Ischemic (Low-Flow) Priapism Managed by Al-Ghorab Distal Corporoglanular Shunt - A Case Report

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Track Record Article

Revised: 08 March 2026
Accepted: 20 April 2026
Published: 30 April 2026

How to cite:
Ridho, M. M., & Danarto, R. (2026). Ischemic (Low-Flow) Priapism Managed by Al-Ghorab Distal Corporoglanular Shunt - A Case Report. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health, 8*(2), 1–15.

Abstract

Priapism is a rare urological condition characterized by a persistent penile erection unrelated to sexual stimulation, most commonly affecting adults, while in children it is frequently associated with sickle cell anemia or trauma. The Al-Ghorab shunt is an open distal shunt technique that may be utilized as a first-line surgical intervention. We report the case of a 58-year-old male who presented with a one-month history of painful persistent erection, with no history of sexual stimulation, medication use, or genital and perineal trauma. Based on clinical evaluation, the patient was diagnosed with ischemic (low-flow) priapism and was scheduled for open distal shunting using the Al-Ghorab (corporoglandular) shunt technique. The operative duration was 120 minutes, and the patient was managed postoperatively in a non-intensive care ward without complications, with an Erection Hardness Score (EHS) of 1. The patient was discharged on postoperative day five and returned for follow-up on postoperative day twelve, at which time the surgical wounds on the glans and ventral penis were noted to be dry, indicating that although surgical preference may vary among surgeons, the Al-Ghorab shunt can be considered as a first- or second-line option following percutaneous distal shunting based on its success rate and side-effect profile.

Keywords: Ischemic Priapism, Low-Flow Priapism, Al-Ghorab Shunt, Distal Corporoglanular Shunt.

INTRODUCTION

Priapism is a rare condition characterized by a persistent penile erection in the absence of sexual stimulation or an erection lasting longer than four hours (Ho et al., 2026). It predominantly occurs in adults, whereas in pediatric populations it is most commonly associated with sickle cell anemia or trauma. The most frequent etiology is idiopathic; however, several other contributing factors have been identified, including hematologic disorders, cardiovascular disease, infections, metabolic disorders, neurogenic conditions, malignancies, and adverse drug effects (Salonia et al., 2022; Biebel et al., 2022).

Ischemic (low-flow) priapism is a urological emergency, as prolonged hypoxia and acidosis within the corpora cavernosa can lead to irreversible smooth muscle necrosis. Delays in treatment—especially more than 24–48 hours—are strongly associated with corpus fibrosis, permanent erectile dysfunction, and decreased achievement rates of minimally invasive therapies (Bivalacqua et al., 2021). These consequences highlight the weightiness of early recognition and timely intervention. In the Indonesian healthcare context, delays can be

aggravated by limited consciousness, sociocultural stigma, and barriers in the multilevel referral system, particularly in primary and secondary care providers (De Niro et al., 2024; Yudiana et al., 2023). Consequently, patients often present late to tertiary centers, significantly worsening prognosis and limit treatment options. Therefore, this case emphasize not only the clinical severity of ischemic priapism but also the need to reinforce emergency response pathways and referral agility within the national healthcare system.

Initial management of priapism is conservative and includes physical exercise, ejaculation, application of ice packs, cold water baths and enemas, corporal aspiration, irrigation, and intracavernosal pharmacologic injections (Lumbiganon et al., 2024). When conservative therapy fails, surgical intervention should be considered. Delayed adequate management beyond 48 hours increases the risk of corporal fibrosis and the subsequent need for shunt procedures. Surgical shunting aims to relieve static blood stasis within the corpora cavernosa and restore oxygenated blood flow. Reported success rates for aspiration alone are approximately 30%, while intracavernosal injections with or without aspiration range from 43% to 81%. In contrast, shunt procedures-particularly the Al-Ghorab shunt-have reported success rates of 70%–74% (Rahoui et al., 2022). The Al-Ghorab shunt is an open distal shunt created by forming a corporoglandular fistula. It may be employed as a first- or second-line surgical option when percutaneous distal shunts, including the Winter, Ebbehoj, or T-shunt techniques, have failed (De Niro et al., 2024 ; Ho et al., 2026).

