

## Purple Urine Bag Syndrome : A Rare Case Report

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**Abstract**

**Background:** Purple urine bag syndrome is a rare condition that may be a resource of concern for both patients and clinicians because it is a not-well-known condition.

**Case Presentation:** We reported an unusual case of purple urine bag syndrome in a 76 -year- old male patient with multiple systemic diseases presented to our center in case of acute urinary retention for the first time. After catheterization, the color of the bag changed to purple color. Dealing with such a situation requires only the reassurance of the patient.

**Conclusion:** Interns, urologists, and nephrologists should be known side by side with patients about this rare harmless phenomenon.

**Keywords:** Case report, Purple urine bag syndrome, Urinary retention, Discoloration

**Background**

Purple urine bag syndrome (PUBS) is the color of the urine bag rather than discoloration of urine following urinary catheterization for hours and days [1]. Discoloration of the urine bag is due to the presence of indigo and indirubin pigments, which precipitate and react with the synthetic materials of the catheter and urinary bag [2].

Recognition of this entity is important as treatment is simple and can minimize patient and familial distress as well as overmanagement [3].

Herein, we present a case of PUBS, which was the first time to be diagnosed in our hospital.

**Case Presentation**

A 76 years old patient presented to the emergency department complaining of acute urinary retention. Past medical history is remarkable for coronary artery bypass grafting surgery 20 years ago after acute myocardial infarction in another center. He had well-controlled hypertension; diabetes mellitus type II, and chronic kidney disease. His doctor prescribed him clopidogrel, tamsulosin, captopril, furosemide, and glipizide. His father died of colorectal cancer. He was a smoker but

quit after cardiac surgery. A urinary catheter was inserted. We noticed that his catheter bag and its tubing had a purple discoloration (Figure 1).



**Figure 1:** A urine bag showing a purple urine color.

Urinalysis showed 20-25 white blood cells/ high-power-field, 2+ proteins, positive nitrites, and a PH of 8. Urine culture was significant for Escherichia Coli, which was more than 10<sup>5</sup>/mL

growth. A detailed history revealed that the patient had benign prostatic hyperplasia and his urology doctors tell him it needs a transurethral resection. However, because of the low cardiac ejection fraction and highly dangerous surgery, he was treated with tamsulosin and catheterization as needed. The patient sometimes missed his drugs, so he had a urinary catheter from time to time across the recent 17 years. After that, we prescribed him an antibiotic, and was scheduled to remove the catheter.

## Discussion

PUBS is rare and was first reported in 1978 [4].

PUBS is a consequence of UTIs with bacteria, which metabolise products of tryptophan to produce red and blue pigments. Normal bacterial flora deaminates tryptophan in the gastrointestinal tract to produce indole. Indole is rapidly transported by the portal circulation and is conjugated to produce indoxyl sulphate by the liver. This is secreted into urine where sulphatases and phosphatases produced by certain bacteria convert it to indoxyl. In alkaline urine especially, indoxyl is oxidised to indigo (a blue pigment) and indirubin (a red pigment). These pigments mix and react with catheter tubing to produce a striking purple hue. This interaction between the bag (i.e., the plastic) and pigments as well as a high bacterial load is important in precipitating PUBS [3].

Many bacteria have been implicated in the pathogenesis of PUBS that include *E. coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella*, *Enterococci* and Group B *Streptococci* [4].

Numerous factors have been associated with purple discoloration of urine. The most important are advanced age, female gender, constipation, dementia, bedridden situation, institution-alization, end-stage renal disease, dehydration, chronic catheterization, use of polyvinyl chloride urinary cath-eter or bag, recurrent UTI, high urinary bacterial counts and alkaline urine [5].

It is important to manage PUBS appropriately, as it has a high morbidity and mortality relative to UTIs alone due to its contributing factors. One must treat the UTI (e.g., with ciprofloxacin) and any constipation as well as sanitation measures including replacing the catheter. Another approach is to use intravenous antibiotics if the PUBS persists or the patient is in an immunocompromised state [3].

However, since this condition is fairly unknown by healthcare professionals, the patient was erroneously informed that the purple color was from the ink of the bag system, which put the patient at risk due to lack of proper management [6].

In our case, the patient had chronic renal disease and benign prostatic hyperplasia, which considered risk factors for pubs. This is the first case to be diagnosed in our center.

Purple urinary bag syndrome, although benign, is an alarming condition that does not need aggressive antibiotic treatment, as it commonly resolves with good catheter management [7].

To our hospital records, it is the first case in a male patient with acute urinary retention for BPH and who has PUBS. Such cases are not pathologically, and need to tell the patient that it is a harmless condition and no further investigations should be done.

## Conclusion

Purple urine bag syndrome is a rare case that has been described few times in the literature. Medical professionals should be known about this phenomenon to treat it as needed.

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