

# Non-Neurogenic 'Christmas Tree' Urinary Bladder in A 30-Year-Old Man with Urethral Stricture: A Case Report

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## Abstract:

condition the urinary bladder appears elongated and pointed with a thickened, trabeculated wall likened to a Christmas tree. It is most commonly the result of neurogenic bladder from detrusor hyperreflexia which most commonly occurs after spinal trauma. Christmas tree bladder also may rarely be seen in cases of bladder neck obstruction of non- neurogenic cause.

A 30-year-old male presented with two weeks history of leakage of urine par the perineum. There was prior history of urethral discharge, poor urinary stream, urine dribbling and dysuria. No history of genital trauma, urethral instrumentation or catheterization in past. Attempt at passage of urethral catheter failed. He subsequently had open supra pubic cystostomy. Ultrasonography shows multiple internal echoes in the urine with thickened irregular bladder wall. The upper urinary tract was normal. Combine RUG and VCUG demonstrate short segments strictures at the bulbar and membranous urethra. A track of contrast column was noted from the region of the bulbar stricture to the exterior consistent with urethro-cutaneous fistula. The urinary bladder appears large, elongated superiorly with irregular outline resembling 'Christmas tree' configuration.

**Key words:** christmas tree bladder; urethral stricture; voiding cystourethrography

## Introduction

A 'Christmas tree' bladder also called 'pine cone' bladder is the abnormal cystography appearance of the urinary bladder. In this condition the urinary bladder appears elongated and pointed with a thickened, trabeculated wall likened to a Christmas tree [1]. It is most commonly the result of neurogenic bladder from detrusor hyperreflexia which most commonly occurs after spinal trauma. However, other causes such as multiple sclerosis, myelodysplasia, herniated disc and arteriovenous malformations have been reported [2]. Christmas tree bladder also may rarely be seen in cases of bladder neck obstruction of non- neurogenic cause [3].

We report a rare case of non- neurogenic 'Christmas tree' urinary bladder in a 30-year-old man with urethral stricture diagnosed on voiding cystourethrography (VCUG) and retrograde urethrography (RUG) with review of the relevant literature.

## Case Report

A 30-year-old man presented to the urology unit of Usmanu Danfodiyo University Teaching Hospital with two (2) weeks history of leakage of urine par the perineum. There was prior history of poor urinary stream, urine dribbling and dysuria. Patient admits to previous history of repeated episodes of urethral discharge in which he seeks medical attention at a

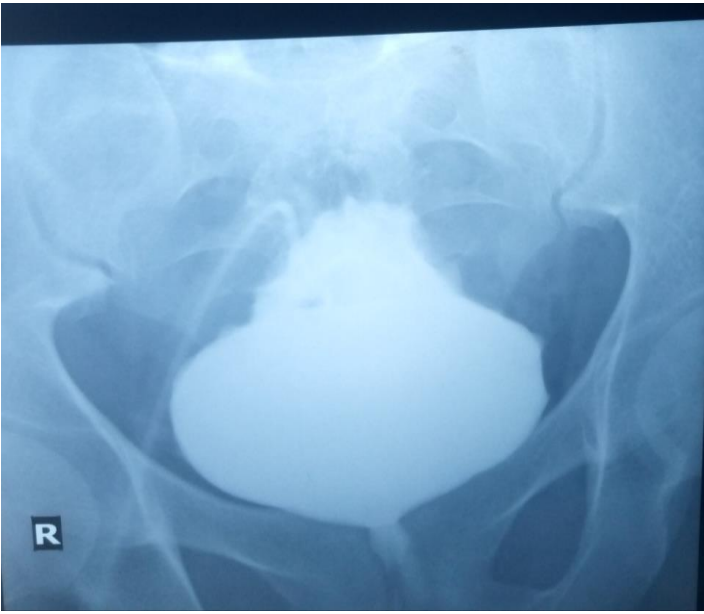
local health facility. No history of genital trauma, urethral instrumentation or catheterization in past.

Physical examination revealed an active young man, not pale, anicteric. Vital signs and systemic examinations were normal. Attempt at passage of urethral catheter failed. He subsequently had open supra pubic cystostomy. Urine microscopy culture and sensitivity revealed staphylococcus aureus sensitive to ciprofloxacin. He was referred to radiology department for Abdomin-pelvic ultrasound and combine retrograde urography (RUG) and voiding cystourethrography (VCUG).

