The Professional Medical Journal
www.theprofesional.com

https://doi.org/10.29309/TPMJ/2021.28.06.6208

ORIGINAL PROF-0-6208

Frequency of grading of complications using modified clavien classification system after transurethral resection of prostate.

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Article received on:
12/11/2020
Accepted for publication:
10/01/2021

ABSTRACT… Objective: To determine the frequency of post-operative complications of transurethral resection of prostate (TURP), in benign prostatic hyperplasia (BPH) patients, using the Modified Clavien Classification System (MCCS). **Study Design:** Descriptive study. **Setting:** Urology Department, Sindh Institute of Urology and Transplantation, Karachi. **Period:** 26th May, 2019 to 25th Nov, 2019. **Material & Methods:** A total number of 162 patients with benign prostatic hyperplasia planned for TURP were included in this study and Post-operative complications data was collected, and classified according to the Modified Clavien Classification System (MCCS). Patient's demographics and other parameters like prostate volume, operative time, mean prostatic tissue resected and hospital stay was collected. **Results:** Mean age was 63.32±8.36 years. Mean prostate volume was 56.99±13.25 grams. Mean operative time was 26.55±9.46 mins. Mean prostate tissue resected was 16.75±12.09 grams. Mean hospital stay was 1.27±0.60 mins. Grade I complication occurred in 06 (3.70%) patients, grade II in 03 (1.85%) patients, grade IV in 01 (0.62%) patients. While there were no complications in remaining 152 (93.83%) patients. **Conclusion:** Clavien–Dindo classification system can be easily applied by urologists to grade the post-operative transurethral resection of prostate (TURP) complications. We observed that TURP is a very safe procedure for surgical management of benign prostatic hyperplasia, and is having low morbidity and mortality.

Key words: Benign Prostatic Hyperplasia, Modified Clavian Classification System, Transurethral Resection of Prostate.

Article Citation: Chaudhary A, Ahmed Z, Ahmed B, Ullah K, Lashari MK, Qamar U. Frequency of grading of complications using modified clavien classification system after transurethral resection of prostate. Professional Med J 2021; 28(6):848-853. https://doi.org/10.29309/TPMJ/2021.28.06.6208

INTRODUCTION

Benign prostatic hyperplasia (BPH) is the leading cause of lower urinary tract symptoms (LUTS) in males and affects almost up to 210 million men worldwide.[1] Approximately 50% and 75% of men will be having histologically BPH at 50 and 80 years of age respectively, and almost 50% of them will clinically present with lower urinary tract symptoms symptoms.[2]

Transurethral resection of the prostate (TURP) is considered the ''golden standard'' procedure for BPH management. With advancing technology and training the complications of TURP has reduced a lot. However, like other most surgical procedures, TURP is not without complications.[3] In a prospective multicenter study perioperative morbidity rate of 11.1% and mortality rate of 0.1% was published.[4] Also another study showed an overall complication as 40%.[5]

Currently, various scoring system are in use for predicting post TURP complications, with no known ideal scoring system.[6] The Modified Clavien Classification System (MCCS), has been suggested for grading of post-operative surgical complications. In MCCS, the complications are divided into five grades (Grade I to Grade V) from minor to major complications.[7]

Mitropoulus et al in a systematic review showed that MCCS or Clavien Dindo classification system a simple, reliable, and validated tool for assessing, reporting and grading of post urologic

surgical complications and thus recommended this classification system for post urological complications among other grading systems considered.[8]

MCCS is increasingly become popular in field of urology .Very few studies have used MCCS for grading the post-operative complications of TURP, also there is a huge variability in the literature with MCCS grading post-TURP complications.

The rationale behind our study was to determine the frequency of severity of Post- TURP complications in our population using MCCS. This study will be helpful in understanding the appropriateness of MCCS in grading TURP complications. The results will be shared with community.

MATERIAL & METHODS

This Descriptive study was carried at Urology Department, Sindh Institute of Urology and Transplantation, Karachi, from 26th May, 2019 to 25th Nov 2019. Total duration of study was 6 months. Total of 162 cases were included in this study through non-probability consecutive sampling technique.

Patients who were advised TURP for BPH with prostatic volume of > 40 gram, age range >50 to <80 years, with ASA status I-III were included in this study.

Patients with previous history of bladder neck, prostate or pelvic surgery were excluded from this study.

After approval from hospital ethical, verbal and written informed consent was taken from all patients. All TURP procedures were done by consultant urologists.

Data of Post-operative complications was collected up to 3 months post TURP in out-patient department, and categorization of complications was done by MCCS.

