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Chronic Irritation to Malignancy: A Case of Squamous Cell Carcinoma of The Suprapubic Catheter Tract Extending into Bladder in A 46-Year-Old Man.

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ABSTRACT

Background: Squamous cell carcinoma (SCC) of the suprapubic cystostomy (SPC) tract is a rare but serious complication of long-term catheterization. Chronic irritation, recurrent infections, and metaplastic changes contribute to its pathogenesis. While SCC of the bladder is well-documented, neoplastic transformation at the SPC site remains uncommon, with limited cases reported in the literature.

Case Presentation: A 46-year-old man with a history of traumatic urethral stricture and long-term suprapubic catheterization presented with a non-healing ulcer, hematuria, and foul-smelling discharge at the catheter site. Examination revealed an ulcerated mass, and imaging confirmed local tumor invasion with left-sided hydronephrosis but no distant metastasis. Histopathology confirmed well-differentiated SCC. The patient underwent primary radiotherapy (65 Gy in 35 fractions), leading to near-complete tumor resolution.

Conclusion: This case highlights the need for vigilance in patients with chronic SPC use who present with persistent ulcerative lesions. Primary radiotherapy may be a viable treatment option. Close surveillance remains crucial to monitor for recurrence.

KEYWORDS

Suprapubic cystostomy, Squamous cell catheter, Metaplasia, Chronic irritation.

INTRODUCTION

Squamous cell carcinoma (SCC) of the suprapubic cystostomy (SPC) tract is an uncommon but clinically significant complication associated with long-term indwelling catheters.¹ Chronic irritation, recurrent infections, and metaplastic changes in the urothelial and peri-catheter tissues have been implicated in the pathogenesis of this malignancy.^{2,3}

The first documented case of SPC-associated SCC was reported by Stroumbakis et al in 1993.⁴ Since then, fewer than 20 cases have been described, predominantly in patients with paraplegia or urethral stricture requiring chronic catheterization.⁴ While SCC of the urinary tract has been extensively studied in the context of chronic inflammation, its occurrence at SPC sites remains rare, and no clear guidelines exist for screening or management.^{1,5}

Squamous cell carcinoma (SCC) of the bladder is an uncommon malignancy, comprising approximately 2–5% of all bladder cancers in developed countries.⁵ However, its incidence is notably higher in regions where schistosomiasis, a parasitic infection caused by Schistosoma haematobium, is endemic.⁶ In parts of Africa and the Middle East, SCC can account for up to 75% of bladder cancer cases, highlighting the strong association between chronic inflammation and malignant transformation.⁷

Here, we present a case of SCC arising from a longstanding SPC tract, emphasizing the diagnostic challenges, histopathological findings, and therapeutic considerations. This case highlights the necessity of

maintaining a high index of suspicion in patients with chronic suprapubic catheterization and persistent ulcerative or proliferative lesions at the catheter site.

CASE PRESENTATION

A 46-year-old man presented at the Urology Outpatient Clinic with a two-month history of a non-healing ulcer and a mass at the suprapubic catheter site, accompanied by hematuria, necroturia, persistent discomfort, and foul-smelling discharge. His medical history included multiple failed urethroplasties for traumatic urethral stricture, necessitating long-term suprapubic catheterization (SPC) with a latex catheter for over a decade.

Physical examination revealed a 5×4×2 cm ulcerated mass at the catheter site (Fig 1). He was, however, referred to Accident and Emergency for urgent psychiatric review by the psychiatrist for suicidal intention vocalized by the patient. Further laboratory evaluation revealed a PCV of 28% and leukocytosis. Urinalysis revealed the presence of red blood cells and leukocytes. Urine M/C/S was positive for urine culture. Urine cytology was not done. Abdominopelvic Magnetic Resonance Imaging (MRI) showed tumor extension from the bladder wall to the abdominal wall, with ureteral involvement, but no evidence of nodal or distant metastasis (Fig 2a). An abdominopelvic Computerized Tomography scan showed left-sided hydronephrosis (Fig 2b). Histopathological analysis of the biopsy specimen confirmed well-differentiated squamous cell carcinoma (Fig 3).



Figure 1: showing an ulcerated mass at the catheter size measuring 5x4x2 cm.



Figure 2a: Abdominopelvic Magnetic Resonance Imaging showing mass extending from the skin and anterior abdominal wall into the bladder. Note the catheter balloon.



Figure 2b: Abdominopelvic Computerized Tomography scan showing left-sided hydronephrosis.



Figure 3: photomicrograph showing the malignant squamous cells in nests with central areas of keratin pearl formation and desmoplasia of the surrounding stroma at high power (H&E x 200).

A multidisciplinary team opted for primary radiotherapy as the modality of treatment. The patient underwent 35 sessions of radiotherapy, receiving a total dose of 65 Gy over 52 days (15th April to 5th June, 2024). The treatment was administered in two phases. This resulted in the near-complete resolution of the mass (Fig 4a, b). The patient remains under close surveillance, with scheduled follow-up imaging and possible suprapubic cystoscopy to monitor for recurrence.



Figure 4a: Resolution of SCC of Suprapubic Catheter Tract Post radiotherapy.



Figure 4b: MRI post radiotherapy showing resolved Left-sided Hydronephrosis.

DISCUSSION

Squamous cell carcinoma (SCC) arising from a suprapubic cystostomy (SPC) tract is an exceptionally rare complication associated with long-term catheterization.¹ Due to its rarity, there are no standardized treatment guidelines specifically tailored for SCC at the SPC site. The first ever case of SCC of the suprapubic cystostomy tract after a urethral stricture was published in 1993 by Stroumbakis et al.⁴ Since then there has been about 15

other cases reported with or without bladder involvement summarized in Table 1.