However, reports and clinical data describing the use of the Al-Ghorab distal Corporoglanular shunt for prolonged ischemic priapism remain limited. This case report aims to describe the clinical presentation, surgical management, and short-term postoperative outcomes of an open Al-Ghorab shunt in a patient with long-standing ischemic priapism. We present our surgical experience in performing an open distal corporoglandular shunt to relieve static cavernosal congestion and restore penile detumescence in a 58-year-old man with a one-month history of painful low-flow priapism.

METHODS

The study design was a retrospective single-case report involving a male patient (n = 1) diagnosed with long-standing ischemic (low-flow) priapism. The study was conducted at Dr. Sardjito General Hospital, Division of Urology, Department of Surgery, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia. Clinical data and surgical details were obtained from the electronic medical record system.

Data were collected from medical records and inpatient monitoring sheets, including demographic characteristics, presenting complaints, medical history, physical examination findings, vital signs, laboratory parameters (complete blood count, renal and liver function tests, electrolyte profile, coagulation profile, and urinalysis), and radiological assessments (penile ultrasonography). The diagnosis of ischemic priapism was established based on clinical findings and ultrasonographic evidence of reduced cavernosal arterial flow.

The clinical course of the disease and its management were presented consecutively, including initial conventional management, surgical, perioperative care, and postoperative carry out. The primary outcomes assessed were postoperative detumescence, complication rates, wound healing, and early erectile function based on the Erection Hardness Score (EHS). This case report was prepared in accordance with the CARE Guidelines. Patient data were anonymized, and written informed consent for publication was obtained. Ethical approval was by ethics committee of Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, with the ethical approval number KE/FK/0654/EC/2026. Informed consent was obtained from all subjects and/or their legal guardian(s).

RESULTS

A 58-year-old male presented with a one-month history of persistent painful penile erection. The erection was not associated with sexual stimulation, medication use, or trauma to the genital or perineal region. The patient had previously consulted a urologist at a secondary-level hospital and had undergone corporal aspiration two weeks prior; however, the symptoms subsequently recurred.

The patient had a medical history of arrhythmia and cardiomegaly, for which he was receiving ramipril and bisoprolol. He had previously undergone corpus cavernosum aspiration for priapism on November 11, 2022, at a private hospital in Magelang. He denied any prior history of hematuria, flank pain, passage of urinary stones, or purulent urination. There was no history of trauma or hematologic disorders.

The patient was conscious and oriented (compos mentis). Vital signs on admission were as follows: blood pressure 122/72 mmHg, heart rate 101 beats per minute, respiratory rate 20 breaths per minute, and body temperature 36.7 °C. Urological examination revealed no bulging or tenderness at the costovertebral angles or suprapubic region. On external genital examination, the penis was fully erect with an Erection Hardness Score (EHS) of 4 and a Visual Analog Scale (VAS) pain score of 3–4. There were no changes in penile coloration or sensory

deficits. A 10-Fr indwelling Foley catheter was in place at the external urethral meatus, with a urine output of 1,500 mL over 24 hours, clear yellow in appearance.

Figure 1. Preoperative Clinical Photograph

Preoperative laboratory evaluation revealed a leukocyte count of 9.52 × 10^3/µL, hemoglobin level of 15.9 g/dL, platelet count of 245 × 10^3/µL, blood urea of 20.30 mg/dL, serum creatinine of 1.0 mg/dL, sodium level of 131 mmol/L, potassium level of 4.17 mmol/L, and chloride level of 98 mmol/L. Coagulation and liver function profiles were within normal limits. Urinalysis showed a pH of 5.5, specific gravity of 1.015, erythrocytes 52.6/µL, leukocytes 284/µL, and bacteria 4,428.6/µL. The patient was subsequently scheduled for penile ultrasonography.

