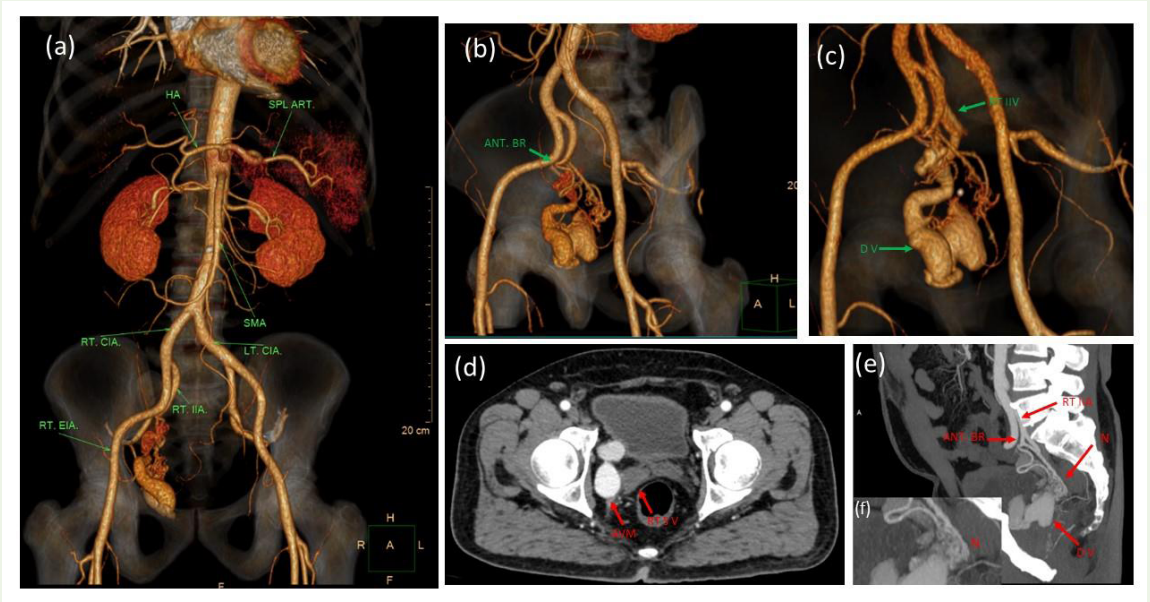


**Figure 1:** VR coronal (a) Left anterolateral oblique (b,c), CECT whole abdomen arterial phase axial (d) MIP sagittal (e) and zoomed in (f) images show the pelvic AVM. (a) shows relation of the AVM with Abdominal aorta and its branches. (b) (c) and (e) show main feeding artery i.e. anterior branch of right internal iliac artery (RT IIA) and draining vein (D V) into right internal iliac vein (RT IIV). (e) and (f) show the nidus i.e the dysplastic capillaries. (d) shows anatomical relation of AVM with the right seminal vesicle.



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malformations) are often treated by sclera therapy [16-18].Our patient was offered embolization under fluoroscopy guidance as the treatment modality. However, he opted against definitive treatment, choosing instead a conservative 'wait and watch' approach.

## Conclusion

Congenital pelvic arteriovenous malformation (AVM) is an uncommon vascular anomaly characterized by direct connections between arteries and veins, encompassing a malformed vascular network, or nidus. Only a few cases are reported in males. This case report details presentation of a congenital pelvic AVM in a 64-year-old male patient, who reported nonspecific symptoms such as dull aching abdominal pain. A CECT of the whole abdomen ultimately revealed a high-flow arteriovenous malformation on the right side of the pelvic wall.

**Teaching points**

- Congenital pelvic wall arteriovenous malformation is a rare entity, rarer in males.
- The symptoms associated with pelvic AVMs are mostly nonspecific and include flank, abdominal, or pelvic pain, haematuria, hemospermia, impotence, dysuria, dyspnoea due to high-output heart failure, foot drop, and lower extremity edema.
- Sometimes it's an incidental finding.
- Treatment for congenital pelvic AVM in males varies based on the severity of symptoms.

