

Case Report

Green Urine in Clinical Practice: A Case Report and Discussion

Srinivas Reddy Kallem^{*}, Tushar Parmeshwar, Nyna Sindhu, Krishna Ramavath, Reshmi, Harikrishna and Adharsha

Department Of General Surgery, All India Institute of Medical Sciences, Hyderabad, India

Abstract

Case summary: A 32-year-old male presented to the general surgery Outpatient Department (OPD) diagnosed with fistula in ano for surgical intervention with no remarkable medical history, was scheduled to undergo an elective Ligation of the Intersphincteric Fistula Tract (LIFT) procedure and open hemorrhoidectomy under spinal anesthesia. Preoperative evaluation, including digital rectal examination and MRI fistulogram, confirmed a suprasphincteric fistula with internal and external openings at the 12 and 11 o'clock positions, respectively, and grade 3 internal hemorrhoids. During the LIFT procedure, 5 ml of diluted methylene blue was injected to trace the fistula tract. Postoperatively, the patient passed green blue colored urine 7 hours after surgery. Immediate evaluation ruled out any communication between the fistula tract and the urinary system, as confirmed by MRI and absence of urinary symptoms. Routine urine analysis and renal function tests were normal. Literature review indicated that the blue discoloration of urine was due to the absorption and renal excretion of methylene blue. The patient continued to pass blue green-colored urine for 48 hours, with the color gradually diluting after each voiding, and eventually returned to normal. The patient was discharged in a satisfactory condition with no further complications.

Conclusion: This case highlights a benign postoperative phenomenon of blue/green urine discoloration following the use of methylene blue during fistula surgery. Awareness of this occurrence is important for healthcare providers to prevent unnecessary alarm and ensure appropriate postoperative care.

Keywords: Fistula in ano; LIFT Surgery; Methylene blue; Blue urine; Unusual urine discoloration

Introduction

Any deviation from the normal urine color during surgery can be concerning to healthcare professionals. Normally, urine is yellow, and any changes can indicate various physiological or pathological conditions. Common urine color changes include:

- High-colored urine: Usually due to dehydration, where the urine appears dark yellow.
- Dark yellow to orange urine: Can indicate the presence of bilirubin, known as bilirubinuria.
- Pink to red-brown urine: Often suggests hematuria, which is the presence of blood in the urine.
- Brown urine: May indicate myoglobinuria, the presence of myoglobin in the urine, typically due to muscle breakdown.
- Yellow urine: Can be caused by the ingestion of Vitamin B-complex.
- Orange urine: Often results from the use of the antibiotic rifampicin.

Here we present a case of Blue-Green Discoloration of Urine After LIFT Surgery on Administration of Methylene Blue in Anal Fistula.

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***Corresponding author:** Srinivas Reddy Kallem, Department of General Surgery, All India Institute of Medical Sciences, Hyderabad, India

Case Presentation

A 32-year-old male presented to the general surgery Outpatient Department (OPD) diagnosed with fistula in ano for surgical intervention with no remarkable medical history, was scheduled to undergo an elective Ligation of the Intersphincteric Fistula Tract (LIFT) procedure and open hemorrhoidectomy under spinal anesthesia. During the preoperative evaluation:

Digital rectal examination

- External opening at the 11 o'clock position, 3 cm from the anal verge, with mild serous discharge.
- Internal opening approximately 6 cm from the anal verge at the 12 o'clock position.
- Grade 3 internal hemorrhoids at the 3, 7, and 11 o'clock positions, with no active bleeding.

MRI fistulogram

- Suggested a suprasphincteric fistula tract.
- Confirmed internal opening at the 12 o'clock position and external opening at the 11 o'clock position.

Surgical procedure

- The patient underwent the Ligation of the Intersphincteric Fistula Tract (LIFT) procedure and open hemorrhoidectomy under spinal anesthesia. During the surgery:
- 5 ml of diluted methylene blue was injected into the external opening to trace the fistula tract.
- The dye was observed exiting from the internal opening at the 12 o'clock position, approximately 6 cm from the anal verge.
- The patient underwent successful LIFT surgery and open hemorrhoidectomy without intraoperative complications.

Postoperative event

- 7 hours post-surgery, the patient passed blue-colored urine, which was an unexpected finding.
- The patient continued to pass blue-colored urine for up to 48 hours post-surgery.
- The color gradually diluted with each voiding.
- After 48 hours, the patient's urine returned to its normal color.

Outcome

- The patient was discharged in a satisfactory condition with no further complications.
- An evaluation was conducted to rule out possible communication between the fistula tract and the urinary system. The patient had no preoperative urinary symptoms or urine leakage from the external opening. The MRI was reviewed with a radiologist, confirming no communication between the fistula tract and the urinary system.
- Routine urine analysis and renal function tests (RFT) were normal.

The main cause of green urine in the present case was the use of Methylene blue after excluding all other causes detailed history revealed benign and reversible etiology.

Literature Review and Explanation

Upon reviewing the literature, it was determined that the blue discoloration of urine was due to the absorption of remnant methylene blue from the fistula tract into the circulatory system, followed by renal excretion.

