

Rapid Communication

An 18-month Audit of TURP Complications using the Clavien-Dindo Classification System

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Abstract

Transurethral resection of the prostate (TURP) is the gold standard for management of medical treatment for benign prostatic obstruction (BPO) resistant to medical therapy. Complications can be classified into various systems. The Clavien-Dindo Classification System has been 'highly recommended' for grading urological complications.

This paper aims to retrospectively analyse complications of TURP over an 18-month period at St Mary's Hospital, London.

Sixty-six patients underwent TURP for benign prostatic disease from 1st May 2012 until 30th November 2013. Eight complications were seen in six (9.1%) patients. Complications ranged from Clavien-Dindo I to III-b.

TURP has been a safe method of managing benign prostatic disease in our centre. Urological complications can be easily classified using the Clavien-Dindo Classification System.

Keywords: TURP, prostate, resection, complications, Clavien-Dindo

Abbreviations

TURP: Trans-urethral Resection of the Prostate; BPO: Benign Prostatic Obstruction; UTI: Urinary Tract Infection

Introduction

Trans-urethral resection of the prostate (TURP) is gold standard for the treatment of lower urinary tract symptoms such as frequency, nocturia, hesitancy and incomplete voiding in men with benign prostatic obstruction (BPO) resistant to medical treatment in prostates 30-80 mL. TURP is also indicated in BPO related haematuria and UTI, recurrent urinary retention, upper urinary tract dilatation secondary to BPO and bladder stones [1]. TURP has been shown to improve urine flow by 120% and has been associated with an increase in Q_{max} by 9.7 ml/s. Improvements have been seen in both terms of quality of life indicators and IPSS score which improve by 70.6% following TURP [2].

Complications of TURP can be divided into intraoperative, perioperative and postoperative complications. Intraoperative complications include bleeding, of which 8.6% require postoperative transfusion and TUR syndrome, a dilutional hyponatraemia, which has decreased to less than 1% of cases due to the introduction of bipolar diathermy and intravesical fluid management [3]. Perioperative complications include UTI (4-20%), retention (3-9%) and bladder tamponade (1-5%) [3]. Urinary incontinence can occur in 30-40% of cases in the weeks following procedure, likely due to detrusor overactivity. However, long-term iatrogenic stress incontinence occurs in <0.5% [3]. Other post-operative complications include urethral stricture (2-9%) and bladder neck stenosis (0.3-9%) [3]. Retrograde ejaculation is seen in >90% but there is debate over whether this should be classified as a complication or consequence of TURP. Complications can be classified into various systems. Mitropoulos

et al. completed a systematic review of urological complications and deemed the Clavien-Dindo Classification System (Table 1) 'highly recommended' for grading of urological complications [4].

This paper aims to retrospectively analyse complications of TURP over an 18-month period at St Mary's Hospital, London and classify using the Clavien-Dindo System. Use of the Clavien-Dindo system for classification of urological complications will be discussed.

Materials and Methods

All patients that underwent TURP for benign disease at St Mary's Hospital, London from 1st May 2012 until 30th November 2013 were retrospectively analysed. Patient data was collected from operative notes, inpatient notes, electronic discharge summaries, urology clinic and specialist nurse follow-up documentation two months or longer following TURP. Complications were classified using the Clavien-Dindo system.

Results and Discussion

Sixty-six patients underwent TURP for benign disease over an 18-month period. Patient age ranged from 52-87 (mean = 70). Eight complications were seen in six (9.1%) patients (Table 2). Complications ranged from Clavien-Dindo I to III-b. No grade IV or above complication was seen.

Clavien-Dindo I – No pharmacologic or surgical intervention required

Urinary retention was seen in one patient who was readmitted 22 days following TURP, having passed trial without catheter (TWOC). He was managed with IV fluids, re-catheterised and passed TWOC after 5 days. One other patient failed TWOC post-operatively but subsequently passed TWOC on first attempt 10 days later. The nurse specialist documented retrograde ejaculation on two occasions for which no management was required.

