



## Research Article

### A Rare Case of Umbilical Pilonidal Sinus

S.P. Gayathre , K.Lokeshwari & Abhinash\*

Government Stanley medical college, Chennai

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##### \*Corresponding author:

**Dr. Abhinash**

Government Stanley medical college,  
Chennai

#### ABSTRACT

The umbilical pilonidal sinus (UPS) is a rare condition that presents unique diagnostic challenges due to its uncommon nature. Unlike the more common pilonidal sinuses found near the buttocks, UPS can occur in various atypical locations, including the breast, spaces between fingers, armpit, and belly button. UPS is a relatively uncommon subtype, accounting for only about 0.6% of all pilonidal diseases. The diagnosis of UPS can be challenging, as it may not initially be suspected due to its rarity and unusual presentation. Clinicians must maintain a high index of suspicion, especially in patients with predisposing factors for pilonidal disease, such as being young, male, obese, hairy, and having poor skin hygiene. Although UPS is rare, awareness of this condition among healthcare providers is crucial for prompt diagnosis and appropriate management. Early recognition can help prevent complications and improve outcomes for patients with UPS. Further research is needed to better understand the pathogenesis and optimal management strategies for this rare but clinically important condition. Several risk factors for UPS overlap with those for pilonidal cysts in the buttock cleft, including being young, male, obese, hairy, and having poor skin hygiene. However, the presentation of UPS can differ, requiring a high index of suspicion for accurate diagnosis. We recently encountered a case involving a teenage boy with an umbilical pilonidal sinus that initially presented as a sinus near the belly button. Upon further investigation using imaging and surgical exploration, a hair-containing sinus was identified within the umbilicus. Increasing awareness of UPS among pediatric surgeons is essential for prompt diagnosis and treatment. This awareness can lead to quicker identification of the condition, potentially avoiding unnecessary imaging tests that may not provide conclusive results. Understanding the distinct features of UPS is crucial for its effective identification and management.

#### INTRODUCTION

Pilonidal sinus is a condition commonly seen in adolescents but can persist into adulthood. It causes significant discomfort and distress for patients due to chronic inflammation and the formation of sinus tracts. The disease is believed to occur when body hair becomes embedded in a subcutaneous cavity, leading to a granulomatous reaction over time. This condition has been well-documented and was first described by Mayo in 1833 as a cyst containing hair beneath the coccyx. While most cases of pilonidal disease (PD) are found in the sacrococcygeal region, there are rare instances, such as umbilical pilonidal sinus (UPS), where the disease occurs in unusual locations like the navel [1-4].

The occurrence of UPS is particularly rare, and it was initially described by Paty and Williams in 1956. Unlike the more common sacrococcygeal location, UPS presents unique challenges in diagnosis and treatment due to its unusual location and limited established treatment protocols. The existing literature on UPS management suggests that outcomes are relatively similar whether managed conservatively by hair extraction or through surgical intervention. In our case study, we present an uncommon case of UPS in a teenage male. The patient underwent surgical management involving umbilectomy, which is the surgical removal of the umbilicus, followed by recreation of the umbilical structure using sutures. This approach aimed to eliminate the pilonidal sinus and restore the cosmetic appearance of the umbilic-

us[5-7].

Surgical intervention for UPS typically involves complete excision of the affected tissue, including the sinus tracts and any embedded hair, followed by closure of the wound. In cases like this, where the umbilicus is involved, the surgical approach is more complex due to the anatomical considerations and the need to recreate a functional and aesthetically pleasing umbilicus post-operatively. The decision to perform umbilectomy followed by umbilical reconstruction using sutures is a specialized technique tailored to address the unique challenges posed by UPS. This approach not only aims to resolve the pilonidal disease but also ensures optimal cosmetic outcomes for the patient[5, 8-10].

The management of UPS requires a multidisciplinary approach involving surgeons experienced in pilonidal disease and plastic surgery to achieve the best possible results. Long-term follow-up and patient education are crucial components of care to monitor for recurrence and ensure patient satisfaction with the functional and cosmetic outcomes of the procedure. In summary, UPS is a rare variant of pilonidal disease that poses challenges in diagnosis and management. Surgical intervention, such as umbilectomy with reconstruction, represents a tailored approach to effectively treat UPS and restore normal anatomy and function for affected patients[11-15].