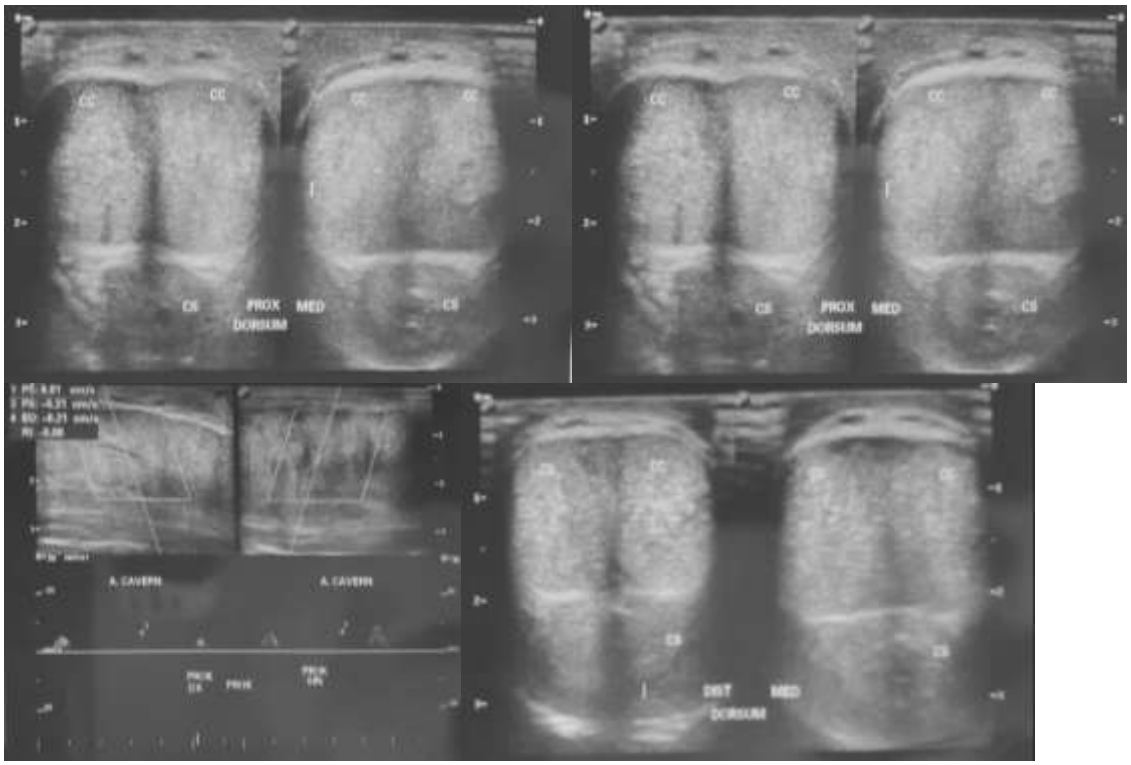

Figure 2. Penile Ultrasonography.

Penile ultrasonography demonstrated reduced penile vascular flow with decreased peak systolic velocity of the cavernosal arteries, supporting a diagnosis of low-flow priapism. The

patient was diagnosed with ischemic (low-flow) priapism. An attempted cavernosal aspiration via the bulbar cavernosum was unsuccessful due to presumed intracavernosal blood clotting. Consequently, the patient was scheduled for an open distal shunt procedure using the Al-Ghorab (corporoglandular) shunt technique. The operative steps are described as follows.

Al-Ghorab Shunt Procedure

The patient was placed in the supine position and underwent general anesthesia with prophylactic antibiotic administration, including cefazolin. A temporary tourniquet was applied to the proximal shaft of the penis to control bleeding and facilitate visualization during glans incision. A 1-cm transverse incision was made on the glans penis, approximately 1 cm from the dorsal coronal margin. The cavernosal tissue of the glans was retracted and secured using 2-0 sutures or Kocher clamps. Bilateral sharp excision of a 5-mm circular conical segment of the tunica albuginea was then performed to create a corporoglandular shunt (Al-Ghorab shunt). Dark, deoxygenated blood was observed during shunt creation and was noted to drain poorly due to tissue edema. Blood evacuation was continued until a change in blood color and consistency was achieved. Dilator insertion and manual compression were performed three times until complete detumescence was observed. The glans skin was then closed using 3-0 chromic sutures. A urethral catheter was inserted and secured to the patient's thigh. Wound closure and dressing were applied lightly without excessive compression.

Figure 3. Postoperative Clinical Photograph.

