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# Cavernous Hemangioma of the Penile Glans: A Rare Case Report and Literature Review

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## Abstract

Cavernous hemangioma of the penile glans is an exceptionally rare benign vascular lesion, with only a few cases reported in the literature. It poses diagnostic and therapeutic challenges for urologists, particularly regarding aesthetic and functional outcomes. We report a case of a 30-year-old male patient with a cavernous hemangioma of the glans penis, successfully treated by partial glandectomy and meatoplasty, followed by postectomy. Postoperative evolution was uneventful, with satisfactory cosmetic and functional results and no recurrence.

**Keywords: Penile glans; Cavernous hemangioma; Glandectomy; Meatoplasty; Vascular malformation**

## Introduction

Cavernous hemangiomas of the genitalia are rare vascular malformations, typically diagnosed during childhood. In adults, such lesions are exceedingly uncommon. They can involve the glans penis, penile shaft, scrotum, and perineum, occasionally extending to the anterior abdominal or pelvic wall [1].

These lesions may present diagnostic difficulties and therapeutic dilemmas due to their low prevalence and variable presentation. Management options include conservative observation, laser fulguration, sclerotherapy, cryotherapy, or surgical excision, depending on lesion size, symptoms, and aesthetic considerations [2,3].

This report describes an unusual case of a granular cavernous hemangioma in an adult patient, highlighting the diagnostic process, surgical management, and outcomes, along with a review of the relevant literature.

## Case Presentation

A 30-year-old male presented with a one-year history of a painful, aesthetically concerning lesion on the glans penis. Physical examination revealed a bluish, well-circumscribed vascular mass confined to the glans.

Doppler ultrasonography demonstrated a venous-pattern vascular malformation consistent with a cavernous hemangioma. Contrast-enhanced pelvic CT angiography showed patent iliac arteries and veins with preserved luminal filling and no evidence of stenosis, aneurysm, or dissection. No abnormalities were detected in the surrounding pelvic vasculature [4,5].

Given the symptomatic and aesthetic nature of the lesion, the patient underwent partial glandectomy with meatoplasty, followed by postectomy, under spinal anesthesia. The procedure included frenulectomy with frenuloplasty, resection of approximately two-thirds of the distal glans containing the hemangioma, and urethral meatoplasty with Caprofyl 4-0 sutures. Skin and mucosal closure were performed with chromic catgut 4-0.

The patient was catheterized with an 18 Fr Foley catheter and discharged on the first postoperative day. The catheter was removed during the first outpatient follow-up visit. The postoperative course was uneventful, with no urinary or erectile dysfunction reported.

Histopathological examination confirmed a cavernous hemangioma characterized by dilated blood-filled vascular channels with areas of venous thrombosis Figure1A and1B.

## Discussion

Cavernous hemangiomas of the penis are extremely rare benign vascular lesions. They may

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**Figure 1: (A).** Lesion before surgical approach dorsal view with exposure of the balanopreputial sulcus. **(B).** Lesion before surgical approach dorsal view. **(C).** Lesion before surgical approach- ventral view. **(D).** Before surgical approach - right lateral view.

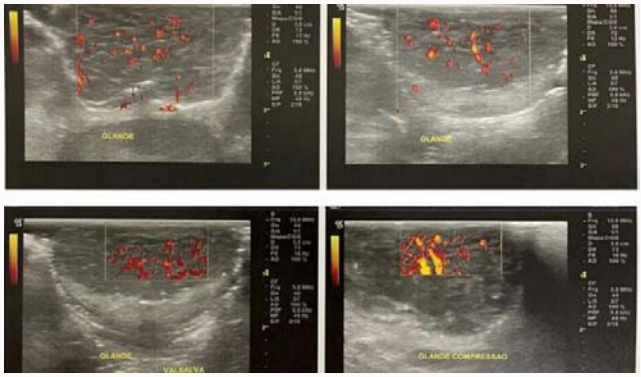

**Figure 2:** Doppler ultrasound showing venous-pattern vascular malformation occupying the glans, consistent with cavernous hemangioma.