Grade-I: Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic and radiological interventions i-e fever (>100F), transient hematuria (that persist for <48 hours and then resolves spontaneously), catheter blockage and failed voiding trial. Therapeutic drugs allowed are anti-emetics, analgesics, antipyretics, and physiotherapy.
Grade-II: Complications requiring treatment with medications other than mentioned for above grade I complications i-e hematuria requiring blood transfusion and urinary tract infection requiring antibiotics.

Grade-III: Complications requiring management with endoscopic, surgical or radiologic intervention i-e bladder perforation and urethral stenosis.

Grade-IV: Life-threatening complications needing treatment intensive care unit i-e pulmonary embolism, myocardial infarction, uro-sepsis and transurethral syndrome.

Grade-V: Death within one month of procedure.

Patient's demographics age, gender and operative data like prostate size/volume, operative duration, mean prostatic tissue resected and hospital stay was collected. All this information was recorded on a pre-designed Performa.

All the data was entered and analyzed in SPSS version 20. Continuous variables such as age, prostate size/volume, operative duration, prostate volume resected and duration of hospitalization was presented as mean (SD), and categorical variables such as MCCS grading was done in frequencies and percentage form. Effect modifiers such as age, prostate size/volume, and operative duration were controlled by stratification. Chi-square was also applied test Post-stratification for determining association of the effect modifiers with grading complications, while taking P-value of < 0.05 as significant.

RESULTS

Mean age was 63.32±8.36 years (range of 50 to 70 years). Mean prostate volume of patients was 56.99±13.25 grams. (Range was 40 to 88).

Mean operation time was 26.55±9.46 minutes. Minimum operation time was 10 mins and maximum was 50 mins. Mean prostatic tissue removed was 16.75±12.09 grams. Minimum was 05 grams and maximum was 50 grams. Mean duration of hospitalization was 1.27±0.60 days. Minimum duration was 01 and maximum were 04 days. Table-I.

Frequency of MCCS grading showed grade I complication in 06 (3.70%) patients; grade II in 03 (1.85%) patients, grade IV in 01 (0.62%) patients. While no complication observed in remaining 152 (93.83%) cases (Figure-1) and overall complication was 6.17 %.

Stratification of age with two age groups, 50-60 and 61-70 years over MCCS was done. The difference was statistically insignificant with P-value of 0.334. Table-II.

Stratification of mean prostate volume over MCCS between two groups was done, 1st group with 40-50-gram and other group with mean prostate volume >50 gm. This difference was also statistically not significant with p- value of 0.193. Table-III.

Similarly, stratification was also performed on the basis of mean prostate tissue removed, operation time and hospital stay and no signification association was found with MCCS. Table-IV, V, VI.

Variable	Mean	SD	Range
Age(years)	63.32 ± 8.53		50-70
Prostate volume(gm)	56.99 ± 13.25		30-88
Operation Time(mins)	26.55 ± 9.46		10-50
Prostate Tissue Removed(gm)	16.75 ± 12.09		05-50
Hospital stay (days).	1.27 ± 0.60		01-04

Table-I.

MCC Grading Complications	Age Group		P-Value
	50-60 Years	61-70 Years	
Grade I	01	05	0.33
Grade II	02	01	
Grade III	00	00	
Grade IV	00	01	
Grade V	00	00	
Nil	70	82	

Table-II. Stratification of age to determine the association with MCC grading complications.

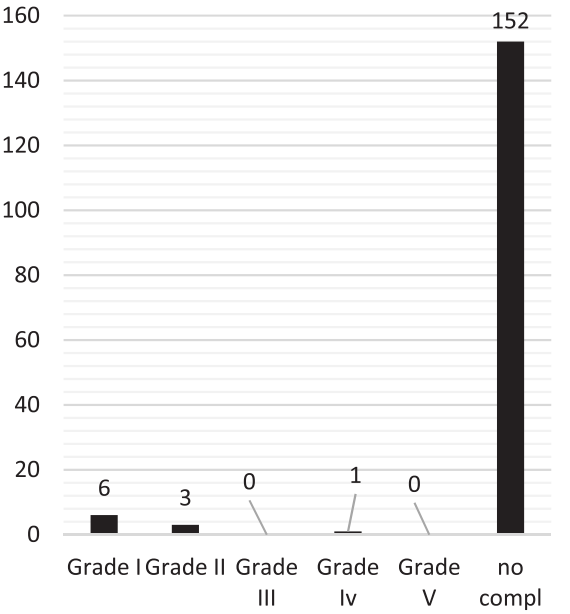

Figure-1. Frequency of MCCS Grading Complications.

