

Acute Kidney Injury Following Transurethral Resection of the Prostate in a Patient with Hepatitis C: A Case Report

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ABSTRACT

Introduction: Transurethral resection of the prostate (TURP) is a widely performed urologic procedure. Although postoperative acute kidney injury (AKI) is uncommon, it may occur through various mechanisms.

Case Presentation: We report details an 81-year-old male with chronic HCV who presented with lower urinary tract symptoms and underwent an uncomplicated monopolar TURP. Despite the absence of chronic kidney disease and intraoperative complications, the patient developed AKI two days post-surgery, characterized by confusion and elevated creatinine levels (0.94 to 5.53 mg/dL). He required multiple hemodialysis sessions for metabolic derangements. The interplay between HCV-related renal pathologies and surgical stress likely contributed to the AKI, highlighting the vulnerabilities faced by elderly patients with underlying liver conditions. Early nephrology consultation and renal monitoring are critical for improving prognosis in individuals experiencing postoperative AKI linked to chronic hepatitis C.

Conclusion: This case underscores the necessity for comprehensive preoperative assessments, vigilant intraoperative monitoring, and proactive postoperative care to mitigate AKI risks in this high-risk population. Given the increasing incidence of surgical interventions in geriatric patients with HCV, further research is essential to establish effective management protocols and enhance patient outcomes following TURP.

Keywords: Hepatitis C, acute kidney injury, TURP, benign prostatic hyperplasia, geriatric

1. INTRODUCTION

Transurethral resection of the prostate (TURP) remains the gold standard for treating symptomatic benign prostatic hyperplasia (BPH).¹ Postoperative complications include bleeding, infection, acute kidney injury (AKI) and acute renal failure (ARF).^{1,2} AKI following TURP can result from various factors such as hemolysis, hypotension, and the use of certain irrigating fluids like glycine, which can lead to TURP syndrome.¹ AKI is rare but significant, often attributed to hemodynamic instability or urinary tract obstruction.³ Patients with pre-existing conditions, such as chronic kidney disease or liver diseases like hepatitis C, may have an increased risk of postoperative complications.⁴ In those with chronic hepatitis C, immune complex-mediated glomerulonephritis may also contribute to this increased risk.⁵

The incidence and management of acute kidney injury (AKI) following transurethral resection of the prostate (TURP) in patients with hepatitis C is underexplored, despite its potential impact on patient outcomes. The interplay between hepatitis C and kidney function complicates the understanding of AKI development post-TURP, highlighting the need for targeted strategies for early diagnosis and management in this high-risk group. This is urgent because AKI can significantly increase morbidity and mortality, especially in patients with compromised liver function.⁶ This case report documents a novel instance of HCV-associated AKI requiring hemodialysis after an uncomplicated monopolar TURP, emphasizing the urgency for further research to establish comprehensive care protocols for these patients.

2. CASE PRESENTATION

An 81-year-old male geriatric patient with chronic hepatitis C virus (HCV) infection presented with lower urinary tract symptoms and urinary retention. His medical history did not include chronic kidney disease, hypertension, or diabetes. A transabdominal ultrasound was performed, revealing a prostate volume of 57 cc, suggestive of BPH. Laboratory tests conducted prior to surgical intervention on July 24, 2025, indicated the following values: hemoglobin 12.9 g/dL, urea 29 mg/dL, creatinine 0.94 mg/dL, sodium 141 mmol/L, and reactive HCV serology.

The patient underwent a monopolar transurethral resection of the prostate (TURP) under spinal anesthesia. The procedure, which lasted 45 minutes, utilized sterile water as the irrigation fluid, and approximately 15 grams of prostate tissue was resected. During the operation, the patient experienced transient systolic hypertension, with blood pressure peaking at 180 mmHg. There were no episodes of hypotension or significant bleeding recorded intraoperatively.

Two days postoperatively, the patient developed confusion and disorientation, with a Glasgow Coma Scale (GCS) score of E4M6V4. Laboratory values postoperatively on July 29, 2025: hemoglobin 11.4 g/dL, urea 102 mg/dL, sodium 132 mmol/L, and his creatinine deteriorated significantly 5.53 mg/dL. Despite a daily urine output of 600 mL of clear yellow urine, the patient exhibited signs of acute kidney injury (AKI). Urinalysis was unremarkable, and imaging showed no postrenal obstruction. He required hemodialysis three times during hospitalization due to AKI. Renal biopsy was not performed, considering his advanced age and the observed improvement in renal function following dialysis sessions.

