

Results of Bladder TUR Performed by a Second - Year Urology Resident at the Hospital de Clínicas de Montevideo, Uruguay: Detailed Analysis

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Abstract: ***Objective:** This study aims to describe the results of bladder transurethral resection (TUR) surgery performed by a urology resident during his second year of training at the Hospital de Clínicas, Montevideo, Uruguay. **Methods:** A descriptive study was carried out that included bladder TUR surgeries performed by a single resident during the period from April 2023 to March 2024. Variables such as the number of surgeries performed, operative time, type of surgery were recorded. of tumor reported by pathological anatomy and the presence of detrusor muscle in the sample. The data were analyzed using Excel version 2019. **Results:** During the period studied, the resident performed a total of 16 bladder TURs, all using bipolar energy. The average operative time was 49.62 minutes with a standard deviation of 20.34 minutes. Pathology revealed a variety of diagnoses, with a predominance of high - grade muscle - invasive tumors (T2 HG). Most of the samples positive for urothelial tumor had detrusor muscle in the sample, suggesting an appropriate resection technique. **Conclusions:** This study provides important insight into the practice of bladder TUR performed by a urology resident in his second year of training. The results support the performance of TUR by urology residents under adequate supervision and highlight the need for comprehensive training to improve care for patients with bladder pathologies.*

Keywords: Transurethral bladder resection; bladder cancer; urology residency

1. Introduction

Bladder cancer is among the most common cancers worldwide, being the seventh in men and the tenth in both genders. Smoking and occupational exposure to various compounds are among the main risk factors associated with its development.

Most cases are of urothelial origin, with approximately 75% of patients presenting with non - muscle invasive disease; confined to the mucosa (stage Ta, CIS) or submucosa (stage T1) and 15% muscle invasive disease (stage T2 - 4) (1).

Regarding the degree of cellular differentiation; prognostic factor for progression, in 2004 the WHO published a histological classification system that includes; papillary urothelial neoplasia of low malignant potential (PUNLMP), low - grade non - invasive papillary carcinoma (LG) and high - grade non - invasive papillary carcinoma (HG) (2).

Transurethral resection (TUR) of the bladder is considered the diagnostic, prognostic and therapeutic gold standard in non - muscle invasive bladder cancer, since it allows the eventual complete transurethral resection of Ta - T1 tumors. Classically, monopolar or bipolar energy has been used, although there is evidence that supports the use of thulium - YAG or holmium - YAG or KTP - green light lasers (3) (4) (5). The resection can be fractional or en bloc, the technique

selected depends on the size and location of the tumor and the experience of the surgeon. Recent evidence does not confirm a higher recovery rate of the detrusor muscle with the en bloc technique, compared to gradual resection (6).

The absence of detrusor muscle in the specimen is associated with a significantly increased risk of residual disease, early recurrence, and tumor understaging. Therefore, it is considered a substitute criterion for the quality of the resection and is mandatory (except in Ta LG/G1 tumors) (7).

This study aims to describe the surgical activity corresponding to bladder TUR performed by a urology resident in his second year of residency at the Hospital de Clínicas, Montevideo Uruguay, in the period April 2023 to March 2024.

2. Methods

A descriptive study was conducted, including all bladder TURs performed by a single resident during the specified period. The main variables of interest are the number of surgeries performed, operative time, type of tumor reported by pathological anatomy, and presence of detrusor muscle in the sample.

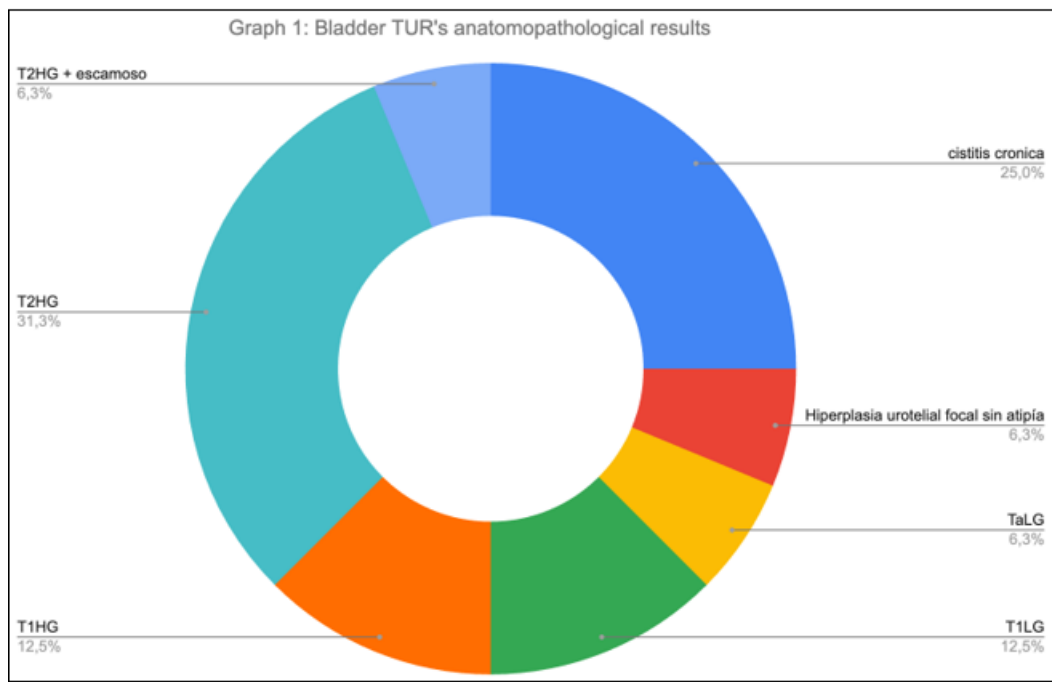
Data were collected from the institution's registry of operative descriptions and pathological anatomy reports, and analyzed in Excel version 2019.