The duration of the Al-Ghorab shunt procedure was 120 minutes. Postoperatively, the patient was admitted to a non-intensive care ward, where repeat laboratory evaluations were performed, and close monitoring of general condition, vital signs, bleeding, and signs of subcutaneous emphysema was conducted. Postoperative medications included intravenous ceftriaxone 1 gram every 12 hours and intravenous paracetamol 1 gram every 8 hours as antibiotic prophylaxis and analgesia. Wound care was performed every two days at the

operative site. The patient was able to achieve erectile function on postoperative day one, with an Erection Hardness Score (EHS) of 1, and was discharged on postoperative day five without complications.

Figure 4. Postoperative Day-1.

The patient returned for outpatient follow-up on postoperative day twelve. The postoperative wounds on the glans and ventral aspects of the penis appeared dry and showed no signs of infection. Antibiotics were administered during the inpatient postoperative period and were continued for an additional seven days at home. The urethral catheter was maintained for patient comfort and to facilitate hygiene at the operative site.

Figure 5. Postoperative Day-2 - 5.

Figure 6. Postoperative Day-12.

DISCUSSION

Ischemic priapism represents a true urological emergency in which delayed intervention directly correlates with irreversible structural and functional damage (Gorczyca et al., 2024; Grande et al., 2026). The nowdays case highlights an extreme presentation, with a 1 month lenght of low-flow priapism—far damned the greatly accepted therapeutic window of 24– 48 hours. Prolonged hypoxia, hypercapnia, and acidosis within the corpora cavernosa initiate smooth muscle necrosis, endothelial dysfunction, and subsequent corporal fibrosis, happened at the cellular level. These pathophysiological changes explain the markedly mitiged efficacy of traditional measures in longstanding cases and the high likelihood of persistent erectile dysfunction although successful detumescence.

Compared with the literature which exists, this case strengthen the well-established time-dependent reject in therapy success (Holzman, 2023; Lindsay et al., 2025; Pang et al., 2025; Pozzi et al., 2026). Intracavernosal aspiration and injection therapy prove the optimal outcomes when performed early, but their efficacy reduction significantly with delayed presentation. In contrast, distal shunting procedures, including the Al-Ghorab technique, remain a vibrant salvage option for refractory or longstanding ischemic priapism. Reported success rates of 70%–74% for the Al-Ghorab shunt are consistent with the outcome observed in this case in penile detumescence. However, it is important to critically recognize that "success" in these studies is frequently defined as determination of erection rather than sustainability of erectile function, which is frequently impaired with late presentations such as our case. This distinction is crucial when counseling patients and assess procedural result.

This case also emphasize the clinical urgency of ischemic priapism, which must be approved not only at the specialist level but also in primary and emergency care providers. Any erection durable longer than 4 hours should prompt quickly medical assessment and transfer.

Default to recognize priapism as an emergency can cause to critical delays, as demonstrated in this case, where longstanding duration likely describe gaps in early finding and timely transfer. Enhance emergency response protocols and upgrade access to urological services in regional centers may help alleviate delays and enhance the result.

However, this case related to the limited body of literature on longstanding ischemic priapism treated with an open distal shunt and emphasizes the critical benefit of early identification and treatment. It further serves as a warning that, in prolonged cases, the main therapeutic objective often shifts from functional concervation to anatomical solution, underscoring the devastating effect of the late treatment. Prospective attempt should focus on increasing early diagnosis, optimizing referral systems, and assess long-term functional result in same cases (Gannon et al., 2025; Ho et al., 2026).

Priapism is a rare situation typically by involuntary penile erection unconnected to sexual stimulation and is also assign as a longlasting erection lasting greater than 4 hours. Three types of priapism are recognized: low-flow (ischemic or veno-occlusive), high-flow (non-ischemic or arterial), and recurrent (stuttering) priapism (Salonia, Boeri, Capogrosso, Corona, Dinkelman-Smith, Falcone, Gul, et al., 2022). Priapism predominantly affects adults, with an incidence ranging from 0.34 to 1.5 per 100,000 person-years. In pediatric populations, low-flow priapism is most commonly associated with sickle cell anemia, whereas high-flow priapism is typically related to trauma. The incidence of priapism among patients with sickle cell anemia is reported to be 3.6% in children and 42% in adults (Bludorn & Thatcher, 2025; El-Achkar et al., 2026).