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### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

## References:

1. Lam K, Pillai A, Reddick M (2017) Peripheral Arteriovenous Malformations: Classification and Endovascular Treatment. Appl. Radiol.
2. Kedzierski B, Nowak G, Kuśmierska M, Jaźwiec P, Szuba A (2013). Giant Congenital Malformation of the Perirectal Plexus in Computed Tomography Imaging - Case Report. Polish J. Radiol.
3. Game x, Berlizot P, Hassan T,Joffre F, Chokairi S, et al.(2002) Congenital pelvic arteriovenous malformation in male patients: a rare cause of urological symptoms and role of embolization Eur Urol 42: 407-412.
4. Tufano A, Minelli R, Rossi E, Brillantino C, Di Serafino M, et al. (2021) Inferior Epigastric Artery Pseudoaneurysm Secondary to Port Placement during a Robot-Assisted Laparoscopic Radical Cystectomy. J. Ultrasound 24: 535-538.
5. Suzuki K, Nishimi D, Morioka H, Takanami M (2007) Hematospermia Associated with Congenital Arteriovenous Malformation of Internal Iliac Vessels. Int. J. Urol 14: 370-372.
6. Hammad FT, Shawish F, Kazim E (2011) Congenital Pelvic Arteriovenous Malformation Presenting with Urinary Retention: A Case Report. Med. Princ. Pract 20: 294-296.
7. Addo EA, Emtage J, Massis K, Hernandez DJ (2015) A Congenital High Flow Arteriovenous Malformation of the Bladder Presenting With Polypoid Cystitis and Ureteral Obstruction. Urol. Case Reports3: 181-184 .
8. Bae S, Young SDo, Sung WS, Kwang BP, Kim DI, et al.(2008) Ethanol Embolotherapy of Pelvic Arteriovenous Malformations: An Initial Experience. Korean J. Radiol 9: 148-154.
9. Game X, Berlizot P, Hassan T, Joffre F, Chokairi S, et al.(2002) Congenital Pelvic Arteriovenous Malformation in Male Patients: A Rare Cause of Urological Symptoms and Role of Embolization. Eur. Urol 42: 407-412.
10. Badra EV, Mordasini P, Bervini D, Herrmann E (2020) Arteriovenous Malformation of the Brain. In Stereotactic Radiosurgery (SRS): Procedure, Results and Risks (2 Volume Set).
11. Schimmel K, Ali MK, Tan SY, Teng J, Do HM, et al. (2021) Arteriovenous Malformations—Current Understanding of the Pathogenesis with Implications for Treatment. International Journal of Molecular Sciences Pp: 22.
12. Sow NF, Lèye M, Basse I, Dieng YJ, Seck MA, et al. (2018) Heart Failure with Normal Heart Revealing Complex Arteriovenous Malformation of the Lower Limb in a Child: Case Study and Literature Review. Pan Afr. Med. J 31: 131.
13. Wang X, Zhao Z (2023) Renal Arteriovenous Malformation Causing Hematuria: Case Report and Review of the Literature. Med. (United States) 102: e34547.
14. Huang Y, Liu X, Qian HA (2023) Male Congenital Pelvic Arteriovenous Malformation Diagnosed by Abdominal Ultrasound: A Case Report and Literature Review. Front. Surg 9: 907234.
15. Dubois J, Alison M (2010) Vascular Anomalies: What a Radiologist Needs to Know. Pediatric Radiology 40: 895-905.
16. Do YS, Kim YW, Park KB, Kim DI, Park HS, et al. (2012) Endovascular Treatment Combined with Embolosclerotherapy for Pelvic Arteriovenous Malformations. J. Vasc. Surg 55: 465-471.
17. Mallios A, Laurian C, Houbballah R, Gigou F, Marteau V (2011) Curative Treatment of Pelvic Arteriovenous Malformation - An Alternative Strategy: Transvenous Intra-Operative Embolisation Eur. J. Vasc. Endovasc. Surg 41: 548-553.
18. Yakes W (2022) Abstract No. 383 Ethanol Embolotherapy Management of Pelvic Arteriovenous Malformations (AVM). J. Vasc. Interv. Radiol .



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