#### CASE PRESENTATION

A 20-year-old male presented to the clinic with a one-year history of recurrent pain and discharge from his umbilical region. Initially, he noticed a small painful swelling at the umbilicus which gradually developed into an ulcer with serous discharge that later became darker in color. He had managed these symptoms conservatively with oral medications but experienced repeated episodes of pain and discharge, which became more frequent over the past two months. During physical examination, the patient appeared hirsute and moderately built. There was no redness or local temperature elevation observed around the umbilical area, but tenderness was present upon palpation. Moderate serosanguinous discharge could be expressed from the umbilical sinus at the 12 o'clock and 8 o'clock positions. The remainder of his physical examination was unremarkable. This case presentation highlights a chronic and recurring issue involving an umbilical sinus, which likely represents an umbilical pilonidal sinus (UPS).

The patient's symptoms, including pain, discharge, and

tenderness, align with characteristic features of UPS, a rare variant of pilonidal disease occurring at the umbilicus. The presence of hirsutism and the pattern of discharge from specific positions within the umbilicus further support this diagnosis.

Further evaluation and management, potentially including imaging studies or surgical intervention, may be warranted to definitively diagnose and treat this condition. UPS poses unique challenges compared to traditional pilonidal disease due to its location, and tailored treatment strategies such as surgical excision and reconstruction may be necessary for resolution and prevention of recurrence.

#### INVESTIGATIONS

The patient underwent an abdominal ultrasound to investigate various potential pathologies, including a patent urachus, urachal cyst, omphalitis, and persistent omphalomesenteric duct, due to ongoing concerns about recurrent discharge from the umbilical region. The ultrasound revealed a distinct, 13 x 8 mm heteroechoic (mixed echogenicity) lesion located in the subcutaneous layer of the umbilicus. Importantly, the imaging did not show evidence of a urachal cyst or other subcutaneous processes, nor did it identify a hernia. Despite the ultrasound findings, the diagnosis remained unclear, prompting further investigation. Given the persistent seropurulent discharge from the umbilical region, the consulting medical team proceeded to conduct a CT Sinogram specifically targeting the umbilical sinus. This specialized imaging technique involves introducing contrast material into the umbilical sinus to visualize its passage. The CT Sinogram revealed focal pooling of contrast material within the umbilicus, indicating an abnormality within the umbilical sinus. Notably, there was no observed passage of contrast into the peritoneal cavity, which helped rule out certain conditions such as a patent urachus.

In response to these findings, the patient was started on oral antibiotics to address the ongoing discharge and potential underlying infection in the umbilical region. The use of antibiotics aims to control infection and reduce symptoms while further diagnostic and treatment plans are formulated. The combination of ultrasound and CT Sinogram imaging provides valuable insights into the nature and location of the umbilical sinus abnormality, narrowing down potential differential diagnoses and guiding appropriate management strategies. Ongoing monitoring and additional investigations may be necessary to achieve a definitive diagnosis and implement targeted therapeutic interventions for the patient's condition.

