Cowper's Duct Syringocele Mimicking Prostatic Obstruction: A Case Report

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KEYWORDS
Cowper's duct syringocele, lower urinary tract symptoms, cystoscopy, deroofing, urethral anomaly.

ABSTRACT
Introduction: Cowper's glands, also known as bulbourethral glands, were first described by French surgeon Jean Mery in 1684 and later detailed by William Cowper in 1699. Cowper's duct syringocele, a rare condition involving cystic dilatation of Cowper's gland, can mimic symptoms of prostatic obstruction, posing diagnostic challenges. Common presentations include lower urinary tract symptoms (LUTS) such as urgency, weak stream, and incomplete emptying, often leading to misdiagnosis as benign prostatic hyperplasia (BPH). Accurate diagnosis involves imaging studies like transrectal ultrasound (TRUS) and magnetic resonance imaging (MRI), along with retrograde urethrography and cystourethroscopy. Management varies from conservative measures to surgical intervention, depending on symptom severity. Case Presentation: A 36-year-old male presented with urinary obstruction symptoms, reporting a poor stream and straining to urinate over three months, with exacerbation characterized by incomplete voiding. No hematuria, UTIs, or urolithiasis history was noted. Examination was largely unremarkable, except for a flat prostate on per rectal examination. Uroflowmetry indicated a maximum flow rate (Qmax) of 15 ml/sec with an interrupted pattern. MRI revealed a cystic lesion in the posterior urethra, raising suspicion for Cowper's duct syringocele. Diagnostic cystoscopy confirmed the cystic dilatation, which was deroofed using monopolar energy. The patient's recovery was uneventful, with follow-up uroflowmetry showing significant improvement, with a Qmax of 27 ml/sec. Discussion: This case underscores the importance of considering Cowper's duct syringocele in the differential diagnosis of LUTS, especially in patients with atypical presentations. The diagnostic approach included uroflowmetry, MRI, and cystoscopy, which confirmed the cystic lesion. Management involved transurethral deroofing, leading to symptom resolution and improved urinary flow. Early recognition and intervention are crucial for favorable outcomes. Literature highlights the role of imaging and endoscopic techniques in diagnosing and managing this rare condition, emphasizing the need for interdisciplinary collaboration in complex urological cases. Conclusion: This case emphasizes the need for considering Cowper's duct syringocele in patients with LUTS to avoid misdiagnosis and inappropriate management. Accurate diagnosis through a combination of uroflowmetry, imaging, and cystoscopy, followed by appropriate surgical intervention, can significantly improve patient outcomes. The case underscores the efficacy of endoscopic techniques and the importance of interdisciplinary collaboration in optimizing care for patients with rare urological conditions.

1. Introduction

The pair of small glands referred to as Cowper's glands, named in honor of William Cowper who provided a comprehensive account of the gland in 1699, though they were initially identified by French surgeon Jean Mery in 1684. These glands are alternatively known as bulbourethral glands (1) (2). The first description of Cowper's syringocele was provided by Fenwick. The cystic dilatation of Cowper's gland is referred to as Cowper's syringocele. These glands' secretions are a part of the seminal fluid, which lubricates the male urethra when arousal occurs (3). Cowper's duct syringocele is a rare but significant condition that can mimic symptoms of prostatic obstruction, leading to diagnostic challenges and potential mismanagement

The normal presentation of cowper's duct syringocele is LUTS, which includes urgency, hesitation, incomplete emptying, weak stream, and frequency of urination. Many times, these symptoms might be confused with those of prostatic blockage, including benign prostatic hyperplasia (BPH). Patients may also occasionally have hematuria, recurrent urinary tract infections (UTIs), and post-void dribbling. A comprehensive clinical assessment is crucial since Cowper's duct syringocele and prostatic pathology have similar symptoms.

