



PERITONITIS SECONDARY TO BLADDER INJURY

**M. Moujahid*, V. A. Blata, I. Talbi, Y. Mehdahoui, A. Laalou, R. Chouiba, F. Mohafid, M. Laaroussi, M. Friha,
N. Njoumi, M. Najih, M. Yaka, H. Laraqui, A. Ehirchiou and A. Zentar**

Urology Service Mohamed V University, Faculty of Medicine and Pharmacy Rabat Morocco.
Visceral II Surgery Service of Instruction Military Hospital Mohamed V. University.
Faculty of Medicine and Pharmacy in Rabat, Morocco.

***Corresponding Author: M. Moujahid**

Urology Service, Mohamed V University, Faculty of Medicine and Pharmacy Rabat Morocco.

Article Received on 30/07/2017

Article Revised on 20/08/2017

Article Accepted on 10/09/2017

ABSTRACT

The bladder blast that appears during endoscopic urologic operations is rare and dangerous. It is due to a production of hydrogen by hydrolysis of the water during the coagulation and section processes. Hydrogen becomes very combustible once mixed with ambient oxygen. We report a case of bladder blast during transurethral resection of the prostate.

KEYWORDS: Transurethral Resection, Bladder Blast, Trauma, Diagnosis and Treatment.

INTRODUCTION

The bladder blast during transurethral resection of the prostate is rare. The onset of this accident is linked to the importance of cellular hydrolysis during electrocoagulation, releasing a mixture of gas, becoming explosive when it comes in contact with oxygen. Certain precautions may limit this risk. We report a new case of intraperitoneal rupture of the bladder during a prostatic resection performed at the surgical service of the Military Hospital Mohamed V-Rabat, Morocco.

OBSERVATION (MATERIAL AND METHOD)

A 72-year-old female patient hospitalized for surgical treatment of a prostate adenoma associated with acute urinary retention. Rectal examination showed an enlarged prostate in volume, estimated at 68 grams. Endoscopic trans-urethral resection was decided. The operative act was difficult because of the hemorrhagic character of the prostate and only 30 grams of shavings were removed through of a Hellick pear.

In an attempt to control the bleeding, an important and brutal explosion occurred that surprised the surgical team.

Irrigation fluid was not recovered and blunt exploration of the bladder by endoscopy showed a probable rupture of the bladder dome. An exploratory laparotomy under general anesthesia was performed immediately by which a partial rupture of the bladder dome was confirmed. Wound repair and cystotomy were performed. The tightening test revealed no flow. The exploration of the peritoneal cavity showed no associated digestive injury.

The cystography performed one month later showed a perfectly tight of bladder.

DISCUSSION

The rupture of bladder by explosion during trans-urethral resection of prostate is rare. To our knowledge, 8 cases were described in the literature. Cassuto from 1926 reported a case of intra-vesical explosion during an electro-coagulation of the bladder.^[1] Krestschmer describes for the first time two cases of rupture of bladder during a trans-urethral resection of bladder.^[2] In 1950, Bobbit also reports a case of explosion of bladder during a trans-urethral resection of prostate.^[3] In 1975, Ning announces 2 new incidents during resection with mucous tears in the vesical dome without real break, following upon an intra vesical explosion during electro coagulation.^[4] Moring in 2003 report a case of vesical explosion during a trans urethral resection of the prostate.^[5] In 2013, EL Anzaoui also report a new case during a trans urethral resection of the prostate.^[6]

Ning reports his analysis by spectrometry of the intra-vesical composition in gas during a resection and the electro-coagulation. The amount of hydrogen released is important. The hydrogen constitutes 40 in 50% of the produced gas, while the oxygen constitutes only 3%; wich suggested that these gases would be produced by the hydrolysis of the intracellular water.^[6] Hansen confirmed these data in 1979 following in vitro study.^[7] This thermal degradation is much more important during the electro-coagulation. Other hydrocarbons would be also present, with an explosive potential mattering in the presence of oxygen.^[6,8] Indeed, the hydrogen and these various gases are not explosive if they are not

associated to the oxygen. The content in oxygen in the bladder is normally weak. During the manipulations of the resector, a certain quantity of atmospheric air can be introduced into the bladder. Air bubbles passing in the irrigation can contribute to increase the content in oxygen.^[9] The mixture oxygen-hydrogen more or less associated with other hydrocarbons becomes then highly explosive. Repercussions on the bladder can be small with simple mucous lacerations, but can also be major with intra-peritoneal break of bladder.^[10]

The various principles to limit the risk of explosion of bladder during an electro-coagulation base above all on the ambient control of the air inlet in the vesical surrounding wall. It is necessary to limit at the most the manipulations entails an air inlet whether it is during the mismatch of the girdle of the resector or the recycling of shavings of resection by Ellick's pear. Some simple principles must be besides applied: open the faucet of irrigation before the introduction of the element operator in the girdle, make sure of the water professor Ellick's pear and flood the filter of the pipe of irrigation. The aspiration is recommended when a big quantity of air is present in the bladder. Certain authors also described the interest of the supra pubic catheterization.^[11] It seems also that it's recommended to use a moderate intensity of electro-coagulation.^[12]

CONCLUSION

The bladder blast in endoscopic procedures is rare; however, it poses a real danger to the patient's life. Risks are represented by sharp visceral pain. This entity is due to the production of gas, in particular hydrogen, which, once mixed with the oxygen of the environment, becomes very flammable. The prevention of such incidents is possible while respecting some security measures.

No conflict of interest.

REFERENCES

1. Cassuto A. Explosion in the bladder during an electro-coagulation. *J Urol.*, 1926; 22: 263.
2. Kretschmer HL. Intravesical explosions as a complication of transurethral electro resection: Report of two cases. *JAMA*, 1934; 103: 1144-78.
3. Bobbit R. M. Intravesical rupture of bladder during transurethral prostatic resection. *J. Urol.*, 1950; 64: 338.
4. Ning TC, Jr, Atkins DM, Murphy RC. Bladder explosion during transurethral surgery. *J Urol.*, 1975; 114: 536-9-81.
5. G. Morin et coll., *Progrès en Urologie*, 2003; 13: 303-305.
6. El Anzaoui, J, Abakka N, El harrech Y and al. The intra vesical explosion during the procedures of endoscopic resection: a dangerous incident which can be avoided *Can Urol. Assoc. J.*, Jul-Aug 2013; 7(7-8): 17-19.
7. Hansen RI, Inversen P. Bladder explosion during uninterrupted transurethral resection of the prostate. A case report and an experimental model. *Scand J Nephrol*, 1979; 13: 211-2.
8. Di Tonno F, Fusaro V, Bertoldin R and al. Bladder explosion during transurethral resection of the prostate. *Urol Int*, 2003; 71: 108-9.
9. Khan A, Masood J, Ghei M, et al. Intravesical explosions during transurethral endoscopic procedures. *Int Urol Nephrol*, 2007; 39: 179-83.
10. Dublin N., Razack A.H, Loh C.S. Intravesical explosion during transurethral resection of the prostate. *Aust. N. Z. J. Surg*, 2001; 71: 384-385.
11. Horger DC, Babanoury A. Intravesical explosion during transurethral resection of bladder tumors. *J Urol*, 2004; 172: 1813.
12. Frachet O, Cordier G, Henry N and al. Perforing vesical during a trans-urethral resection of tumor of bladder. *Prog Urol.*, 2007; 17: 1310-2.