3. DISCUSSION

The management of urinary retention in elderly patients can be complicated by the presence of chronic conditions such as HCV infection. The development of AKI in this geriatric patient following TURP is likely multifactorial.⁷ Although no hypotension, sepsis, or urinary obstruction was documented, the patient's age and underlying HCV infection predisposed him to a heightened renal vulnerability.⁸ HCV is a major cause of mixed cryoglobulinemia, which leads to cryoglobulinemic vasculitis and glomerulonephritis (GN). Cryoglobulins are antibodies that precipitate at lower temperatures and can form occlusive aggregates in the glomerular capillaries, leading to renal injury.^{5,9} The deposition of immune complexes containing HCV antigens, antibodies, and complement in the glomeruli is a critical pathogenic mechanism. This can result in membranoproliferative glomerulonephritis (MPGN) and other forms of GN.¹⁰ There is also evidence suggesting that HCV may have direct cytopathic effects on renal tissues, contributing to kidney damage.^{10,11} HCV can cause AKI as part of systemic vasculitis and increases the risk of AKI from other causes.⁵ AKI is associated with increased morbidity, mortality, and prolonged hospital stays.¹²

Renal injury due to HCV can remain subclinical until triggered by systemic stress, such as surgery. This stress can exacerbate the underlying cryoglobulinemia or immune complex deposition, leading to acute manifestations of renal disease.^{5,11,13} HCV infection accelerates the progression of Chronic Kidney Disease (CKD) and increases the risk of End-Stage Renal Disease (ESRD).¹⁴

Geriatric patients are particularly susceptible to AKI due to reduced renal reserve, age-related nephron loss, and impaired autoregulation of renal blood flow.¹⁵ These structural and functional changes, combined with common comorbidities and polypharmacy, increase the risk of AKI in this population.¹⁶ The elderly are less likely to fully recover from AKI and are at higher risk of progressing to chronic kidney disease.¹⁵

The use of water as an irrigation fluid in monopolar TURP increases the risk for fluid and electrolyte imbalance.¹⁶ In this case, postoperative hyponatremia and altered mental status raised the possibility of a mild form of TURP syndrome, although the neurologic symptoms were delayed and not severe. TURP syndrome is characterized by symptoms ranging from mild hyponatremia to severe neurological disturbances, cardiovascular collapse, and even death due to the absorption of hypotonic irrigation fluid.^{16,17} Postoperative hyponatremia is a well-documented complication of TURP, often leading to altered mental status and other neurological symptoms.¹⁸ The development of hyponatremia during or after TURP can be attributed to the excessive absorption of irrigation fluids, which dilutes serum sodium levels and decreases serum osmolality, potentially causing cerebral edema and other severe complications.^{19,20} Continuous monitoring and early recognition of symptoms such as disorientation, headaches, and altered states of consciousness are crucial for timely intervention.²¹ Early recognition and management of hyponatremia and other symptoms are essential to prevent severe complications and improve patient outcomes.¹⁵ Effective management of TURP syndrome involves early diagnosis, controlling bleeding, suspending the operation if necessary, and correcting electrolyte imbalances promptly. Preventive measures include using isotonic irrigation fluids, minimizing the duration of the procedure, and close monitoring of fluid absorption.¹⁹

The patient's progressive azotemia and preserved urine output suggest intrinsic renal pathology, potentially linked to HCV-related glomerular disease. The absence of proteinuria or hematuria may be due to early-stage or low-grade disease unmasked by operative stress. Postoperative hemodialysis was essential to manage metabolic derangements, and the patient's renal function gradually improved.²² Renal biopsy is often required to confirm the diagnosis and guide treatment.¹³ The decision to forego biopsy was influenced by the patient's clinical progress and the risks associated with invasive procedures in elderly

patients.⁴

This case emphasizes the need for careful perioperative assessment in elderly patients with HCV, especially when using fluid-absorptive procedures such as monopolar TURP. Early identification and multidisciplinary management of AKI can improve outcomes in this high-risk population.^{1,23,24}

4. CONCLUSION

This case underscores the need to consider HCV-related renal injury in patients developing AKI after non-renal surgery. In the setting of chronic hepatitis C, surgical procedures may unmask or exacerbate subclinical glomerulopathies. This involves comprehensive preoperative assessment, vigilant intraoperative monitoring, and proactive postoperative care to mitigate the risks associated with this high-risk population. Early nephrology consultation and renal monitoring are essential, especially when typical causes of AKI are absent. Future studies are needed to determine the true incidence and optimal management of HCV-related AKI in surgical patients.

5. CONFLICT OF INTEREST

The authors declare no competing interests in this study.

6. ETHICAL CLEARANCE

This report underwent review and approval by the Ethics Committee of Health Research at Faculty of Medicine Pelita Harapan University, with reference number 271/K-LKJ/ETIK/IX/2025.

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