Accurate diagnosis of Cowper's duct syringocele requires a combination of imaging studies and specialized procedures. Transrectal ultrasound (TRUS) and magnetic resonance imaging (MRI) are valuable tools for visualizing the cystic dilatation of Cowper's duct. Additionally, retrograde urethrography and cystourethroscopy play pivotal roles in confirming the diagnosis by directly visualizing the cystic lesion within the Cowper's duct orifice. (4)

The management of Cowper's duct syringocele depends on the severity of symptoms and the presence of

complications. Conservative measures, such as watchful waiting and symptomatic management with alpha-blockers or anticholinergic medications, may suffice for mild cases. However, symptomatic or complicated syringoceles may necessitate surgical intervention. Endoscopic techniques, such as transurethral unroofing or marsupialization of the syringocele, have demonstrated favorable outcomes in relieving obstructive symptoms and preventing recurrent UTIs (5).

Recognizing Cowper's duct syringocele is crucial for avoiding misdiagnosis and inappropriate management. Failure to consider this condition may lead to unnecessary procedures, such as prostatectomy, which can exacerbate symptoms and compromise patient outcomes. Therefore, clinicians should maintain a high index of suspicion for Cowper's duct syringocele in patients with unexplained LUTS, particularly when conventional treatments for prostatic obstruction yield inadequate responses (6).

Cowper's duct syringocele represents a rare but clinically relevant entity that can masquerade as prostatic obstruction (7). This Study aims to elucidate the clinical presentation, diagnostic modalities, management strategies, and the importance of recognizing Cowper's duct syringocele in patients presenting with lower urinary tract symptoms (LUTS). By raising awareness of this condition among healthcare providers, we can mitigate diagnostic delays, prevent unnecessary interventions, and improve the overall quality of patient care. Here, we present a case of a 36-year-old male with urinary complaints ultimately attributed to a Cowper's duct syringocele.

2. Case Presentation:

A 36-year-old male presenting with symptoms suggestive of urinary obstruction warrants a comprehensive evaluation to ascertain the underlying cause. The patient reported a gradual onset of poor stream and straining to pass urine over the past three months, with recent exacerbation characterized by incomplete voiding and decreased output for the past week. Notably, there was an absence of hematuria, urinary tract infections (UTIs), prior history of urolithiasis, or urological interventions. The patient's marital status and fatherhood status are pertinent for gathering relevant medical and social history.

Upon examination, findings were largely unremarkable, with a flat prostate noted on per rectal examination. Abdominal examination revealed no abnormalities, with the abdomen being soft and non-tender. Uroflowmetry was performed (Fig A), revealing a maximum flow rate (Qmax) of 15 ml/sec with an interrupted pattern, indicative of urinary flow obstruction. Subsequent MRI of the abdomen and pelvis (Fig B) unveiled a solitary, well-defined oval cystic lesion measuring 28x13x21mm in the posterior aspect of the urethra, raising suspicion for Cowper's duct syringocele (CDS).

Diagnostic cystoscopy, conducted under spinal anesthesia, confirmed the presence of a cystic dilatation in the ventral aspect of the bulbar urethra. Notably, manipulation of irrigation during the procedure demonstrated the dynamic nature of the cyst, with its prominence varying based on fluid flow (Fig C). Utilizing monopolar energy via a Collin's knife (Fig C), the cyst was effectively deroofed, addressing the obstructive pathology. Postoperatively, the patient experienced an uneventful recovery, with the Foley catheter removed after one week.

Follow-up uroflowmetry (Fig D) at three months demonstrated a notable improvement in urinary flow dynamics, characterized by a bell-shaped curve and a significantly increased Qmax of 27 ml/sec. These findings underscore the efficacy of the intervention in ameliorating the obstructive urinary symptoms associated with CDS. The comprehensive evaluation and management of the patient's urinary symptoms led to the successful identification and treatment of Cowper's duct syringocele. This case highlights the importance of considering rare entities in the differential diagnosis of lower urinary tract symptoms, facilitating timely intervention and improved patient outcomes.