3. Results

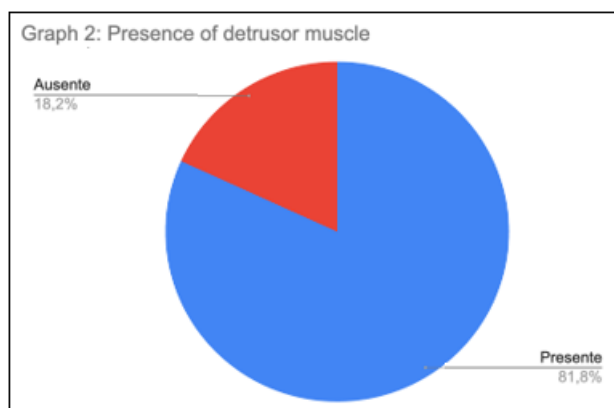
In a period of one year, the resident performed a total of 16 bladder TURs. They were performed only using bipolar energy, fractional technique. In all of the interventions the

resident played the role of surgeon. The mean operating time was 49.62 minutes with a standard deviation of 20.34 minutes with a range of 20 - 90 minutes.

The pathological anatomy reported T2 HG in 31.3% (n=5) of the samples, 25% (n=4) chronic cystitis, 12.5% (n=4) T1 LG, 12.5% (n=4) T1 HG and 6.3 % (n=1) Ta LG, T2HG with squamous component and focal urothelial hyperplasia without atypia (graph 1).



Regarding the presence of detrusor muscle in the samples positive for urothelial bladder tumor (n=11), 81.8% (n=9) had a detrusor muscle in the sample and 18.2% (n=2) did not present it (graph 2).



4. Discussion

Bladder TUR is a fundamental procedure in the management of bladder cancer. In this study, the results of 16 TURs performed by a urology resident during his second year of training at the Hospital de Clínicas, Montevideo, Uruguay were analyzed.

The results show a diversity of pathological diagnoses, with a significant prevalence of high - grade muscle - invasive tumors (T2 HG), followed by chronic cystitis and low - grade

submucosal non - muscle - invasive tumors (T1 LG). This profile reflects the complexity of the cases treated by the resident during the period studied, and the prevalence of advanced disease at the institution.

It is encouraging to note that most of the samples positive for urothelial tumor had detrusor muscle in the sample, which suggests an adequate resection technique and a lower probability of recurrence. However, the presence of a minority percentage of muscle - free specimens highlights the importance of a meticulous resection technique to ensure accurate assessment of tumor stage and reduce the risk of recurrence. The absence of the detrusor muscle, with the exception of Ta LG tumors and primary CIS, is a criterion to be considered for a second TUR in addition to; an incomplete initial TUR and the presence of T1 tumors. In these cases, it has been shown that a second TUR improves recurrence - free survival (8).

The average operative time of 49.62 minutes is consistent with standard practices in bladder surgery (9). Although operative time may vary depending on the complexity of the cases and the surgeon's experience, it is essential to maintain a balance between surgical efficiency and the precision of the resection.

Regarding the training of the resident in this type of surgery; During the first year of training, instruction is given on performing outpatient cystoscopies, the initial step of bladder TUR. It consists of introducing a rigid or flexible instrument

through the urethra, after lubrication, and once in the bladder, systematically observing and describing the findings using diagrammed images. Once the resident achieves this skill, he or she is allowed to perform hemostasis after transurethral resection of a bladder tumor, so that the resident becomes familiar with the instruments and how they operate. Once this ability has been achieved, TUR of the bladder for small, single tumors is allowed towards the end of the first year of residency. It should be noted that these activities are supervised and supervised by qualified urologists who teach the service.

Furthermore, it is important to recognize the limitations of this study, including its retrospective nature and relatively small sample size. Furthermore, the evaluation of the quality of the resection was based only on the presence of the detrusor muscle, not including, for example, the presence of intraoperative complications such as the rate of bladder perforations.

More prospective, larger - scale studies are needed to validate these findings and evaluate the relationship between resident experience, surgical outcomes, and long - term clinical outcomes. Additionally, it would be beneficial to implement ongoing training and supervision programs to improve residents' technical skills and safety in performing TUR.

5. Conclusions

- This study provides valuable insight into the practice of bladder TUR performed by a urology resident during his second year of training.
- The results support the performance of TUR by urology residents under adequate supervision and highlight the need for comprehensive training to ensure optimal surgical outcomes and improve care for patients with bladder pathologies.
- Further long - term studies are required to evaluate the safety and effectiveness of this approach.

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