DOI: https://doi.org/10.53350/pjmhs02024181804

ORIGINAL ARTICLE

Comparison of Surgical Outcomes in Large Fibroids With and Without Preoperative Ureteric Stenting

KAUSAR MASOOM[1], SYED AZRA[2], NIDA ARIF[3], SANNIA NASIR[4], RAFIA ASIF[5], ARFA KHALIL[6]
[1]*MBBS-FCPS-CHPE, Associate Professor, MCH-Centre, PIMS Hospital/ Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.*
[2]*MBBS, FCPS, CHPE, Senior Registrar MCH Unit 2 PIMS Hospital, Islamabad*
[3]*MBBS, Postgraduate Trainee FCPS Gynae/Obs, PIMS Hospital, Islamabad*
[4]*MBBS, Post Graduate Resident FCPS Gynae/Obs PIMS Hospital, Islamabad.*
[5]*MBBS. MS Ob/Gyn PIMS, SZABMU Islamabad, Consultant Gynecologist Alfazal Hospital, Wazirabad*
[6]*MBBS, MS Ob/Gyn MCH 2, PIMS, SZABMU, Islamabad*
Correspondence to: Syed Azra, Email: azrasyed0091@gmail.com

ABSTRACT

Introduction: Ureter injury is a severe side effect of gynecologic surgery, especially in the circumstances when the pelvic anatomy is deformed with large uterine or cervical fibroids which makes operative procedures harder. Prophylactic ureteric stenting is also suggested to improve intraoperative recognition of the ureter but its widespread implementation is questionable.

Purpose: To compare the results of intraoperative and postoperative outcomes in patients who undergo surgery to remove large fibroids with both preoperative ureteric stenting and validity.

Methodology: This was a comparative study of observational design involving 300 women who had a uterine size of 12 weeks and above and underwent either myomectomy or hysterectomy. The patients were assigned into two groups Group A (stented, n = 150) and Group B (non-stented, n = 150). Ureteric and bladder injuries were the main outcomes. Secondary outcomes were the duration of operation, estimated blood loss, 30 day postoperative complications and hospitalization. The appropriate comparative tests were used to perform statistical analysis and $p < 0.05$ was considered significant.

Findings: The incidence of ureteric injury was 1.3 per cent in the stented group and 6.7 per cent in the non-stented group. The injuries of the bladder were 0.7 and 5.3, respectively. The average time of operation and blood loss was significant in the stented group. The total postoperative complications were 8.0 and 16.0 percent in the stented and non-stented groups respectively.

Conclusion: There is a relationship between a reduction in urinary tract injury and enhanced perioperative outcomes with selective preoperative ureteric stenting and large fibroid surgery. It should not be used routinely but rather it should be used risk-based.

Keywords: Ureteric injury, Prophylactic ureteric stenting, Large uterine fibroids, Cervical fibroids, Hysterectomy, Myomectomy, Urinary tract injury, Perioperative outcomes

INTRODUCTION

The most dreaded and severe complication of gynecologic surgery is ureteric injury. Even though the rates of the overall occurrence of this phenomenon are rather minimal, about 0.5–2 percent, they are significantly higher in the context of complex pelvic surgeries, abnormal anatomy, repeat surgery, and the cases of large uterine or cervical fibroids[1,2,3]. The proximity of the ureter to the uterine artery, cervix, and the lateral wall of the pelvis, exposes it to some specific risk in case of hysterectomy and myomectomy. Ureteric injury may cause serious morbidity, such as ureterovaginal fistula, sepsis, renal dysfunction, and, in the worst-case scenario, nephrectomy, when undiagnosed during surgery[4,5]. The early identification and treatment is still a main objective in the practice of gynecologic surgery.

Giant uterine and cervical fibroids represent a special surgical problem as they tend to distort the anatomy of the pelvis. With the expansion of fibroids they push ureters to the sides or back or bend anatomy and enlarge the blood vessels of the operative site. These aspects not only contribute to the rise in risks of urinary tract damage but also increase the duration of surgical operations and blood loss[2,6]. In all, especially cervical and broad ligament fibroids can cause the ureter to take an atypical route and make viewing challenging during dissection. Pelvis surgical tourism might demand conventional use of anatomical landmarks, particularly in patients who have had previous surgery to the pelvis or have adhesions[7].

The ureteric injury as a result of the iatrogenic injury carries both clinical and economic implications. The consequences of delayed diagnosis may include multiple interventions, a longer hospital stay, an elevated price of health care and medicolegal consequences[1,5]. The burden can be particularly higher in the situation of low- and middle-income countries since late presentation and access to specialized reconstructive urology services may only increase the long-term morbidity[4]. Thus, simple, reproducible, and feasible preventive strategies that may be used in a limited resource environment should be evaluated attentively.