Figure A: Analysis of Uroflowmetry in the Case Presentation

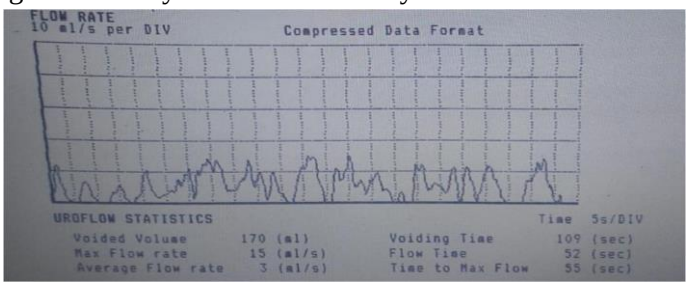


Figure B: MRI Findings - Solitary Cystic Lesion in the Posterior Urethra

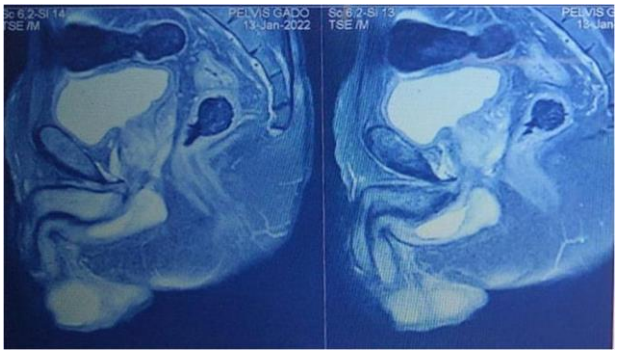


Figure C: Visualization of Cowper's Duct Syringocele via Cystoscopy

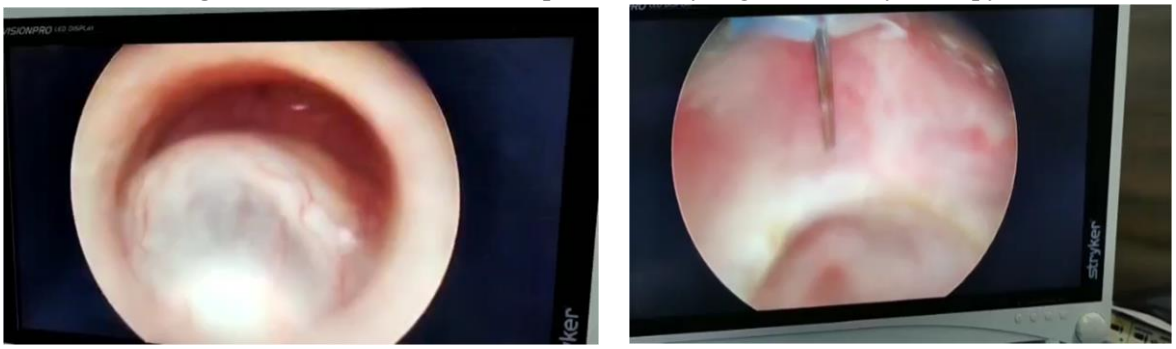
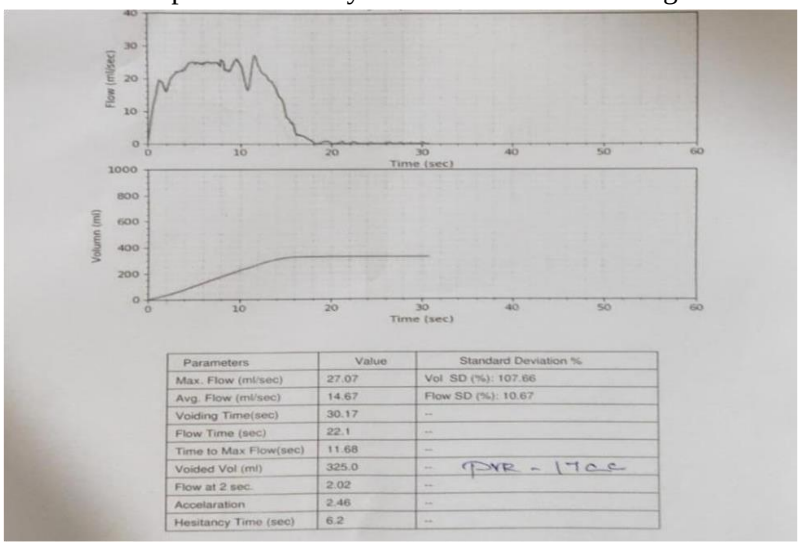


