

Complication rates of open transvesical prostatectomy according to the Clavien–Dindo classification system

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Abstract

Background: Traditional open prostatectomies either transvesical or retropubic remains the reference standard for managing benign prostatic enlargement in some centers, especially in developing countries. The comparison of complication rates between the various types of open prostatectomies is usually a source of significant debate among urologists, most times with conflicting results. The Clavien–Dindo classification system is an excellent attempt at standardization of reporting complications associated with surgeries.

Materials and Methods: We reviewed retrospectively the records of patients who had open transvesical prostatectomy (TVP) in three specialist urology centers in Anambra state, Southeast Nigeria, over a period of 5 years (January 2004–December 2009), with the aim of documenting medical and surgical complications arising from open TVP. These complications were then categorized according to the Clavien–Dindo system.

Results: A total of 362 patients had open TVP over the period under review. Of this number, 145 had documented evidence of complications. The mean age of the patients was 66.3 years (SD 9.4 years; range 49–96 years). The mean follow-up period was 27.8 months (SD 12.6 months; range 6–33 months). The overall complication rate for open TVP in this study was 40.1% (145/362). Complication rates for grades i, id, ii, iiia, and iiib were 0.8%, 0.6%, 35.1%, 0.6%, and 3.0%, respectively. Most complications of open TVP occur in the early postoperative period.

Conclusion: Open TVP still remains a valid surgical option in contemporary environment where advanced techniques for transurethral resection of the prostate and laparoscopic prostatectomy are unavailable. Most complications occur in the early postoperative period, with bleeding requiring several units of blood transfusion accounting for the commonest complication. This should be explained to patients during the preoperative counselling.

Key words: Classification, postoperative complications, reference standard, suprapubic prostatectomy

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Introduction

Transurethral resection of the prostate (TURP) still remains the gold standard for the surgical management of benign prostatic enlargement (BPE) in the developed nations.^[1] Traditional open prostatectomies either transvesical or retropubic remains the reference standard for managing BPE in some centers, especially in developing countries.^[2] Although TURP is increasingly becoming available in our

environment, more time is required for proper assessment and comparison with the open procedure.

The comparison of complication rates between the various types of open prostatectomies is usually a source of significant debate among urologists, most times with

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conflicting results. Within a particular surgical procedure, there is also a need for constant evaluation of surgical techniques through their complication rates. These biases and surgical audit of surgeries can be overcome by using a valid and reliable classification system in reporting complications.

The classification system of Clavien *et al.*^[3] is an excellent attempt at standardization of reporting complications associated with surgeries. The Clavien classification system was first reported in 1992 and was initially used for complications associated with cholecystectomy.^[3]

In this study, we applied the revised Clavien classification system as published by Dindo *et al.*^[4] in 2004 to objectively assess complication rates associated with open TVP.

Materials and Methods

We reviewed retrospectively the records of patients who had open TVP in three specialist urology centers in Anambra state, Southeast Nigeria, over a period of 5 years (January 2004–December 2009), with the aim of documenting medical and surgical complications arising from open TVP. All the data were analyzed by the same author to ensure strict inclusion criteria. Consent for the study was obtained from the hospital ethical committee.

Complications were defined at onset of data collection and categorized as immediate, early, or late complications. Immediate complications were defined as complications occurring at the time of surgery; early when within the first 30 days after surgery; and late when beyond 30 days after surgery. Complications were graded according to the Clavien classification system. All the patients were followed up at regular intervals at the out-patient clinic. Those with complications were followed up at more frequent intervals.

Results

A total of 362 patients had open TVP over the period under review. Of this number, 145 had documented evidence of complications. The mean age of the patients was 66.3 years (SD 9.4 years; range 49–96 years). All the patients were followed up after discharge for a mean period of 27.8 months (SD 12.6 months; range 6–33) months. The overall complication rate for open TVP in this study was 40.1% (145/362). Table 1 shows the complications commonly associated with open TVP according to the revised Clavien classification system. Immediate complications are rare and mainly due to intraoperative bleeding 10 (2.8%), requiring several units of blood during surgery. The early complication rate was 34.5% (125/362), with postoperative bleeding 65 (18%),

Table 1: Complications of transvesical prostatectomy according to the Clavien classification system

| Clavien grade/complication | n (%) | Management |
|--------------------------------|------------|---|
| Immediate complications | | |
| Intra-operative bleeding (ii) | 10 (2.8) | Blood transfusion |
| Early complications | | |
| Wound infection (ii) | 25 (6.9) | Wound dressing/antibiotics |
| Bleeding (ii) | 65 (18.0) | Blood transfusion |
| Urinary tract infection (ii) | 12 (3.3) | Antibiotics |
| Epididymo-orchitis (ii) | 15 (4.1) | Antibiotics |
| Vesico-cutaneous fistula (i) | 3 (0.8) | Extended urethral catheterization |
| Clot retention (iiib) | 5 (1.4) | Bladder exploration/evacuation |
| Late complications | | |
| Urethral stricture (iiib) | 5 (1.4) | Suprapubic cystostomy/Delayed urethroplasty |
| Incontinence (id) | 2 (0.6) | Kegel's exercise |
| Incisional hernia (iiib) | 1 (0.3) | Delayed herniorrhaphy |
| Bladder neck stenosis (iiia) | 2 (0.6) | Bourginage |
| Total | 145 | |

