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BLADDER DIVERTICULUM HARBORING AN ARTERIOVENOUS MALFORMATION PRESENTING AS ACUTE GROSS HEMATURIA

***Dr. Purushothaman K., MBBS, DNB (General Surgery), Dr. Deepak David, MS (General Surgery), M.Ch (Urology), DLS, Dr. Devaprasath Jeyasekharan, MBBS, MS (General Surgery), FAMS (Urology), FRCS (Edin), Dr. Jeffrey, MBBS, M.Ch (Urology)**

Department of Urology, Dr. Jeyasekharan Medical Trust Hospital, Nagercoil, Tamil Nadu, India.

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***Corresponding author:**

Dr. Purushothaman K.

Department of Urology, Dr. Jeyasekharan Medical Trust Hospital, Nagercoil, Tamil Nadu, India.

ABSTRACT

Arteriovenous malformations (AVMs) of the urinary bladder are rare vascular anomalies and represent an uncommon cause of gross hematuria. Their occurrence within a bladder diverticulum is extremely rare and can pose a diagnostic challenge during routine evaluation. A 60-year-old male presented with acute painless gross hematuria with passage of clots. Initial cystoscopy was inconclusive due to poor visualization caused by clot retention. Following clot evacuation, repeat cystoscopy revealed a wide-mouthed diverticulum on the left posterolateral bladder wall. Inspection of the diverticulum revealed tortuous pulsatile vessels with active bleeding, consistent with an AVM. The lesion was successfully treated using Holmium:YAG laser fulguration. Bladder AVMs should be considered in cases of unexplained hematuria. Careful cystoscopic evaluation, including inspection of diverticula, is essential. Endoscopic laser fulguration is an effective and minimally invasive treatment option.

KEYWORDS: Arteriovenous malformation, Urinary bladder, Bladder diverticulum, Gross hematuria, Cystoscopy.

INTRODUCTION

Gross hematuria is a common presenting symptom in urological practice and is frequently associated with malignancy, urinary calculi, infection, or inflammatory conditions. Vascular malformations of the urinary bladder represent a rare cause of hematuria. Among these, arteriovenous malformations (AVMs) are characterized by abnormal direct communication between arteries and veins without an intervening capillary network.

Bladder AVMs are extremely uncommon and account for less than 1% of vascular lesions involving the bladder. They may be congenital or acquired following trauma, surgery, inflammation, or radiation therapy. Clinically, they may present with intermittent or severe hematuria.

The occurrence of an AVM within a bladder diverticulum is particularly rare. We report a case of an intra-diverticular bladder AVM presenting with acute hematuria and its successful endoscopic management.

CASE REPORT

A 60-year-old male presented with a two-day history of painless gross hematuria with passage of clots. There was no history of trauma, anticoagulant use, or prior urological procedures.

On examination, the patient was hemodynamically stable. Laboratory investigations revealed hemoglobin of 10.2 g/dL, with normal renal function and coagulation profile.

Ultrasonography demonstrated echogenic clots within the bladder without any obvious mass lesion. Initial cystoscopy was limited due to heavy clot retention. After clot evacuation, no obvious source of bleeding was

identified.

Following stabilization, repeat cystoscopy revealed a wide-mouthed diverticulum on the left posterolateral bladder wall. Careful inspection demonstrated a cluster of dilated tortuous vessels with a characteristic pulsatile appearance and active oozing, consistent with an arteriovenous malformation.

The lesion was treated using Holmium:YAG laser fulguration with energy settings of 0.8–1.2 J at 10–15 Hz. Complete hemostasis was achieved.

The postoperative period was uneventful, and the patient was discharged on postoperative day two. At six-month follow-up, the patient remained asymptomatic with no recurrence of hematuria.

DISCUSSION

Arteriovenous malformations (AVMs) of the urinary bladder are rare vascular lesions that may present with recurrent or severe hematuria. They may be congenital or acquired in origin.

Bladder diverticula lack normal muscular support and are prone to various complications. The occurrence of vascular malformations within a diverticulum is extremely rare and may be easily missed unless the diverticular orifice is carefully inspected during cystoscopy.

Traditionally, bladder AVMs have been managed with surgical excision or transarterial embolization. However, with advancements in endourological techniques, minimally invasive approaches are increasingly preferred for localized lesions. The Holmium:YAG laser offers precise tissue coagulation with minimal penetration, making it particularly suitable for treating lesions within thin-walled diverticula, where the risk of perforation is higher.