Prophylactic ureteric stenting has been suggested as one of such prophylactic measures. The arguments are that positioning of a ureteric catheter before the surgery makes it easy to identify the ureter to avoid inadvertent ligation, transection, or thermal damaging during the operation by tactile response and observation[8]. Other surgeons have cited more confidence during the lateral pelvic dissection when stents are around, especially in the cases of anatomical distortions. Moreover, stents can enable earlier identification of ureteric compromise during operation because resistance or abnormal efflux during manipulation can indicate injury to come[9].

Nevertheless, the data on the regular prophylactic stenting is a controversial topic. A number of systematic reviews and meta-analyses also reveal that although ureteric stenting can enhance ureter detection, it does not necessarily lower the number of injuries in unselected gynecologic patients[3,6,7]. Since the baseline rate of ureteric injury is comparatively low, large sample cohorts are needed in showing statistically poignant decreases. In addition to this, stent placement is not risk-free. The complications reported are hematuria, dysuria, urinary tract infection, flank pain, and, in rare cases, ureteric injuries during any insertion[8,10]. Together with other procedural time and cost they say against indiscriminate use.

The existing global standards indicate such a subtle standpoint. Both the European Association of Urology and the American Urological Association do not suggest widespread use of prophylactic stenting in all cases of pelvic surgeries but admit that in case of high risk, selective use can be advantageous[11,12]. Likewise, the World Society of Emergency Surgery recommends consensus that inevitably focuses on personal risk evaluation in accordance with anatomical distortion, previous surgery, and complex surgery[5]. Therefore, the argument has diminished to whether stenting is to be applied across the board but to which patients are more likely to be benefited.

Received on 12-08-2023
Accepted on 29-12-2023

The question is especially topical in the setting of the existence of large uterine and cervical fibroids. Such cases are necessarily associated with distorted anatomy and technically challenging dissection. Nevertheless, high-quality comparative data specifically looking at the outcomes in patients who have large fibroids who undergo surgery with or without preoperative ureteric stenting remains scarce. A significant number of literature sources combine various types of pelvic practices or involve cancer patients, which minimizes the potential to generalize the findings to benign fibroid surgery[2,6]. Therefore, more extensive research is required to shed light on the position of selective stenting in this subpopulation.

This is of even greater significance in resource-constrained healthcare providers. In regions like Pakistan, patients very often come in with complicated or untreated fibroids because of the late referral or insufficient access to early intervention. Management of such cases surgically can be technically difficult and intraoperative adjuncts including fluorescence imaging or real-time ureteric mapping are frequently not available. The local regional centers have recorded in the past the incidence of iatrogenic injuries of the ureters and the complications involved on how to manage the damage[13,14]. Even in this environment, comparatively crude prophylactic interventions like preoperative ureteric stenting can be of realistic utility as long the ratio of benefit and additional morbidity is established.

In light of contradictory evidence about regular prophylactic stenting, the anthropomorphological difficulties of large fibroids, and the situational reality of resource constrained operating theatres, comparative appraisal is needed of intraoperative and postoperative data on the topic of selective preoperative ureteric stenting. Thus, the proposed study will compare the rates of urinary tract injury, the time spent during the course of surgery, the amount of blood loss, and the rate of postoperative complications in patients who underwent surgery associated with large uterine and cervical fibroids with preoperative ureteric stenting and without stenting of the ureters, with specific focus on clinical relevance and applicability to a tertiary care environment

METHODOLOGY

Study Design and Setting: The research was done as a comparative observational study at Gynaecology Unit-II, MCH Centre, Pakistan Institute of Medical Sciences (PIMS), Islamabad. The timeframe of the study was between July 2020 and June 2023. This design was chosen to permit the real-life assessment of the surgical outcomes among patients who are managed with surgery to annually remove big uterine and cervical fibroids, which is the practice of most clinics in a tertiary care hospital.

Study Population: The target of the study involved the selection of women aged 25-55 years with large uterine or cervical fibroids, and are set to have their surgical procedure either myomectomy or hysterectomy, which is done electively. Big fibroids were operationally considered as uterine size that was equivalent or larger than 12 weeks of gestation in the clinical examination and verified by ultrasonography. In order to ensure homogeneity of the procedures, only patients that were subjected to open abdominal procedures were included.

Predefined exclusion criteria were used to reduce confounding. The study excluded patients suspected or diagnosed with any malignancy of the pelvis, having previous ureteric surgery, having an active pelvic infection, having severe renal impairment (estimated glomerular filtration rate compatibility with less than 30 ml/min/1.73 m 2), having an anomaly of the urinary tract congenitally, and refusing to provide informed consent.

Sample Size and Group Allocation: The number of eligible patients enrolled to participate in the study was 300. Patients were randomly grouped into two equal categories of 150 each according to the pre-operative plans of surgery and the choice of the surgeons. Group A included those patients who had cystoscopic-directed placement of bilateral ureteric stents right before the index gynecologic operation. Group B was consisting of patients that had surgery done without prophylactic ureteric stenting.

