# Early results of endoscopic bipolar transurethral resection of non-muscle invasive bladder cancer at Viet Tiep Hospital

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**ABSTRACT**

**Objective:** To evaluate the early results of endoscopic bipolar transurethral resection (Bi-TUR) of non-muscle invasive bladder cancer (NMIBC) at Viet Tiep Hospital. **Patients and methods:** This study included 33 patients diagnosed with NMIBC who were treated with Bi-TUR at Viet Tiep Hospital between April 2021 and August 2022. **Results:** The mean age was 66.8 ± 11.4 years, the youngest was 40 years, and the oldest was 87 years. The male-to-female ratio was 5.6/1. The most common location of the tumor was the lateral wall in of 24/33 patients, accounting for 72.7%. The mean operation time was 45.1 ± 9.5 minutes. Among the 33 patients, 30 (90.9 %) had no complications. One patient had postoperative bleeding, accounting for 3%, and two patients had urinary tract infections, accounting for 6.1%. Evaluation of the surgical results after surgery showed that 30/33 patients achieved good results. Three patients achieved fair results. The most common histological type was transitional cell carcinoma in 32/33 patients, accounting for 97%. **Conclusion:** The Bi-TUR for NMIBC is safe and effective, reducing many intraoperative and postoperative complications.

***Keywords:*** non-muscle-invasive bladder cancer, bipolar transurethral resection.

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## INTRODUCTION

Bladder cancer (BC) is a relatively common urological cancer [1]. The incidence of this disease is currently increasing. According to the World Health Organization (WHO) and the National Cancer Institute in the United States, there are over 12,000 new cases of bladder cancer in the UK every year. In the US, from 1990 to 2005, the number increased from 47,000 to 60,000 cases annually [2].

According to the International Union Against Cancer (UICC), non-muscle invasive bladder cancer (NMIBC) is a type in which damage is limited to the mucosa or lamina propria without invasion into the muscle layer. This includes stages Ta, Tis, and T1. [3-5].

The treatment of BC aims to achieve three objectives: removing the presence of the tumor (tumor resection), preventing tumor recurrence, and preventing tumor progression and invasion [1, 6]. Transurethral resection of bladder tumor (TURBT) accomplishes both tumor removal and pathological staging of bladder cancer.

In Vietnam, TURBT has been used since the 1980s, with its first implementation at Viet Duc Hospital in 1981[7]. At Viet Tiep Hospital, TURBT has been performed for many years, starting to use of bipolar loop electrodes (bipolar transurethral

resection/Bi-TUR) since 2017. However, few authors have focused on the effectiveness of this treatment method. Therefore, to contribute to the understanding of the clinical, paraclinical, and early treatment outcomes of patients with non-muscle invasive bladder cancer, we conducted a study to evaluate the early outcomes of Bi-TUR for NMIBC.

## PATIENTS AND METHODS

A prospective descriptive study was conducted. A total of 33 patients diagnosed with NMIBC and treated with Bi-TUR at Viet Tiep Hospital from April 2021 to August 2022 were recruited. The inclusion criteria were patients with primary or recurrent NMIBC with confirmed pathology and complete medical records. Patients with tumors located within the bladder diverticulum, bleeding disorders, or cardiovascular diseases using anticoagulant medication were excluded from the study. The study was conducted in accordance with the guidelines of the Declaration of Helsinki and was approved by the Institutional Review Board.

Study indicators included age, sex, reason for hospital admission, and surgical outcomes such as the number of tumors, tumor location, operation time, intraoperative complications, early surgical outcome assessment, and pathological results.

Assessment of early surgical outcomes of bi-TUR for NMIBC [8]:

*Good outcome:*

+ Complete tumor resection confirmed by the surgeon.

+ Safe surgery with no complications.

+ No urinary tract infections.

*Fair outcome:*

+ Complete tumor resection confirmed by the surgeons.

+ Intraoperative bleeding managed with endoscopy without the need for conversion to another surgical method or postoperative bleeding managed with medications.

+ Urinary tract infection treated successfully.

*Poor outcome:*

+ Incomplete tumor resection requiring conversion to open surgery.

+ Complications such as bladder perforation or significant bleeding during surgery requiring conversion to open surgery.

Postoperative bleeding not controlled with internal medicine, requiring surgical intervention for hemostasis

## RESULTS

The mean age was 66.8 ± 11.4 years, with the youngest being 40 and the oldest being 87 years old. The male-to-female ratio was 5.6:1. Mainly patients came for medical examination due to symptoms of dysuria and urgency, accounting for 66.7% (Table 1). The number of patients with a single tumor was 26 out of 33, accounting for the majority (78.8 %). The most common location of the tumor was the lateral wall, with 24 of 33 patients (72.7 %). (Table 2)

***Table 1.*** *Reasons for hospital admission (n=33)*

| Reasons for hospital admission | Number | Percentage (%) |
|---|---|---|
| **Hematuria** | 16 | 48,5 |
| **Dysuria** | 22 | 66,7 |

| | | |
|---|---|---|
| **Lower abdominal pain** | 11 | 33,3 |
| **Incidental discovery of the disease** | 0 | 0% |

***Table 2.*** *Number and location of tumors (n=33)*

| **Characteristics** | | **Number (Percentage)** |
|---|---|---|
| **Number of tumors** | 1 | 26 (78,8%) |
| | 2-3 | 6 (18,2%) |
| | 4-5 | 1 (3%) |
| | >5 | 0 |
| **Location of tumors** | Bladder neck | 1 (3%) |
| | Trigone | 1 (3%) |
| | Lateral wall | 24 (72,7%) |
| | Anterior wall | 4 (12,1%) |
| | Posterior wall | 2 (6,1%) |
| | Scattered in bladder | 1 (3%) |

The mean operation time was 45.1 ± 9.5 minutes, with the shortest surgical time being 25 min and the longest being 60 min. Operation time in the range of 30 to 45 minutes accounted for the highest proportion (48.5 %).