A review of the available literature suggests that bladder AVMs are exceedingly rare, with only a limited number of cases reported. The occurrence of an AVM within a bladder diverticulum is even more uncommon, making this case noteworthy. Compared to previously reported cases, our findings highlight the importance of meticulous cystoscopic evaluation, particularly in patients presenting with unexplained hematuria.

To the best of our knowledge, intra-diverticular bladder arteriovenous malformation has rarely been reported in the literature.

This case further demonstrates that endoscopic laser fulguration is a safe and effective minimally invasive treatment option for localized vascular lesions, with excellent clinical outcomes.

CONCLUSION

Intra-diverticular bladder AVMs are rare but important causes of hematuria. Thorough cystoscopic evaluation is essential for diagnosis. Endoscopic laser fulguration provides an effective and minimally invasive treatment.

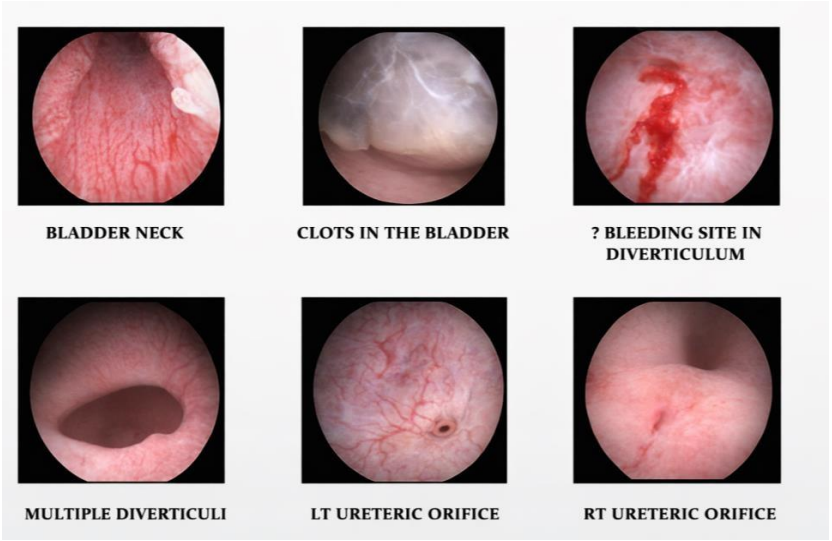

Figure 1: Cystoscopic view showing a wide-mouthed bladder diverticulum on the posterolateral wall.

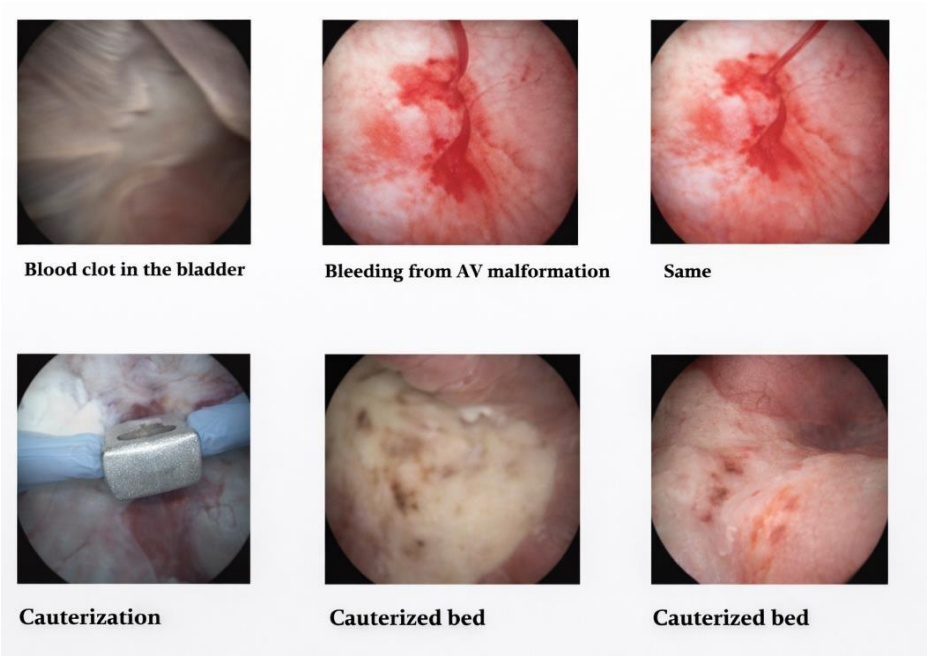

Figure 2: Endoscopic view demonstrating tortuous, pulsatile vessels consistent with an arteriovenous malformation.

Conflicts of Interest: The authors declare no conflicts of interest.

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