The majority of priapism cases are idiopathic in etiology. The most commonly identified causes include alcohol and drug abuse (20%), perineal trauma (14%), and sickle cell disease (11%) (Grande et al., 2026). The etiology of priapism varies according to its subtype. High-flow priapism is typically caused by trauma to the penis or perineum and may also result from the management of low-flow priapism through the creation of de novo fistulas during aspiration and sympathomimetic injections. In contrast, low-flow priapism has a broad range of etiologies, including idiopathic causes, adverse drug effects, metabolic disorders, infections, and malignancies (Table.1) (Alnajjar & Muneer, 2022). In the present case, the patient was a 58-year-old man with a history of cardiovascular disease receiving regular treatment with ramipril and bisoprolol and was diagnosed with idiopathic low-flow priapism.

Table 1. Etiology of Priapismus (Alnajjar & Muneer, 2022)

Etiology.	Example		
Idiopathic			
Hematologic, cardiovascular, and vascular disorders	• Sickle cell anemia • Thalassemia • Leukemia • Multiple myeloma • Olmsted hemoglobin variants	• Fat embolism during hyperalimentation • Hemodialysis • G6PD deficiency	• Factor V Leiden mutation • Vascular vasculitis
Infections	• Scorpion venom • Malaria	• Spider bites	• Rabies
Metabolic disorders	• Amyloidosis	• Fabry's disease	• Gout
Neurogenic disorders	• Syphilis • Spinal cord injury • Cauda equina syndrome	• Autonomic neuropathy • Lumbar disc herniation • Spinal stenosis	• Cerebrovascular accident • Brain tumors • Spinal anesthesia
Neoplasms	• Prostate • Urethra • Testis	• Urinary bladder • Rectum	• Lung • Kidney
Medications and substances	• Vasoactive erectile agents (papaverine, phentolamine, prostaglandin E1/alprostadil) • α-adrenergic receptor antagonists (prazosin, terazosin, doxazosin, tamsulosin) • Anxiolytics (hydroxyzine) • Anticoagulants (heparin, warfarin)	• Antidepressants and antipsychotics (trazodone, bupropion, fluoxetine, sertraline, lithium, clozapine, risperidone, olanzapine, chlorpromazine, thioridazine, phenothiazines, methylphenidate)	• Antihypertensives (hydralazine, guanethidine, propranolol) • Hormones (gonadotropin-releasing hormone, testosterone) • Psychoactive substances (alcohol, marijuana, cocaine)

The diagnostic approach to priapism begins with a thorough history taking focused on potential etiological factors, particularly a history of sickle cell disease and trauma to the pelvis, genital, or perineal regions (Mohan et al., 2025; Rajamohan et al., 2025). A sexual history should also be obtained, including the duration of erection, degree of pain, medication use, and any previous similar episodes (El-Achkar et al., 2026). Physical examination includes assessment of corporal rigidity and evaluation for signs of urogenital or pelvic malignancy. Advance diagnostic examination may cover laboratory investigations and imaging studies. Blood gas analysis is important for identify high-flow from low-flow priapism. Imaging

modalities include ultrasonography, Color Doppler ultrasonography, and magnetic resonance imaging (MRI). Color Doppler ultrasonography may become as an option to blood gas analysis, while MRI can be used to evaluate cavernosal tissue survival and the existence of fibrosis. Typical detection in low-flow priapism involved rigid corpora cavernosa, penile pain, abnormal blood gas analysis, stray hematologic abnormalities, and rare stray with perineal trauma (Salonia, Boeri, Capogrosso, Corona, Dinkelman-Smith, Falcone, Gul, et al., 2022; Wein et al., 2020a). The patient declare 1 month profile of persistent sore erection, and penile ultrasonography verify reduced cavernosal arterial flow with reduction peak systolic velocity, promote the diagnosis of low-flow priapism, in the present case (Grande et al., 2026).