Figure D: Follow-up Uroflowmetry at 3 Months - Patient Progress Evaluation



3. Discussion:

The discussion of the presented case report involves an in-depth analysis of the diagnostic approach, differential diagnosis, management strategies, and clinical implications associated with Cowper's duct syringocele (CDS) as a rare cause of lower urinary tract symptoms (LUTS) in adult males.

The patient's clinical presentation is consistent with common manifestations of CDS, characterized by difficulties in urination, straining, incomplete voiding, and reduced urine output. These symptoms, while nonspecific, may resemble those of other urological disorders such as benign prostatic hyperplasia (BPH) or urethral strictures. Nonetheless, the absence of hematuria, recurrent urinary tract infections (UTIs), or prior urological procedures helped narrow down the possible diagnoses, leading to suspicion of an unusual etiology like CDS. This case corresponds to type 3 presentation (An imperforate syringocele that does not communicate with the urethra) as per the classification outlined in Table 1.

Table 1

Types Of Syringocele	
Type 1	**A Simple Syringocele With Mild Dilatation Of Duct**
Type 2	**A Perforated Syringocele With Dilated Distal Duct That Communicates With Bulbar Urethra With Patulous Ostium**
Type 3	**An Imperforate Syringocele That Does Not Communicate With Urethra**
Type 4	**A Ruptured Syringocele**

(Source: Cowpek's syringocele: a classification of dilatations of Cowper's gland duct based upon clinical characteristics of 8 boys. Maizels M, Stephens FD, King LR, Firlit CF. J Urol. 1938;129:111–114)

The diagnostic workup primarily relied on uroflowmetry and imaging studies, including MRI of the abdomen and pelvis. Uroflowmetry revealed a suboptimal flow pattern with a low maximum flow rate (Qmax), indicative of urinary obstruction. MRI demonstrated a well-defined cystic lesion in the posterior urethra, further supporting the diagnosis of CDS. These findings underscore the importance of a stepwise diagnostic approach, combining non-invasive studies with imaging modalities to elucidate the underlying pathology accurately. Furthermore, diagnostic cystoscopy played a pivotal role in confirming the presence of CDS and delineating its anatomical features. The dynamic nature of the cyst, observed during cystoscopy, wherein its prominence varied with irrigation manipulation, is a characteristic feature of CDS. This underscores the importance of real-time visualization techniques in diagnosing and characterizing urethral abnormalities.

The management of CDS typically involves surgical intervention, aimed at relieving urethral obstruction and preventing complications such as recurrent UTIs or urinary retention. In this case, transurethral deroofing of the cyst was performed successfully using monopolar energy, resulting in significant improvement in urinary flow dynamics postoperatively. The favorable outcome highlights the efficacy of endoscopic techniques in managing CDS-related LUTS and underscores the importance of individualized treatment strategies tailored to each patient's clinical presentation and anatomical considerations.

The successful resolution of symptoms postoperatively emphasizes the importance of early diagnosis and intervention in improving patient outcomes and quality of life. Additionally, the absence of significant complications or recurrence during the follow-up period underscores the safety and efficacy of the chosen management approach. Moreover, this case report underscores the importance of considering rare etiologies, such as CDS, in the differential diagnosis of LUTS, particularly in patients with atypical clinical presentations or refractory symptoms. It also highlights the significance of interdisciplinary collaboration between urologists, radiologists, and other healthcare providers in facilitating accurate diagnosis and optimal management of complex urological conditions.