In our study, 30 of the 33 patients (90.9 %) had no complications. One patient experienced postoperative hematuria, accounting for 3%, and two patients developed urinary tract infections, accounting for 6.1% (Table 3). All patients were successfully managed with medication. There were no cases of intraoperative complications such as bladder perforation, mortality, or intraoperative bleeding.

Postoperative evaluation revealed that 30 of 33 patients achieved good results, while 3 of 33 patients achieved fair outcomes (Table 4). The cases with fair outcomes experienced postoperative complications, such as bleeding and infection, but were successfully stabilized with medication, and none required further intervention.

The most common histological type was transitional cell carcinoma, accounting for 32 of 33 patients (97 %). One of the 33 patients had squamous cell carcinoma, and no cases of adenocarcinoma were observed (Table 5).

***Table 3.*** *Postoperative complications (n=33)*

| Complication | Number of patients |
|---|---|
| **Without complication** | 30 |
| **Hematuria** | 1 |
| **Urinary tract infection** | 2 |

***Table 4.*** *Assessment of surgical outcome (n=33)*

| Surgical outcime | Number | Percentage (%) |
|---|---|---|
| Good | 30 | 90,9 |
| Fair | 3 | 9,1 |
| Poor | 0 | 0 |
| Total | 33 | 100 |

***Table 5.*** *Pathological outcome (n=33)*

| Pathology | Number | Percentage (%) |
|---|---|---|
| Transitional cell carcinoma | 32 | 97 |
| Squamouscell carninoma | 1 | 3 |
| Adenocarcinoma | 0 | 0 |
| Total | 33 | 100 |

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## DISCUSSIONS

According to the literature, BC can occur at any age, but is less common in individuals under 40 years of age, with a higher incidence observed between the ages of 60 and 70 years. Men are affected at a rate 3-5 times higher than women, and younger patients tend to have better differentiation and slower progression. Statistics from the United States in 2014 showed a rapid increase in the disease's prevalence at the age of 50, with the average age of onset being 70 for men and 72 for women.[8].

In our study of 33 patients, the mean age was 66.8 ± 11.4 years, with the youngest patient being 40 years old and the oldest 87. We categorized age groups with a 20-year interval, with the most common age group being 61–80 years old, accounting for 57.6%.

Hà Mạnh Cường (2021) divided ages into groups with a 10-year interval, with the most common age group being 51 to 60 years old,

accounting for 44.1%.[9]. Sylvester R.J. and colleagues (2006) categorized ages into groups of ≤60 years, 61-70 years, 71-80 years, and >80 years, with the most common age group being 61 to 80 years old, accounting for 60.9%. [5].

Regarding gender distribution, Hà Mạnh Cường (2021) reported a male-to-female ratio of 3.54, while Vũ Văn Lại (2007) reported a ratio of 5 [7]. According to Mohammadian M. (2020), the global incidence rate in 2018 was 9.6/100,000 for males and 2.4/100,000 for females [11]. Therefore, according to most authors, males have a higher incidence rate of bladder cancer than females, approximately 3-5 times higher. This gender disparity is attributed to factors such as smoking and occupational hazards.[10].

In our study, the mean operation time was 45.1 ± 9.5 minutes, with the shortest surgery lasting 25 min and the longest 60 minutes. In comparison to other authors, Hà Mạnh Cường (2021) reported an operation time of 28.59 ± 12.65 minutes, with the shortest surgery lasting 15 minutes and the longest 86 minutes.[10]. Similarly, Đỗ Trường Thành (2004) reported an average operation time of 38 ± 13.4 minutes [3], Nguyễn Văn Ân (2014) reported an average operation time of 25.8 ± 8.4 minutes [12].

In our study, 26 of the 33 patients had a single tumor, accounting for 78.8% of the cases. Patients with 2-3 tumors accounted for 18.2% and those with 4-5 tumors accounted for 3%. In comparison, Hà Mạnh Cường (2021) reported that 61% of patients had a single tumor, 37.3% had 2-7 tumors, and 1.7% had 8 tumors (classified according to EORTC criteria).) [10]

According to Hà Mạnh Cường (2021), the rate of successful outcomes was 91.5%. [10]. Similarly, Nguyễn Văn Ân and colleagues (2014) reported a success rate of 90.9%, with 9.1% achieving satisfactory results and no poor outcomes. [12]. This indicates that Bi-TUR for NMIBC is currently much more effective owing to its better infrastructure and equipment. According to Babjuk M (2009), to improve the effectiveness of TURBT, a combination of factors is necessary, including training of urological surgeons, modern equipment such as endoscopes, and imaging systems. [6]. The success criteria for TURBT are met when there is no residual tumor (low early recurrence rate), accurate staging of the tumor, and absence of complications.

## CONCLUSIONS

Bi-TUR for NMIBC is safe and effective, limiting many intra- and postoperative complications.

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## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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None.

## CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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