Table 1: Clavien-Dindo Classification of Surgical Complications [6].

| Grades | Definitions |
|------------|--|
| I | Any deviation from the normal postoperative course without the need for pharmacologic treatment or surgical, endoscopic, and radiologic interventions. Acceptable therapeutic regimens are drugs such as antiemetics, antipyretics, analgesics, diuretics, and electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside. |
| II | Requiring pharmacologic treatment with drugs other than those allowed for grade 1 complication. Blood transfusions and total parenteral nutrition are also included. |
| III | Requiring surgical, endoscopic, or radiologic intervention. |
| IIIa | Intervention not under general anaesthesia. |
| IIIb | Intervention under general anaesthesia. |
| IV | Life-threatening complication (including central nervous system complications: brain haemorrhage, ischaemic stroke, subarachnoid bleeding, but excluding transient ischaemic attacks) requiring intermediate care/intensive care unit management. |
| IVa | Single-organ dysfunction (including dialysis). |
| IVb | Multi-organ dysfunction. |
| V | Death of a patient. |
| Suffix "d" | If the patient suffers from a complication at the time of discharge, the suffix "d" (for disability) is added to the respective grade of complication. This label indicates the need for a follow-up to evaluate the complication fully. |

Table 2: Number of complications following TURP classified using the Clavien-Dindo system.

| Complication | Number of complications | Percentage | Clavien-Dindo classification |
|-----------------------------------|-------------------------|------------|------------------------------|
| Acute urinary retention | 1 | 1.5% | I |
| Failed TWOC post-operatively | 1 | 1.5% | I |
| Retrograde ejaculation | 2 | 3.0% | I |
| UTI | 1 | 1.5% | II |
| Epididymo-orchitis | 1 | 1.5% | II |
| Lower respiratory tract infection | 1 | 1.5% | II |
| Urethral stricture | 1 | 1.5% | III-b |
| Total | 8 | 9.1% | N/A |

Clavien-Dindo II complications – Pharmacologic intervention required

One patient's case was complicated by lower respiratory tract infection seen on chest x-ray two days post-operatively. He was managed with oxygen and intravenous antibiotics, which were switched to oral and recovered well. There was one patient who was complicated by one episode of urinary tract infection (UTI) and a separate episode of epididymo-orchitis, both confirmed on MSU and managed with antibiotics only.

Clavien Dindo III-b – Intervention under general anaesthesia

The same patient who developed UTI and epididymo-orchitis later developed urethral stricture, which was not seen at TURP but confirmed on cystoscopy six months post-operatively and underwent optical urethrotomy. One month following this procedure he had little improvement in symptoms and intermittently self-catheterized twice a week, similar to pre-TURP.

Discussion

TURP is a relatively safe procedure, which has been shown to have many benefits. Complication rates at our centre were seen to be low when compared to literature. Data was collected post-operatively two months following procedure, allowing time for complications to develop. However as data was collected retrospectively there is a possibility that less severe complications (Clavien-Dindo I-II) would be under reported as their general practitioner could have managed them without need for hospital intervention, increasing loss to

follow-up in these groups. We attempted to minimize this risk by nurse practitioner follow-up but all not all patients attended follow-up. Similarly retrograde ejaculation was likely to be very under-reported but this may partially due to pre-operative counselling that retrograde ejaculation is a likely consequence of TURP. There is debate as to whether this should be classified as a complication or consequence of TURP. Clavien-Dindo classification III-a and above are less likely to be lost to follow-up using retrospective analysis as they require surgical intervention and are likely to be re-referred to secondary care.

Clavien et al. published a four-tiered classification system of peri-operative or post-operative complications in 1992 that was based on the management required to treat the complications of surgery [5]. Dindo et al. who split the complications into five grades, two of which were split further, updated Clavien's classification in 2004 to create the Clavien-Dindo Classification [6]. (Table 1) The popularity of this system for grading urological complications has increased in recent years. Yoon et al. analysed all papers published in five major urological journals from 2010-2012 and found an increase in the use of the Clavien-Dindo Classification in papers that discussed surgical outcomes from 21.4% in 2010 to 50.2% in 2012 [7].

Mitropoulos et al. completed a systematic review of urological complications reported using the Clavien-Dindo Classification and reported its use in 204 papers. The review noted improper use in 35.5% of papers, stating modifications, not assigning grades to complications and using intra-operative complications as reasons. Mitropoulos et al. rated the Clavien-Dindo classification as 'highly

recommended' and recommended criteria for reporting urological complications, which have been followed in this study [4]. Multimodality treatments such as combining chemotherapy and surgery are more difficult to grade using the Clavien-Dindo Classification system and the National Cancer Institute Common Toxicity Criteria has been recommended [4, 8].

Conclusion

TURP has been a safe method of managing benign prostatic disease in our centre. The Clavien-Dindo Classification System has been increasingly used in urological literature. It has been a quick and easy to use tool for classifying urological complications in this study.

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