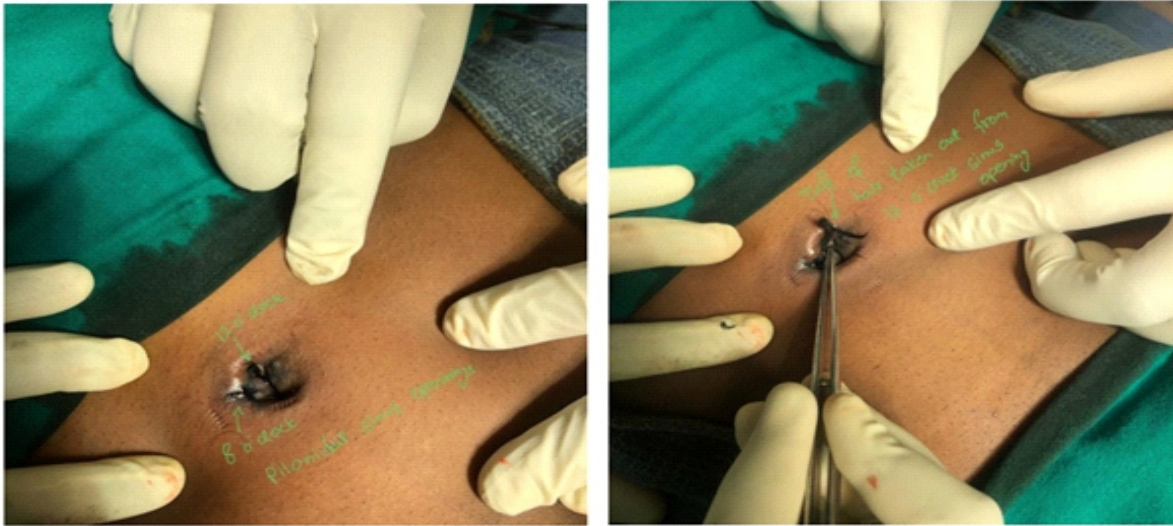


Figure 1: Umbilical pilonidal sinus

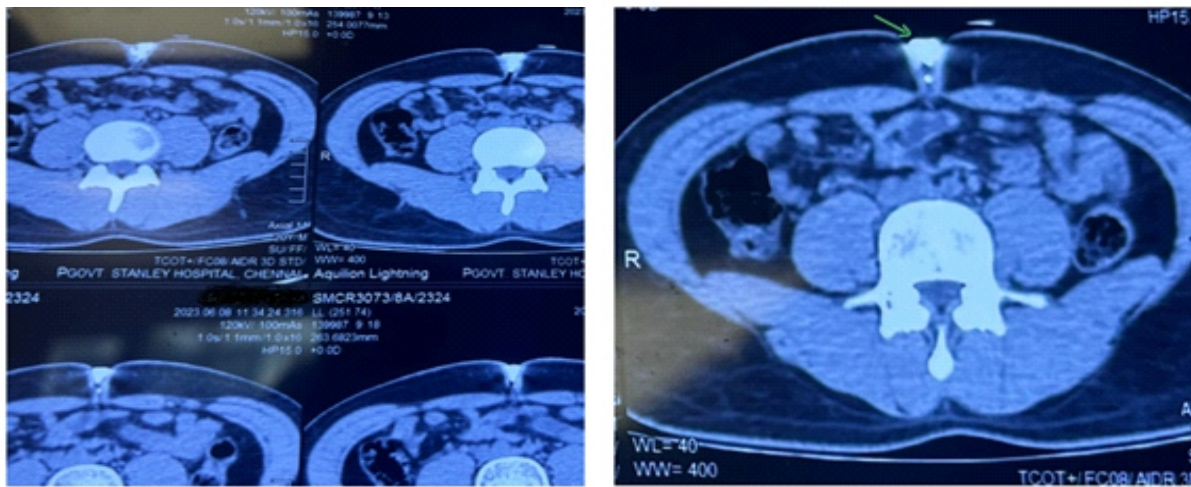


Figure 2: CT-Sinogram of umbilical sinus, showing focal pooling of contrast in umbilicus



Figure 3: Surgical exploration and excision of the presumed umbilical granuloma. Serosanguinous fluid and matted hair were found.

## MANAGEMENT

Due to the persistent and non-resolving nature of the symptoms despite conservative management, the patient underwent surgical exploration and excision of the presumed umbilical granuloma. During the intraoperative examination, the umbilicus was everted with traction to facilitate thorough inspection.

Multiple sinus openings were identified around the umbilicus at the 7 o'clock, 8 o'clock, 10 o'clock, and 12 o'clock positions. Probing of the sinus opening at the 12 o'clock position revealed a tract extending approximately 2 cm, containing serosanguinous fluid and matted hair. This finding suggested a communication between the tract and the patient's subcutaneous tissue. Upon further extension of the tract, a substantial amount of matted hair was encountered, indicating the presence of a pilonidal sinus. Given the presence of multiple sinus openings and the likelihood of recurrence if only individual tracts were addressed, the surgical team proceeded with umbilectomy. Umbilectomy involves the complete surgical excision of the umbilicus to remove the affected tissue and sinus tracts associated with the pilonidal disease.