Initial management of priapism includes physical exercise, ejaculation, application of ice packs, cold water bathing, and cold water enemas. Some cases may resolve spontaneously with analgesic therapy alone. When standard analgesics fail to relieve symptoms, local or systemic anesthesia may be administered, including dorsal nerve block, circumferential penile block, subcutaneous local penile shaft block, or oral sedation. Subsequent interventions include corporal aspiration and irrigation with 0.9% saline solution, with or without intracavernosal pharmacologic injections such as phenylephrine, etilefrine, methylene blue, adrenaline, and terbutaline. Priapism with a specific underlying etiology, such as sickle cell anemia, should be managed by treating the primary cause. In the present case, cavernosal aspiration via the bulbar cavernosum was attempted but was unsuccessful due to presumed intracavernosal blood clotting (Bludorn & Thatcher, 2025; El-Achkar et al., 2026; Fantus et al., 2023; Gannon et al., 2025; Salonia, Boeri, Capogrosso, Corona, Dinkelman-Smith, Falcone, & Verze, 2022; Wein et al., 2020).

Table 2. The Comparation of Winter, Ebbehoj, or T-shunt procedures (Fantus et al., 2023; Gannon et al., 2025).

Aspect	Winter Shunt	Ebbehoj Shunt	T-Shunt
Type of technique	A **percutaneous distal shunt** that creates communication between the glans penis and the corpora cavernosa without an open incision.	Also a **percutaneous distal shunt**, based on the same corporoglanular principle as the Winter shunt.	A **percutaneous distal shunt** designed to create a larger distal drainage tract than the classic percutaneous techniques.
Main instrument	A **large-bore needle**, usually **≥18G** or a biopsy needle such as a **Trucut** or **Biopty gun**.	A **No. 11 blade**.	A **No. 10 blade**.
Basic principle	A needle is passed through the glans into the corpus cavernosum to create a	The principle is similar to that of the Winter shunt, but the tract is created	The same general principle is used, but the blade is rotated **90° away from the urethra** to create a **T-shaped**

	channel for evacuation of ischemic blood.	with a blade rather than a needle.	**incision**, resulting in a wider drainage tract.
Technical maneuver	The puncture is directed dorsally or laterally to reduce the risk of urethral injury; multiple punctures may be made if needed.	The technique is essentially similar to the Winter shunt, with the main difference being the instrument used.	The blade is inserted parallel to the urethra and then rotated 90° laterally, away from the urethra, to form the T-shaped opening.
Size of opening / drainage	Produces a relatively small opening, so drainage may be limited and early re-occlusion can occur.	Like the Winter shunt, it is considered a **small shunt**, and therefore may also be prone to inadequate drainage or early occlusion.	Produces a larger opening, allowing more effective drainage than the classic small-shunt techniques.
If detumescence is not achieved	The procedure may be repeated on the contralateral side; bilateral treatment is not mandatory if unilateral shunting is sufficient.	If minor skin oozing persists, simple closure with a **figure-of-eight suture** may be performed.	It may be started unilaterally and then repeated contralaterally if needed; **tunneling** may be added when drainage remains inadequate.
Procedure setting	Can be performed at the bedside under local anesthesia.	A minimally invasive percutaneous technique that does not require an open incision.	May be performed under local anesthesia or in the operating room, depending on the clinical setting.
Reported success rate	In adults, reported success is relatively low, around **14–26%**.	No separate success rate was specifically reported in the uploaded sources, but it is grouped among distal percutaneous shunts, whose overall efficacy is better in episodes lasting **<48 hours**.	Reported success is higher, around **80–94%**, particularly when combined with **tunneling**.
Effect of priapism duration	Less effective in prolonged priapism because the small drainage tract may be insufficient.	Similarly affected by prolonged ischemic episodes, especially when the burden of trapped ischemic blood is greater.	Performance is generally better, but success still declines in episodes lasting **>48 hours**.
Advantages	Simple, quick, easy to perform, and generally associated with minimal complications.	Still relatively simple, while providing a slightly better opening than a needle-based shunt.	Provides more effective drainage and can be combined with additional maneuvers such as tunneling when needed.