MCC Grading Complications	Mean Prostate Volume		P-Value
	40-50 gm	> 50 gm	
Grade I	00	06	0.193
Grade II	01	02	
Grade III	00	00	
Grade IV	00	01	
Grade V	00	00	
Nil	62	90	

Table-III. Stratification of mean prostate volume to determine the association with MCC grading complications.

MCC Grading Complications	Operation Time		P-Value
	10-20 Mins	21-50 Mins	
Grade I	00	06	0.10
Grade II	01	02	
Grade III	00	00	
Grade IV	00	01	
Grade V	00	00	
Nil	72	80	

Table-IV. Stratification of operation time to determine the association with MCC grading complications.

MCC Grading Complications	Mean Prostate Tissue Removed		P-Value
	05-12 gm	> 13 gm	
Grade I	01	05	0.29
Grade II	02	01	
Grade III	00	00	
Grade IV	01	00	
Grade V	00	00	
Nil	67	85	

Table-V. Stratification of mean prostate tissue removed to determine the association with MCC grading complications.

MCC Grading Complications	Hospital stay		P-Value
	01 Day	02-04 Days	
Grade I	01	05	0.10
Grade II	00	03	
Grade III	00	00	
Grade IV	00	01	
Grade V	00	00	
Nil	126	26	

Table-VI. Stratification of hospital stay to determine the association with MCC grading complications.

DISCUSSION

This study was subjected to evaluate MCCS applicability in grading post-operative TURP complications in BPH patients, rather than on reporting the negative procedural outcomes, which has been thoroughly documented long ago, in large prospective and retrospective multicentric cohorts.[4,9,10,11]

Due to lack of uniformity in reporting negative surgical outcomes, the need of a standardized system for reporting post-operative complications following urological procedures has been realized.[12]

For grading of post-operative complications, Clavien et al. described a four-tiered classification system in 1992.[13] In 2004, Dindo et al. revised this classification and divided this into five grades. This classification is proclaimed as Clavien–Dindo classification or modified Clavian classification system (MCCS). According to the authors, this classification is unequivocal, more reproducible, and is an imperative tool for quality assessment of surgical outcomes. In this complication, Grade 1 and 2 are minor but Grade 3–5 are the major complications.[14] Recently this classification system has been adopted by several urologists and is currently being used for various oncological, and endo-urological procedures.[15,16] The MCCS has been suggested a standard system for reporting post-operative complications, and should be applied accordingly to enhance the quality of related literature.[17]

Usually the minor postoperative problems are usually under reported, and the use of such a standardized system for ranking post-operative complications, prevents negative reporting by maximum detection. Furthermore, such a system has other potential advantages, i.e. increases stability in results reporting, allow longitudinal comparisons of these results with other centers, and helps in conduction of adequate meta-analyses.[18]

In current study mean age of patient is 63.32±8.36 years, which is in line to the mean age in other related studies which reported mean ages of 66.1, 65 ± 5.8, 67.2, 66.1 ± 8.6, and 67.07 ± 9.38 among patients.[19,20,21]

Furthermore, Mamoulakis et al.[22] published 15.7% of overall complication rate, which is quite higher in comparison to our study. We reported an overall recurrence of complication as 6.17%. Agrawal et al.[23] published an overall complication rate of 34.4% which is also higher that what we reported.

Study conducted by Mandal et al. found grade I complications in 22.2% patients, grade II in 5.5% patients, grade III in 4.4%, Grade IV in 2.7% and Grade V complications in 0.4% of patients. Main bulk of complications almost (90 %) was constituted by Grades I, II and III.[7] While in current study, grade I complications found in 06 (3.70%) patients, grade II in 03 (1.85%) patients, grade III in 00 patients, grade IV in 01 (0.62%) patients and grade V in just 00 patient. While no complication observed in remaining 152 (93.83%) patients.

In another study 59.1% were grade I and 29.5% were grade II. Higher grade complications. Grade III were 2.3%, grade IV 6.8% and grade V were 2.3% with single death.[24]

In current study, all patients were monitored for first three months postoperatively. Therefore, are rare longer term post TURP complications were missed, and considered as a limitation of current study.

CONCLUSION

Clavien–Dindo classification system can be easily applied by urologists to grade the post-

operative transurethral resection of prostate (TURP) complications. We observed that TURP is a very safe procedure for surgical management of benign prostatic hyperplasia, and is having low morbidity and mortality according to MCCS.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Zulfiqar Ahmed	Statsitical expertise and result compilation.	
3	Bilal Ahmed	Drafting of manuscript.	
4	Kaleem Ullah	Acquisition, Analysis of data.	
5	Mehran Khan Lashari	Review of Discussion.	
6	Usman Qamar	Interpretation of data.