The decision to perform umbilectomy was driven by the need to comprehensively address the complex sinus tracts and matted hair within the umbilical region to minimize the risk of recurrence. By removing the entire umbilicus and associated affected tissue, the surgical team aimed to achieve complete resolution of the underlying condition and promote optimal healing. Postoperatively, the patient would require meticulous wound care and follow-up to monitor for healing and assess for any signs of recurrence. The surgical intervention undertaken underscores the challenges and complexities involved in managing umbilical pilonidal sinus, necessitating tailored surgical approaches to achieve successful outcomes and prevent future complications.

## DISCUSSION

The first recorded case of an umbilical pilonidal sinus (UPS) was reported in 1956, and since then, fewer than 300 cases have been documented, making it a rare condition, particularly in children. The umbilicus, which serves as a critical point of entry and exit for various systems in fetal development, is susceptible to several disorders due to its high traffic nature. These include common issues like umbilical hernia, urachal cysts, Meckel's diverticulum, and umbilical granulomas, along with lesser-known conditions like UPS [16-18].

Among pediatric umbilical disorders, umbilical hernia is the most prevalent, affecting over ten percent of newborns in the United States. Surgical intervention is often required if the hernia doesn't resolve naturally by school age. Umbilical granulomas, the second most frequent issue, typically occur after the umbilical cord is severed and affect about 1 in 500 children. They are commonly treated with silver nitrate and generally don't necessitate surgery if they're smaller than 1 cm [19,20].

Persistent omphalomesenteric ducts, occurring in about two percent of individuals, and urachal remnants or patent urachus

(found in about 1 in 5000 births) can also resemble UPS, often requiring surgical intervention if symptomatic. Additionally, umbilical cysts and polyps can present similarly, sometimes leading to persistent drainage. The formation of an umbilical pilonidal sinus involves a foreign body reaction, often triggered by hair. Friction and subsequent inflammation cause the foreign body to become trapped, forming a sinus. UPS, although rare and less explored in the US pediatric population, represents only 0.6% of all pilonidal sinuses annually [21,22].

Risk factors for developing UPS are similar to those for gluteal cleft pilonidal sinuses, including obesity, young age, male sex, poor hygiene, and familial predisposition. Treatment approaches range from nonoperative methods such as hair removal and improved hygiene to surgical excision techniques, although no consensus exists on the optimal approach. In a case study, a patient with UPS underwent umbilectomy due to multiple sinus openings, reducing the likelihood of recurrence. Another patient underwent complete sinus excision with umbilical reconstruction, resulting in no recurrence and excellent cosmetic outcomes at a one-year follow-up [23-25].

Research on laser hair removal for preventing pilonidal sinus recurrence suggests promising outcomes compared to traditional methods like razor depilation. Laser depilation, using specific light wavelengths to thermally damage hair follicles, offers a customizable approach tailored to patients' skin and hair type. While laser hair removal's role in treating UPS isn't standardized, studies on gluteal pilonidal disease support its use as an adjunct to surgical treatment. Ongoing trials are exploring laser hair removal's utility postoperatively for preventing gluteal pilonidal disease recurrence [14,15, 26].

## CONCLUSION

This report highlights a case of umbilical pilonidal sinus treated with umbilectomy. Given the rarity of umbilical pilonidal sinus, it's crucial to maintain a high level of clinical suspicion in the outpatient pediatric surgical setting to ensure timely diagnosis and avoid unnecessary imaging studies. According to level I evidence from a double-blind randomized controlled trial, the literature emphasizes that the preferred treatment for optimal cosmetic outcomes and minimal risk of recurrence in managing umbilical pilonidal sinus involves a surgical approach akin to the GIPS (Gluteal Interdigital Pilonidal Sinus) technique. This underscores the importance of a surgical intervention tailored specifically to address UPS, guided by evidence-based practices for achieving the best possible results with low rates of recurrence.

## CONFLICTS OF INTEREST

Authors declared that there is no conflict of interest.

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## ETHICS APPROVAL AND CONSENT TO PARTICIP-

**-ATE**

All necessary consent & approval was obtained by authors.

**CONSENT FOR PUBLICATION**

All necessary consent for publication was obtained by authors.

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