Intravesical Explosion Resulting in Bladder Rupture During Transurethral Resection of Prostate: A Case Report

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ABSTRACT

Transurethral resection of prostate (TURP) is one of the most common surgeries in urology. Intravesical explosion during transurethral resection is an extremely rare event. It usually leads to bladder rupture, which can be either extra- or intra-peritoneal requiring urgent laparotomy. We report a case of intravesical blast in a 70-year-old male undergoing TURP.

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Case Report

A 70-year-old patient was admitted to Urological services of the hospital with symptomatic benign enlargement of the prostate. Patient was on alpha blockers (Silodosin 8 mg od) since a year and patient had no relief of symptoms. Serum prostate specific antigen was 4.17 ng/mL. A transrectal guided biopsy of the prostate revealed benign pathology. Patient was advised monopolar TURP for relief of symptoms.

Under regional anaesthesia (spinal) the patient was positioned and TURP done. The resected chips were washed out and the resectoscope reintroduced to observe the fossa. During the inspection a few bleeders were cauterized. During this procedure there was a loud sound from within the bladder and the bladder collapsed around the scope. Irrigation was not returning; hence a diagnosis of bladder perforation was made, and the patient explored using an infra-umbilical midline incision. The bladder was ruptured irregularly like that of a blast or explosion injury (Figure 1). The torn margins were identified, and the bladder closed in two layers using 00 vicryl suture. A supra-pubic catheter was also left in place. Post-operatively the patient had an uneventful recovery. The drain was removed after 72 hours, supra-pubic catheter removed after a week and the periurethral catheter removed after 2 weeks. The patient voided well after catheter removal with no residual urine.

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Discussion

Intravesical explosion or blast is an extremely rare event associated with transurethral resection of the prostate. Bladder injury can range from mucosa tear to bladder rupture. Such explosions have also been described when using diathermy during colonic surgery and large bowel endoscopies [4]. Mild explosions in the bladder generally do not cause complications, however, severe explosions may result in significant morbidity, including mortality in elderly patients.

The trapping of volatile gases during resection of tissue is the mechanism for the bladder explosion. These volatile gases are an admixture of hydrogen and explosive hydrocarbons [4]. Several authors have demonstrated both in vitro and in vivo that hydrogen (30–65%) was the dominant gas produced during transurethral resection of prostate (TURP), oxygen and several explosive hydrocarbons were produced in small amounts [3]. Majority of these gases are produced from pyrolysis of human tissues and electrolysis of intracellular water due to high temperatures associated with cutting and coagulation of tissues. When hydrogen gets mixed with oxygen from the atmosphere, it becomes inflammable and gets ignited by a spark generated by electrosurgery [4]. The amount of gas formed, and the risk of explosion are proportional to the temperature of the resectoscope and operating time [4].

Lower abdominal tenderness, bleeding from the bladder and a restless patient are the usual symptoms of such an occurrence. These patients need to be explored immediately and the bladder repaired. Patients may need blood transfusions and admission to critical care wards.

Conflicts of Interest

None.

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