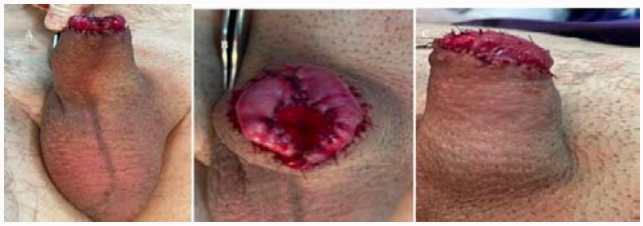

**Figure 3: (A).** Immediate postoperative appearance - ventral view. **(B).** Immediate postoperative appearance - urethral meatoplasty. (**C).** Immediate postoperative appearance -right lateral viewxkx i8.

present as congenital or acquired formations and are often confined to the glans, penile shaft, or scrotum. The etiology remains unclear, although congenital vascular malformation and trauma have been suggested Figure 1C and 1D.

Three histological subtypes of genital hemangiomas have been described: capillary, cavernous, and epithelioid (histiocytoid). Cavernous hemangiomas are characterized by large, dilated vascular spaces lined by endothelial cells, often associated with thrombosis or infarction Figure 2.

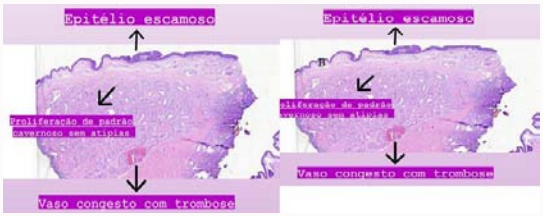


**Figure 4: (A).** Histopathological image showing venous thrombosis within dilated vascular spaces. (**B).** Histopathological image demonstrating cavernous vascular proliferation pattern consistent with hemangioma.


**Figure 5: (A).** Final postoperative result - urethral meatoplasty site. **(B)** Final postoperative result - right lateral view.

Cavernous hemangiomas of the penis have occasionally been reported in association with syndromes such as Klippel-Trenaunay Syndrome (KTS), which features vascular malformations, varicosities, and soft tissue or bony hypertrophy of the affected limb [6-9]. However, our patient presented with an isolated lesion without systemic involvement Figure 3A-3C.

Imaging plays a key role in diagnosis. Doppler ultrasonography, CT angiography, or MRI can delineate the vascular characteristics and extent of the lesion. In our case, Doppler ultrasound and CT angiography were sufficient for diagnosis and surgical planning.

Treatment depends on lesion size, symptomatology, and cosmetic considerations. While asymptomatic cases may be observed, symptomatic or cosmetically deforming lesions are best managed surgically. Reported options include laser therapy, sclerotherapy, embolization, or surgical excision. Partial glandectomy, as performed in this case, can achieve complete removal with excellent aesthetic results Figure 4A and 4B.

Histopathological analysis often reveals vascular channels of variable diameter lined by flattened endothelial cells and areas of thrombosis findings consistent with cavernous hemangioma. In our case, the presence of venous thrombosis confirmed the diagnosis.

The patient's postoperative course was favourable, with complete resolution of symptoms, no complications, and excellent cosmetic satisfaction Figure 5A and 5B.

## Conclusion

Cavernous hemangioma of the glans penis is a rare benign vascular tumor that poses diagnostic and therapeutic challenges. Surgical excision remains the treatment of choice for symptomatic or aesthetically concerning lesions, offering excellent outcomes and minimal recurrence risk.

Due to its rarity, each new case contributes valuable insights into the diagnosis and management of this condition. A thorough clinical

and radiological evaluation is essential to confirm the diagnosis, determine lesion extent, and guide appropriate therapy. Long-term follow-up is recommended to monitor for recurrence.

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