requiring several units of blood transfusion, accounted for the commonest cause of morbidity. Severe bleeding resulted in clot retention in 5 (1.4%). This necessitated reoperation in early postoperative period. Other complications in this group include wound infection 25 (6.9%), urinary tract infection 12 (3.3%), epididymo-orchitis 15 (4.1%), and vesico-cutaneous fistula 3 (0.8%). The late complication rate was 10 (2.8%). The most common complication was post-prostatectomy urethral stricture 5 (1.4%). This required institution of suprapubic cystostomy and a delayed repair. The other complications in this group included incontinence 2 (0.6%). This was transient and resolved on Kegel's exercises, incisional hernia in 1 (0.3%) treated with surgical repair. Complication rates for grades i, id, ii, iiia, and iiib were 0.8%, 0.6%, 35.1%, 0.6%, and 3.0%, respectively.

Discussion

Apart from physical outcome of surgery, surgical techniques require constant evaluation through their complication rates. This requires a valid, reliable, and standardized system that can be easily reproducible among surgeons and researchers. This will serve as an objective means of comparing experience between surgeons and reducing negative outcomes after surgery.

Although initially introduced for reporting negative outcomes after cholecystectomy, the original Clavien classification system consisted of four severity grades.^[3] The recent modification by Dindo *et al.* in 2004^[4] emphasized on the risk and invasiveness of the method used to treat the complications. The Clavien classification system has been applied in reporting complication rates following

open radical retropubic prostatectomy^[5] and its surrogates laparoscopic radical prostatectomy^[6] and robotic assisted radical prostatectomy.^[7] While some reports show some significant advantage over the other in terms of complications, some report showed no significant advantage in terms of complication rates.^[8] This shows the complexity and incoherence associated with the present classification system.

Open TVP still remains a veritable procedure in developing countries and in some developed countries especially for large sized prostates.^[2,9] The literature is devoid of studies using the Clavien–Dindo system to stratify complications following open TVP. Our study represents an attempt to use the Clavien–Dindo system to stratify complications associated with open TVP. Varkarakis *et al.*^[9] ($n=232$) reported long-term complications of open TVP as bladder neck contraction 3.3% (5), urethral stricture 0.6% (1), and meatal stenosis 1.3% (2). Gratzke *et al.*^[10] reported an overall complication rate of 17.3% ($n=902$). The most common complication in their study was bleeding in 33 (3.7%). Shi^[11] in a study on 571 patients who had open prostatectomy reported complications of severe hemorrhage in 21 (3.7%), bladder neck or posterior urethral stricture in 10 (1.7%), and temporary incontinence in 21 (3.7%). These results vary widely with results noted in our study. This study observed an overall complication rate of open TVP of 40.1%. Complication rates for grades i, id, ii, iiiia, and iiib were 0.8%, 0.6%, 35.1%, 0.6%, and 3.0%, respectively. Most complications of open TVP occur in the early postoperative period as seen in our study and that of Gratzke *et al.*^[10] and the most significant of this was bleeding in 18.0% and 3.7%, respectively.

This study and indeed most studies in the literature using this classification system have some limitations. These limitations may account for the varying results of complication rates associated with these studies. First, our study was retrospective. Such studies are often fraught with biases which can skew results of the study especially in reporting of negative outcomes by different surgeons. Second, the patients were not operated by the same surgeon. Surgeons experience is a predictor of the severity of complications.^[12] Third, all the patients in the study do not share similar characteristics in terms of comorbidities, body mass index, and prostate size. These are factors which can impact on the outcome of surgery.

The Clavien–Dindo classification system provides an excellent platform in an attempt to produce a veritable system under which complication rates following surgery can be compared. However, the system has its shortcomings as noted by Constantinos *et al.*;^[13] it cannot evaluate the long-term aspects of the patients' quality of life, and it does not include the comorbidity of the patient, which is a stronger predictor than age of almost all categories of early

complications. Again the system does not focus on the major events that test the surgical technique and ability, and whose presentation will reflect on the patients' quality of life after surgery.

Finally, incoherencies noted in the reporting of negative outcomes after surgery can also impact seriously on studies like this. The import of this is that some physicians may underreport complications or not document any at all after surgery. It is also the opinion of the authors that anaesthetic complications such as cardiac and respiratory complications should be included in future classification systems as the presence or absence of these complications also impact seriously on the final outcome of individual surgery. The Clavien–Dindo system provides the necessary building block upon which future attempts at objectively assessing complications following surgery can be made, putting into consideration these recommendations.

In conclusion, open TVP still remains a valid surgical option in contemporary environments where advanced techniques for TURP and laparoscopic prostatectomy are unavailable. Most complications occur in the early postoperative period, with bleeding requiring several units of blood transfusion accounting for the commonest complication. This should be explained to patients during the preoperative counselling. The Clavien–Dindo classification system promises to be a good system for assessing complications following prostatectomy.

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