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Perspective

Complication in Iatrogenic Bladder Rupture Following Urinary Catheter

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DESCRIPTION

Urinary catheterization is a routine medical procedure performed across various healthcare settings, often considered safe and simple. However, like all medical interventions, it carries risks. The most common complications include urinary tract infections, urethral trauma, and issues related to prolonged catheter use. Among the rarest but most critical complications is iatrogenic bladder rupture. While uncommon, especially when occurring after routine catheter insertion, this condition can be life-threatening if not promptly recognized and managed. This article explores a notable case of bladder rupture following urinary catheter insertion in an elderly woman with a complex medical history, including bladder cancer and neurogenic bladder. The case emphasizes the importance of caution, clinical awareness, and the use of advanced techniques such as ultrasound guidance in high-risk populations.

The patient, an 80-year-old woman, presented to the emergency department with fever, flank pain, and difficulty urinating. Her past medical history was significant for hypertension, diabetes mellitus, chronic kidney disease, neurogenic bladder, recurrent urinary tract infections, and a prior diagnosis of bladder cancer. She had undergone transurethral resection of a bladder tumor located at the dome six years prior. Due to her neurogenic bladder, she had a history of intermittent catheter use. Recently, a urinary catheter had been inserted to address worsening bladder dysfunction but was removed in an outpatient setting the day before her emergency room visit, with the intention of preventing infection. However, upon removal, she developed urinary retention, prompting re-catheterization in the emergency department.

Shortly after the procedure, she developed acute abdominal pain. Imaging via computed tomography revealed a bladder rupture through the dome, with the catheter tip extending outside the bladder wall into the peritoneal cavity. Fortunately, the rupture was identified promptly. The catheter was repositioned under ultrasound guidance, and conservative treatment, including broad-spectrum antibiotics, was initiated. Over the course of three weeks, the patient recovered well and was discharged without further complications. Bladder rupture following catheterization is rare, particularly in the absence of trauma or or surgical intervention. When it does occur, it is often associated with predisposing factors that compromise bladder integrity. In this case, several elements contributed to the patient's susceptibility: advanced age, prior bladder surgery, chronic inflammation from recurrent infections, and long-term catheter use.

In the elderly population, especially those with chronic illnesses, the bladder wall may become thinned, scarred, or less elastic, increasing the risk of perforation during catheter insertion. In patients with neurogenic bladder, impaired sensation can mask early symptoms, potentially delaying diagnosis. Furthermore, in individuals with previous bladder cancer, particularly involving the dome (the most common site for intraperitoneal rupture), surgical scarring or tissue weakening may predispose to structural failure under mechanical stress. Symptoms of bladder rupture are often nonspecific, ranging from abdominal pain and urinary difficulties to nausea, vomiting, and fever. These symptoms can easily mimic other abdominal or urinary pathologies, leading to delayed or missed diagnoses. Early imaging, particularly with computed tomography, plays a vital role in identifying the nature and extent of the injury. In this case, prompt imaging led to timely intervention and a positive outcome.

Emergency nurses are often on the frontlines of catheter care. Their role in recognizing high-risk patients, performing catheterization with care, and observing for early complications is critical. Education and training should emphasize risk assessment and proper technique. In complex patients, collaboration with urology specialists and use of bedside ultrasound should be encouraged when feasible. Emergency nurses should also be empowered to escalate concerns when patients exhibit unexpected symptoms after catheterization. In this case, the patient's complaints of abdominal pain could have been overlooked as post-procedural discomfort. Instead, appropriate imaging was ordered, leading to an accurate and timely diagnosis.

CONCLUSION

Iatrogenic bladder rupture after urinary catheter insertion remains a rare but dangerous event. It is most likely to occur in individuals with underlying bladder pathology, chronic

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conditions, or prior surgeries that compromise bladder wall integrity. This case illustrates the importance of clinical awareness, the potential benefits of ultrasound guidance, and the effectiveness of conservative management when the condition is recognized early. Medical professionals, particularly those in emergency and urologic care, must maintain a high index of suspicion when encountering complications post-catheterization. A careful, patient-specific approach can help prevent serious outcomes and ensure better safety in routine procedures.