Laparoscopic repair of bladder explosion during TURP: A case report

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A B S T R A C T

Bladder explosion leading to bladder rupture during transurethral resection is a very rare intra-operative complication. A 74 year’s male underwent monopolar transurethral resection of prostate (TURP) for refractory urinary retention with two times failed catheter free trial. After 40 minutes of the procedure, a loud snap was heard during final hemostasis. Bladder rupture was confirmed by clinical and endoscopic findings. Procedure was concluded and 22 Fr 3-way’s Foley’s catheter kept per urethral. Laparoscopic repair of bladder perforation was done. We should keep it in mind and take all necessary precaution to prevent this complication, so that unnecessary morbidity can be avoided.

Introduction

Bladder explosion leading to bladder rupture during transurethral resection is a very rare intra-operative complication. Approximately 27 cases have been reported in literature. Incidence of bladder rupture is approximately 0.02% of transurethral procedures. Here we reported a case of bladder rupture due to intravesical explosion during transurethral resection of prostate (TURP), which was managed by laparoscopic repair.

Case report

A 74 year’s male presented with refractory urinary retention with two times failed catheter free trial. On Ultrasound, prostate size was 48 g with catheter in situ and normal bladder wall thickness. All routine preoperative investigations were within normal limits. Monopolar TURP was planned under spinal anaesthesia. The procedure was performed using 26 French (Fr) continuous flow resectoscope and 1.5% glycine was used as irrigant. Electrocautery current was set at 100W for cutting and 70W for coagulation.

After 40 minutes of the procedure, a loud snap was heard during final hemostasis. Subsequently, bladder was collapsed and lower abdomen distended. Patient complained discomfort and lower abdominal pain and breathlessness. The endoscopic examination of bladder revealed a large rent in dome of bladder. Procedure was concluded and 22 Fr 3-way’s Foley’s catheter kept per urethral and irrigation started. Patient was hemodynamically stable. Planning for laparoscopy and repair of perforation was done.

The patient was intubated and converted to general anaesthesia. Pneumoperitoneum was created using verres needle. A 10 mm supr-umbilical port was placed 5 cm above umbilicus. Two 5 mm ports were placed at lateral border of rectus muscle on both sides at level of umbilicus. Another 5 mm port was placed, 2 cm above and medial to left anterior superior iliac spine. The extravasated irrigant fluid was suctioned out from pelvis and sub hepatic space. Patient put in Trendelenburg position. There was a large laceration of approximately 4 cm size at dome of bladder (Fig. 1). Bladder perforation was repaired in two layers in water tight manner, first layer with continuous 2-0 RB vicryl and this layer was reinforced with interrupted vicryl 2-0 RB sutures. Postoperative period was uneventful (Fig. 2).

Drain was placed in pelvis and removed on 3rd postoperative day (POD). Patient was discharged on 4th POD. After 2 weeks, cystogram was done and there was no leak, catheter was removed. Patient voided well. The histopathology report of prostatic chips showed benign prostatic hyperplasia.

Discussion

Bladder explosion during transurethral surgery is rare phenomenon and it is commonly occur due to overdistension of bladder. The mechanism of intravesical explosion is formation and accumulation of explosive gases under the dome of bladder. Mixture of hydrogen (30–65%) and oxygen (5%) are formed by hydrolysis of water by diathermy. The atmospheric air contains 21% oxygen and it may enter the bladder due to leaking irrigation tube, during replacement of irrigation fluid bottles and improper use of Ellik evacuator bulb. These
In our patient, we heard a loud, explosive noise during final step of hemostasis. Seitz et al. also reported a case of bladder explosion during attempting hemostasis at 12 O’clock position. We diagnosed bladder rupture intra-operatively and repaired it laparoscopically in two layers. Advantage of laparoscopic repair is its minimal invasive nature and early postoperative recovery.

To avoid this complication, we should take some precautions during TURP. One should avoid hyper distension of bladder by using continuous flow resectoscope. Extreme care should be taken to avoid activation of resectoscope loop within the air bubble. Air entry into the bladder can be minimized by keeping all connections leak proof, timely replacement of irrigating fluid and proper use of Ellik evacuator. Bladder can be evacuated completely by angling the beak of resectoscope towards dome of bladder. We should avoid high power current during coagulation, as high temperature causes more gas formation. In case of closed system resectoscope, use suprapubic cystostomy to create a low pressure continuous flow circuit during TURP. It also reduces frequency of manual irrigation. Air bubble can be dislodged away from area of resection by suprapubic pressure.

Conclusion

Intravesical explosion leading to bladder rupture is a rare complication and can be managed with laparoscopic repair. We should keep it in mind and take all necessary precaution to prevent this complication, so that unnecessary morbidity can be avoided.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.101093.

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