The ultrasonography shows a moderately distended urinary bladder containing multiple internal echoes and thickened irregular bladder wall. No bladder calculus or mass was demonstrated. The upper urinary tract was normal. The combine RUG and VCUG shows persistent short segments narrowing at the bulbar and membranous urethra in keeping with strictures (figure 1 and 2). In addition, a track of contrast column was noted from the region of the bulbar stricture to the exterior consistent with urethro-cutaneous fistula (watering can perineum). The urinary bladder view shows a large urinary bladder, elongated superiorly with irregular outline resembling 'Christmas tree' configuration (figure 1 and 2). No vesico-ureteric reflux of contrast medium was demonstrated.



**Figure 1: Above;** Retrograde urethrogram showing narrowing/filling defect at the bulbar urethra consistent with urethral stricture (white arrow). Note the track of contrast medium emanating from the penile urethra to the exterior (urethra-cutaneous fistula).  
**Below;** Voiding cysto-urethrography showing towering of the urinary bladder with irregular margin giving a somewhat ‘Christmas tree’ appearance (red filled arrow). Narrowing of the urethra is noted at the membranous and bulbar regions.



**Figure 2:** Cystographic view of voiding cysto-urethrography showing a large contrast opacified urinary bladder with elongated and irregular margins of its superior part resembling ‘pine cone’ or ‘Christmas tree’ configuration (white arrow). Note the supra-pubic catheter in situ (red filled arrow).

## Discussion

Christmas tree has been used to describe the appearance of a hypotonic neurogenic bladder, in which the volume is large, pressure low, and contractions are absent [3]. It is most commonly seen in neurogenic bladder where there is disruption of the micturition reflex and this can occur at any level in the central nervous system from medulla to lumbar spine [2]. Although most commonly associated with neurogenic bladder, it is not pathognomy for it as Christmas tree bladder is sometimes or rarely seen in non-neurogenic conditions including urethral stricture [4].

Urethral stricture is a narrowing of the urethra due to scarring, which leads to obstructive voiding dysfunction with potential serious consequences for the entire urinary tract [5]. It is seen in all ages but is predominantly a male disease condition especially among active younger men. Any part of the urethra can be affected from the prostatic urethra down to the urethral meatus [6]. Urethral stricture has wide range of causes both congenital and acquired. However, the common aetiology of urethral stricture in both developed and developing nations are inflammatory and trauma.

Inflammatory urethral stricture may develop following urethritis, classically it follows gonococcal urethritis though can be seen in nonspecific urethritis such as chlamydia trachomatis [7]. Also in tuberculosis, syphilis and chemical urethritis [7]. They are typically situated in the anterior urethra most commonly in the proximal bulbar urethra as demonstrated in the index case (figure 1). Traumatic urethral stricture usually follows iatrogenic or accidental trauma. The iatrogenic cases commonly follow traumatic failed or prolonged catheterization or may be secondary to urethral instrumentation or urethral surgery. Traumatic strictures are usually short and situated in the posterior urethra [7].

Patient with urethral stricture classically present with obstructive symptoms such as poor urine stream, micturition frequency, urgency, dribbling of urine, feeling of incomplete bladder emptying and frank urine retention [6,8]. Persistence of these obstructive symptoms may lead to structural and functional abnormalities or complications in the proximal urethra, urinary bladder and upper urinary tract. Such complications include peri-urethral abscess formation, urethro-cutaneous fistula, sinuses and urethral diverticulum. Recurrent urinary tract infection and calculi may develop following stasis of urine from incomplete voiding. Detrusor hypertrophy and overdistended urinary bladder with imaging features similar to 'Christmas tree' appearance may occur as observed in this case (figure 1 and 2). Other complications include urinary bladder diverticulum and vesico-ureteric reflux [6,7].

Radiologically, urethral stricture is evaluated by retrograde urography combine with voiding cysto-urethrography. These helps in diagnosing the

site, number and length or extend of the stricture as well as evaluation of associated complications such as urethra-cutaneous fistula, detrusor hypertrophy, diverticulum and vesicoureteral reflux [8,5]. Ultrasonography of the abdomen and pelvis will determine any urinary retention and evaluate upper urinary tract for hydronephrosis [5].

The definitive treatment for urethral stricture is endoscopic (minimally invasive) and open surgical procedures. However, strictures do recur whatever the treatment option taken. The more extensive the stricture is, the further distal its location and the more often it has been treated the poorer the long-time outcome [5].

## Conclusion

'Christmas tree' bladder appearance on cystography is most commonly seen in neurogenic bladder and occasionally in non-neurogenic conditions. We reported a case of urethral stricture with 'Christmas tree' bladder appearance on voiding cysto-urethrography.

## Conflict of Interest

Links of interest the author declares that he has no links of interest relating to this article.

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