

External Iliac Vein Injury During the Bipolar Transurethral Resection of Bladder Tumor: A Case Report

Sacit Nuri Gorgel^{a, b}, Osman Kose^a, Ozan Horsanali^a, Ersoy Uysal^a, Kutun Ozer^a, Emin Ozbek^a

Abstract

Incidence of carcinoma bladder is increasing in industrialized and developed countries. Most of tumors are superficial and well differentiated transitional cell carcinomas. Transurethral resection of bladder tumor is a routinely performed procedure for bladder tumors. This procedure is more likely to stimulate the adjacent obturator nerve, which is in close proximity to the lateral bladder wall. This stimulation causes obturator nerve reflex, leading to inadvertent bleeding and bladder perforation.

Keywords: Bipolar transurethral resection; Bladder tumor; Vein injury

Introduction

Bladder cancer is one of the most common malignant diseases of the urinary tract system. According to the American Cancer Society, approximately 74,690 new cases of bladder cancer and 15,580 bladder cancer-related deaths occurred in 2014 [1]. Approximately 75% of patients with bladder cancer present with non-muscle-invasive bladder cancer (NMIBC, formerly known as superficial bladder cancer) that is confined to either the mucosa (stage Ta, carcinoma *in situ*) or submucosa (stage T1). The current standard treatment for NMIBC is transurethral resection of bladder tumor (TURBT), followed by adjuvant intravesical chemotherapy or immunotherapy [2].

The goals of TURBT are to eradicate all visible tumors, prevent tumor recurrence and prevent progression to invasive or metastatic disease. However, when the lesions are located in the lateral bladder wall or around the ureteral orifice, optimal penetration is difficult to control during TURBT, and

complications such as bleeding, bladder perforation and hydronephrosis can occur. In addition, these procedures are more likely to stimulate the adjacent obturator nerve (ON), which is in close proximity to the lateral bladder wall. This stimulation causes obturator nerve reflex (ONR), leading to inadvertent bleeding and bladder perforation [3].

Case Report

A 52-year-old male patient was admitted to our clinic because of macroscopic hematuria. Physical examination, urine analysis, complete blood count and blood biochemistry were normal. A mass, 2 cm diameter, was detected on urinary system ultrasonography. Papillary tumoral mass was shown in left side wall of the bladder on cystoscopy. Then bipolar transurethral resection of tumor was planned under spinal anesthesia. Bladder perforation and gross hematuria occurred during transurethral resection of tumor due to severe ONR. We decided to perform open surgery due to persistence of hematuria, the occurrence of hypotension and tachycardia. Bladder perforation about 1 cm at left side wall and left external iliac vein injury were seen in open surgery. The left external iliac vein injury was repaired with 5-0 prolene suture and bladder perforation was repaired with 3-0 vicryl suture. Pathologic evaluation of transurethral resection was reported as low grade urothelial carcinoma. Cystoscopy was normal after 3 months from open surgery.

Discussion

ON originates from L2-L4 lumbar plexus and passes through obturator foramen to supply adductor muscles of thigh. It passes close to infero-lateral bladder wall, bladder neck and prostatic urethra [4].

In transurethral urological surgeries, bladder is distended with irrigation fluid. ON path comes very close to the lateral bladder wall. Electric current can easily stimulate the ON while doing TURBT. Stimulation of ON causes sudden jerk (adductor reflex) due to contraction of adductor muscles. This all happens in fraction of a second and may lead to bladder perforation or deep cut which may cause profuse bleeding. This may also result in incomplete resection of the bladder tumor

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^aIzmir Katip Celebi University, Ataturk Training and Research Hospital, Department of Urology, Izmir, Turkey

^bCorresponding Author: Sacit Nuri Gorgel, Izmir Katip Celebi University, Ataturk Training and Research Hospital, Department of Urology, Izmir, Turkey. Email: sngorgel@hotmail.com

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[5, 6].

Motor part of the ON is blocked under spinal anesthesia; however, jerk does occur due to non-blockage of sensory part. D-tubocurarine and succinylcholine have been used to block neuromuscular junction but this requires a general anesthesia with endotracheal intubation. However, morbidity is relatively high in old age patients requiring tumor surgery under general anesthesia [7, 8].

Prentiss was the first person who used regional block of ON in 1965 [9]. Various techniques of obturator nerve block (ONB) were described in literature [10-12].

Conclusion

ONB along with spinal anesthesia can be safely employed to prevent the obturator jerk, which commonly occurs in tumors of posterolateral areas of bladder. We recommend ONB in patient of lateral bladder tumor undergoing TURBT. Vascular injury should be considered in the presence of persistence of hematuria, hypotension and tachycardia due to ONR and open surgery should be performed.

Conflict of Interest

The authors declare that they have no conflict of interest.

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