Methylene blue, a nonpathogenic water-soluble dye, is used intraoperatively for diagnostic tests (fistula detection, patency of fallopian tubes, and identification of parathyroid glands). Methylene blue-induced green urine has been reported previously. Green urine was seen in a patient of bladder carcinoma who was on ProSed™ DS (an oral analgesic, antiseptic, and antispasmodic medication that contains methylene blue) [1,2]. Methylene blue is metabolized in the body to leucomethylene blue which is excreted primarily in the urine. Some are excreted unchanged in the urine. Blue urine is rare because the blue pigments combine with urochrome (yellow pigment in urine) resulting in green urine [3]. Methylene blue absorbs light at wavelength 550 - 700 nm with preferential maximum absorbance at 660 nm and 609 nm (shoulder peak) and can be detected in urine by spectrophotometry. The presence of these two peaks in a green urine sample confirms the presence of methylene blue. In a patient with normal renal function, methylene blue appears in urine in a few minutes after intravenous administration and 2-6 h after oral administration [3]. It may remain detectable after 24 h [1].

The main cause of green urine in one case was the use of Clorets (a breath freshener). The color is called the 'Cloret sign',⁴ and is taught to be due to Actizol present in the tablets, a proprietary ingredient that contains the water-soluble chlorophyll. An underlying pathological condition might be the cause of change in the urine color, but a thoroughly detailed history revealed benign and reversible etiology, and thus helped in avoiding unnecessary investigations and also distress among patient and clinicians [4,5].

Conclusion

This case highlights an unusual but benign postoperative finding: blue/green urine discoloration due to the administration of methylene blue during fistula surgery. It is important for healthcare providers to be aware of this potential occurrence to prevent unnecessary alarm and ensure appropriate postoperative management. Recognizing this expected side effect can help reassure patients and guide effective communication and care planning. The green urine observed in this patient was a transient effect of the methylene blue dye used during the surgery. This temporary discoloration is a known and benign side effect of methylene blue and does not indicate any harmful underlying condition. Therefore, while any change in urine color can be alarming, the use of methylene blue should be recognized as a potential cause of green urine, reassuring the clinical team about the benign nature of this observation.

References

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Table 1: Causes of urine colour and reasons for exclusion.

Causes		Reasons For Exclusion
Propofol administration	Occurs as A result of A phenolic green chromophore which is conjugated in the liver and excreted in the urine	Not administered propofol during ot.
Chronic obstructive jaundice	The presence of biliverdin (oxidation product of bilirubin)	No symptoms of jaundice
Urinary tract infections	Caused by pseudomonas can turn urine green due to pyocyanin and pyoverd in pigments produced by the bacterium.	No symptoms of uti. Cue is normal
Drugs such as promethazine, thymol, cimetidine, and propofol Nonphenol medications that produce green urine are metoclopramide, amitriptyline, and indomethacin.	Contain phenol groups that are conjugated in the liver and subsequently excreted by the kidneys as green urine.	No History of drug intake.
Hypercalcemia:	Severe hypercalcemia can cause dehydration, which might concentrate the urine and potentially enhance the color effects of certain medications or compounds present in the urine.	Serum calcium levels are normal
Laxatives:	Laxatives can cause green urine.	No history of intake of laxatives and certain foods.
Dietary factors:	Consumption of certain foods, such as asparagus, can sometimes lead to green-tinged urine.	

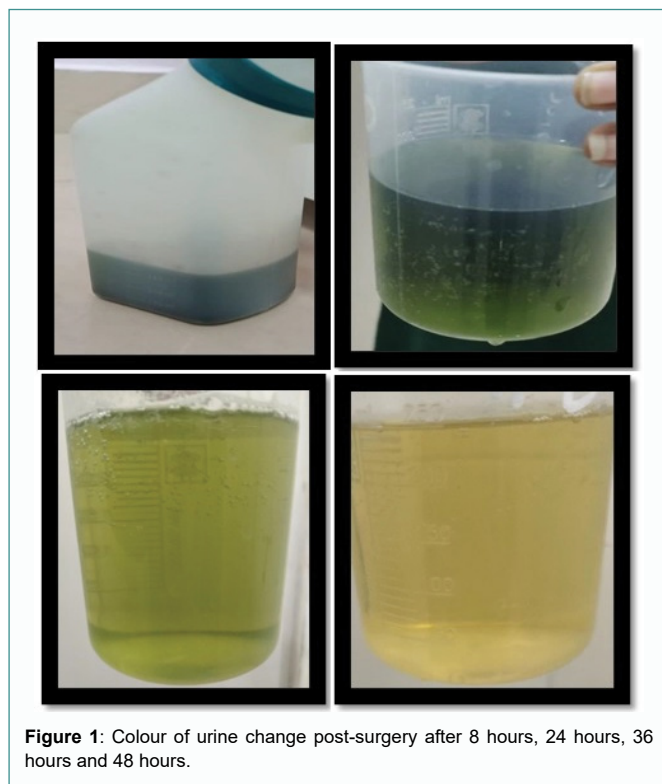


Figure 1: Colour of urine change post-surgery after 8 hours, 24 hours, 36 hours and 48 hours.