



## Introduction

Urinary retention is one of the common presentations that we often encounter in the Emergency Department. Diagnosis is based on history, clinical examination and bladder scan findings. Sometimes the clinical examination is unreliable, especially in patients with high BMI, ascites or anasarca. This makes the diagnosis uncertain and the bladder scan readings should be interpreted with caution. Thus, radiological imaging might be required before planning further intervention.

## Case Presentation

An 83 year old woman was admitted under the medical team for sepsis secondary to soft tissue infection. She had multiple comorbidities including hypertension, diabetes, Ischemic heart disease and morbid obesity with a BMI of 58. On assessment she was dyspneic, orthopneic, delirious and not passing urine. Lab results showed an AKI. Initial Bladder scan showed 900 cc. five uneventful attempts of urinary catheter insertion by the medical team, but still, no urine output and the bladder scan showing positive readings. Surgical team on call was involved for the possibility of inserting a Supra public catheter. On review by surgeons, the urinary catheter was in place, no evidence of blood per urethra and the bladder scan showed a reading of around 900 cc. The question was whether the patient has an obstructive uropathy or anuria from other causes. This was based on patient's significantly high BMI, background history, uneventful catheterization and persistent reading on bladder scan. False reading on bladder scan was suspected. Out of hours CTKUB was done as no US scan services was available at that time. It showed the catheter was in situ, an empty bladder, no back pressure, atrophic kidneys and a significant amount of ascites. The patient was then managed medically.

## Discussion

Bladderscan is a non-invasive portable 3D ultrasound device that measures bladder to help assess urinary retention and post void residual bladder volume. It uses algorithms to derive an estimate of bladder volume from the ultrasound data displayed topographically. It does not need to be operated by a sonographer. Three studies compared the accuracy of the BladderScan with catheterization and real time ultrasound [1]. One study reported poor accuracy, and the other two studies reported moderate to high accuracy [1]. The diagnosis of urinary retention is based on clinical and bladder scan findings. Clinical findings could be hard to elicit in obese patients and in patients with ascites or subcutaneous edema. Bladder scan is sensitive for detecting any fluid in the abdomen not specifically urine in the bladder. This should always be considered in patients at high risk of having ascites [2]. This would lead to a false reading on the bladder scan [2]. In addition to this, large ovarian and renal cysts were also reported to give a false positive reading on bladder scans with a rate of 9%. Insertion of supra pubic catheter in these patients could lead to serious complications

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