The presented case report, serves as a critical exploration into the diagnostic and management complexities associated with Cowper's duct syringocele (CDS). This rare condition often eludes detection due to its infrequency and overlapping symptoms with prostatic obstruction. By integrating insights from various research studies, this discussion aims to provide a comprehensive understanding of CDS, emphasizing its clinical significance, diagnostic challenges, and therapeutic interventions.

Numerous studies have contributed valuable insights into the diverse clinical presentations, diagnostic modalities, and treatment approaches for CDS. For instance, the study titled "Cowper's syringocele: a classification of dilatations of Cowper's gland duct based upon clinical characteristics of 8 boys" offers a structured classification system for Cowper's syringoceles, facilitating a nuanced approach to diagnosis and management. By categorizing syringoceles into distinct groups based on clinical characteristics, this classification system enhances diagnostic accuracy and guides tailored treatment strategies. (8)

Furthermore, studies such as "Cowper's gland duct cyst in an adult male: Radiological and clinical aspects" (9) and "Cowper's syringocele: symptoms, classification and treatment of an unappreciated problem" (10) provide valuable insights into the diagnostic challenges associated with CDS. These studies highlight the importance of considering CDS in the differential diagnosis of lower urinary tract symptoms, particularly in young males, and underscore the significance of interdisciplinary collaboration in optimizing patient care.

Moreover, research investigations such as "Cowper's syringocele: an analysis of 15 consecutive cases" (11) and

"Cowper's syringocele: diagnosis based on MRI findings" (12) emphasize the role of advanced imaging modalities, such as MRI, in accurately diagnosing CDS. These studies underscore the importance of meticulous clinical evaluation and imaging techniques in delineating the anatomical features of CDS and guiding appropriate management strategies.

Additionally, studies focusing on therapeutic interventions for CDS, such as "A Case of Symptomatic Cowper's Syringocele in an Adult Male: Diagnosis and Management" (13) and "Transurethral Unroofing of a Symptomatic Imperforate Cowper's Syringocele in an Adult Male," (14) shed light on the successful management of symptomatic CDS in adult patients. These studies highlight the efficacy of endoscopic procedures, such as transurethral unroofing or marsupialization, in alleviating obstructive symptoms and improving patient outcomes.

Furthermore, the study titled "Cowper's duct ligation for treatment of dysuria associated with Cowper's syringocele treated previously with transurethral unroofing" presents an alternative management option for persistent symptoms post-transurethral unroofing. This study underscores the importance of individualized treatment approaches based on patient-specific factors, emphasizing the need for comprehensive evaluation and personalized care in the management of CDS. (15)

This discussion synthesizes evidence from various research studies to underscore the clinical significance of CDS and the challenges associated with its diagnosis and management. By integrating insights from multidisciplinary research, healthcare providers can enhance their understanding of CDS and optimize patient care through accurate diagnosis and tailored treatment approaches. Collaboration among urologists, radiologists, and other healthcare professionals is essential in navigating the complexities of CDS and improving patient outcomes and quality of life.

4. Conclusion:

The presented case highlights the importance of considering Cowper's duct syringocele (CDS) as a differential diagnosis in adult males presenting with lower urinary tract symptoms (LUTS). Through a systematic diagnostic approach involving uroflowmetry, imaging studies, and diagnostic cystoscopy, the underlying pathology was accurately identified, leading to targeted management. Transurethral deroofing of the cyst resulted in significant improvement in urinary flow dynamics and symptom resolution without notable complications. This case underscores the efficacy of endoscopic techniques in managing CDS-related LUTS and emphasizes the importance of interdisciplinary collaboration in optimizing patient care. Overall, timely recognition and intervention are crucial in achieving favorable outcomes and enhancing the quality of life for individuals affected by CDS.

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Conflict of Interest:

The authors declare no conflicts of interest.

Informed Consent:

Informed consent was obtained from patient for the publication of their case details and associated images.

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