A review of previously reported cases (Table 1) shows that SCC of the SPC tract primarily affects older males (ages 34–88 years), most of whom had a history of paraplegia or urethral stricture necessitating prolonged catheterization^{5,1}. Chronic irritation, recurrent infections, and persistent foreign body exposure are widely accepted as major risk factors.^{2,6} In our case, the

patient was 46 years old with over a decade of SPC use, likely leading to malignant transformation. Unlike some previous cases where SCC remained localized to the SPC tract, our patient presented with tumor invasion into the bladder, anterior abdominal wall, and ureter, leading to hydronephrosis.

Most reported cases developed SCC after 5–38 years of catheter use, reinforcing the link between prolonged irritation and carcinogenesis^{3,7}. However, some studies have documented aggressive tumor formation within just 3–9 months, highlighting the potential for rapid malignant transformation even with short-term catheterization⁶ More than half of the cases in Table 1 (10 out of 16) reported bladder involvement, supporting the hypothesis that SCC may originate within the bladder before spreading externally to the SPC tract⁶. Similar to prior reports, our case was diagnosed at an advanced stage (T4), reflecting delayed recognition due to

nonspecific symptoms such as ulceration, hematuria, and discharge.⁷

Due to the absence of standardized treatment guidelines, management of SPC-associated SCC varies widely. Surgical resection (including radical cystectomy, wide local excision, and pelvic lymphadenectomy) is frequently performed but often with palliative intent due to late-stage diagnosis³. Some patients who declined aggressive treatment or had metastatic disease, such as those in Manzo-Perez et al. (2012) and Massaro et al. (2014), were managed with palliative care.⁵ Radiotherapy was primarily used when surgery was not feasible. In our case, the patient underwent definitive radiotherapy (65 Gy in 35 fractions), leading to nearcomplete tumor resolution. This supports the efficacy of radiotherapy as a primary treatment modality, particularly for patients who are not surgical candidates or wish to preserve bladder function.

| TABLE 1: Reported literatures on | Squamous cell ca | rcinoma from Su | prapubic cystostomy tract |
|---|------------------|-----------------|---------------------------|
| | | | |

| Year of Publication | Study | Age (years) | Indication for SPC | Duration of SPC (years) | Bladder involvement | Tumor Stage | Modality of treatment |
|------------------------|------------------------------|----------------|---|----------------------------|------------------------|----------------|---|
| 1993 | Stroumbakis et al | 80 | Urethral stricture | 5 | (-) | T4 | Radiation and excision |
| 1995 | Stoke III et al ³ | 50 | Paraplegia | 25 | (+) | T4 | Surgery |
| 1999 | Schaafsma et al | 80 | - | 5 | (-) | T4 | Wide local excision and partial cystectomy |
| 2000 | Gupta et al | 40 | Urethral stricture | 20 | (+) | T4 | Radical cystoprostactectomy and excision of mass with ileal conduit. |
| 2011 | lto et al ⁸ | 58 | Paraplegia | 35 | (-) | T4 | Radiotherapy |
| 2012 | Manzo-Perez BO et al | 34 | Paraplegia | 3 months | (+) | Τ4 | Palliative care |
| 2013 | Chung et al ⁹ | 56 | Urethral stricture | 9 | (+) | T4 | Radiation |
| 2014 | Massaro et al | 55 | Paraplegia | 38 | (-) | T4 | Surgical resection and recurrence in 1 year end up in palliative care. |
| 2014 | Massaro et al | 85 | Idiopathic urinary retention | 9 months | (+) | Τ4 | Surgical resection and palliative care |
| 2015 | Ranjan et al | 68 | Urethral stricture | 20 | (+) | T4 | Radiotherapy |
| 2015 | Boaz et al ¹⁰ | 65 | Urinary diversion for I&D of periurethral abscess in a patient with Urethral stricture | 3 months | (-) | T3 | Penile amputation, Wide local excision of scrotum, radical urethro- cystoprostactectomy and pelvic lymphadenectomy. |

| 2015 | Zhang et al | 61 | Paraplegia | 29 | (-) | T4 | Radiotherapy |
|------|-----------------------------------|----------|--|----------------|------------|-----------------|---|
| 2017 | Subramaniam et al ¹ | 88 | Urethral stricture | 25 | (-) | T4 | Wide local excision with bladder cuff and flap reconstruction |
| 2018 | Khadhouri et al ⁵ | 53 | Paraplegia | 20 | (+) | T4 | Surgical excision and simultaneous end colostomy |
| 2022 | Metke et al ⁶ | 71 81 | Spinal cord injury Chronic bladder outlet obstruction | 50 20 years | (-) (+) | - | Wide local excision and partial cystectomy Palliative external radiation therapy |
| 2025 | Choudhari et al ⁴ | 69 | Urethral stricture | 25 years | (+) | Not reported | |
| 2025 | Present study | 46 | Traumatic urethral stricture and failed urethroplasties | >10 years | + | T4 | Radiotherapy |

CONCLUSION

This case underscores the rare but significant risk of squamous cell carcinoma arising from long-term suprapubic catheter use. Regular monitoring of catheter sites is crucial for early detection and intervention. Radiotherapy may serve as a potential primary treatment modality, especially in cases where surgical management is not feasible. Further studies are needed to understand the pathogenesis, optimal management strategies, and long-term outcomes of catheterassociated malignancies.

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