Limitations	Limited efficacy in adults and a relatively frequent need for further intervention.	Still carries a risk of failure because the opening remains relatively small.	Outcome remains strongly influenced by the duration of ischemia.
Complications / notes	Complications are generally minimal.	Minor oozing may occur but is usually easy to control; the main concern is limited shunt patency.	Overall complication rates are reported to be low, although the risk of erectile dysfunction increases with prolonged priapism duration.

When conservative management fails to achieve sustained resolution, surgical intervention is indicated. In low-flow priapism, the primary therapeutic goal is to relieve the compartment syndrome within the penis and restore arterial blood flow to the corpora cavernosa. Shunt procedures may be employed to resolve static blood stasis within the corpora cavernosa and re-establish oxygenated circulation (Asmundo & Russo, 2024). Shunt techniques are classified according to their anatomical location (distal vs. proximal) and surgical approach (percutaneous vs. open). In the present case, an Al-Ghorab shunt was performed, which is an open distal shunt procedure (Figure 7). The Al-Ghorab shunt is created by forming a corporoglandular fistula. This technique is considered a first- or second-line shunt option when percutaneous distal shunts, including the Winter, Ebbehoj, or T-shunt procedures, have failed (Table 2). Inadequate fistula size between the corpora cavernosa and the spongiosal tissue of the glans is a common cause of failure in percutaneous distal shunt procedures. The Al-Ghorab shunt provides direct visualization through an open approach, allowing for the creation of a definitive and appropriately sized glans–cavernosal shunt (Adams & Evans, 2022; Alghalyini et al., 2024; Gannon et al., 2025)

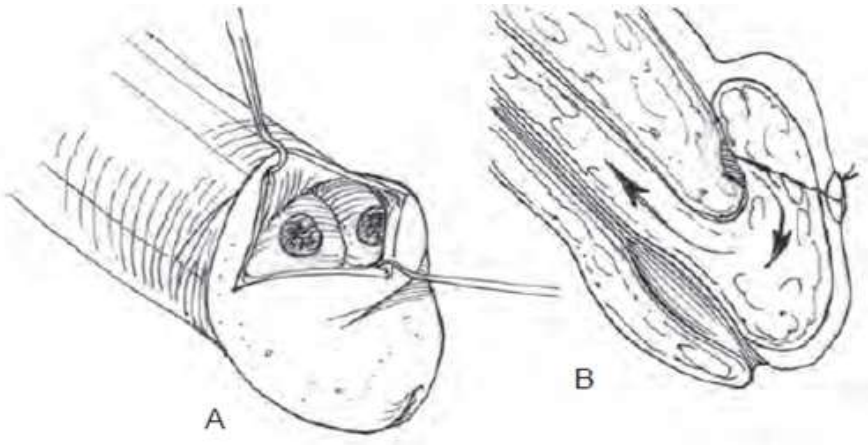

Figure 7. Open Distal Shunt Using the Al-Ghorab Shunt Procedure (Gannon et al., 2025).

Postoperatively, patients are hospitalized at least until the wound dressing is removed, with removal of the urethral catheter on the second postoperative day. Nursing staff should assess the external appearance and sensory function every four hours during the first 24 hours. Potential complications include wound infection, cavernosal infection, penile skin necrosis,

urethrocavernous fistula, urethral stricture, and erectile dysfunction. During hospitalization, antithrombotic prophylaxis with low–molecular weight heparin may be initiated four hours after surgery, and oral antibiotics are typically continued for seven days (Adams & Evans, 2022; Alghalyini et al., 2024; Bivalacqua et al., 2021; El-Achkar et al., 2026) In the present case, the patient received postoperative paracetamol and intravenous ceftriaxone 1 g every 12 hours and was discharged after five days.

CONCLUSIONS

Surgical intervention may be indicated in cases of priapism that do not achieve permanent resolution with conservative management, including aspiration, irrigation, and pharmacologic injection. The Al-Ghorab shunt, an open distal shunt procedure, carries potential postoperative complications such as wound infection, cavernosal infection, penile skin necrosis, urethrocavernous fistula, urethral stricture, and erectile dysfunction. The choice of surgical approach may vary according to individual surgeon preference. However, based on considerations of success rates and potential adverse effects, the Al-Ghorab shunt may be considered a first- or second-line option following unsuccessful percutaneous distal shunt procedures.

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