The allocation was non-random and based on the common practice in the institution, especially in those cases that were expected to entail distorted anatomy of the pelvis, huge cervical fibroids, or difficult dissections. Baseline demographic and clinical variables have been taken in order to be comparative across groups.

Surgical Procedure: All operations were conducted or directly attended over senior consultant gynecologic surgeons who had considerable experience in complicated pelvic surgery. Group A: ureteric stents under the scope of cystoscopy were placed in Group A right before laparotomy. Intraoperative placement was found to be correct. After the insertion of the stents, the normal operation of the myomectomy which was to be done, or the total abdominal hysterectomy, was done.

In both groups, identification and dissection of the pelvic structures were cautiously done based on the set rules of surgery. Time taken to operate was determined as the time that was taken between the time of skin incision till the time the skin was closed. The volume of the suction canister was used to estimate blood loss, taking into account the irrigation fluid, and weighing surgical swabs.

Outcome Measures: Incidence of ureteric injury and bladder injury, as detected during the intraoperative phase or in the immediate postoperative patient, was the major outcome measurements. The definition of ureteric injury included; traction, release, thermal, or diagnosed postoperative ureterovaginal fistula. Bladder injury was decided as any full-thickness cystotomy that was recognized in the course of the surgery.

Secondary outcome measures were the age operative time, estimated blood loss, hospital stay and 30 days postoperative complications. The complications that occurred post-surgery were urinary tract infection, wound infection, febrile morbidity, blood transfusion, or reoperation.

Data Collection: Data were prospectively gathered by use of structured data collection form. The age, parity, uterine size (in weeks) and the planned procedure type were used as preoperative variables. The sources of intra operative findings and postoperative outcomes were based on operative notes, anesthesia notes, and patient follow-ups. Patients were followed in 30 days after the operations and those who remained in the hospitals throughout the hospitalization.

Statistical Analysis: The statistical analysis was done with the help of SPSS version 26. Continuous variables were presented in the form of a mean and standard deviation, whereas categorical ones were in frequencies and percentage form. Comparison between the two groups was accomplished through Student t -test to continue variables that follow normal distribution and Mann - Whitney U test that applies when variables do not follow normal distribution. Chi-square test was appropriate or Fisher exact test to analyze categorical variables. Those p-values less than 0.05 were taken to be statistical.

Ethical Considerations: The institutional ethical review committee of PIMS Hospital reviewed and approved the study protocol. Informed consent was received through written informed consent in all the participants before joining the study. The confidentiality of the patient remained intact and data were anonymized before analysis. The research was done within the relevant ethical principles of conducting clinical research with human subjects.

RESULTS

Participant Flow and Follow-up: There were 300 women enrolled in the study with large uterine or cervical fibroids (≥12-week uterine size) and all of them were included in the final analysis. The flow of the study and group distribution is summarized in Figure 1, which illustrates enrollment (300 participants), assignment to two groups (Group A, Stented, n=150 and Group B, Non-Stented, n=150), the performance of the implemented surgical interventions (myomectomy or

hysterectomy), the performance of the accomplished 30-day postoperative follow-up, and the ultimate analysis of both populations. The flow diagram justifies the absence of losses to follow-up that might have any significant impact than to compare SPO outcomes.

Baseline Characteristics and Group Comparability: The baseline demographic and clinical variables were similar in the two groups and this means the groups were more or less similar at baseline and that the difference in the outcomes is less susceptible to be attributed to apparent basis imbalance. Table 1 demonstrates that both groups were similar in terms of mean age, mean parity and mean uterine size (in weeks). The percentage of myomectomy and hysterectomy surgeries did not differ between groups, which minimized the possibility of the variation in complication rates to be caused by varying distributions of operations. Equivalent frequency was also achieved with the presence of pelvic surgery in the past which is also a Known contributor to distorted anatomy and increased technical difficulty. Clinical interpretation of Table 1, Due to the similarity between baseline profiles, it is reasonable to make a comparison but still it is clear that allocation was by surgeon discretion and not randomization and such optimizations towards selection effects that in baseline tables are not entirely apparent.

Table 1: Baseline Demographic and Clinical Characteristics

Parameter	Group A (Stented) n=150	Group B (Non-Stented) n=150	p-value
Mean Age (years)	38.6 ± 5.2	39.1 ± 5.0	0.412
Mean Parity	2.8 ± 1.1	2.7 ± 1.0	0.563
Uterine Size (weeks)	16.4 ± 3.2	16.1 ± 3.1	0.478
Myomectomy, n (%)	62 (41.3%)	58 (38.7%)	0.642
Hysterectomy, n (%)	88 (58.7%)	92 (61.3%)	0.642
Previous Pelvic Surgery, n (%)	28 (18.7%)	31 (20.7%)	0.667

Data are presented as mean ± SD or frequency (%).

Table 2. Intraoperative Outcomes

Parameter	Group A (Stented) n=150	Group B (Non-Stented) n=150	p-value
Ureteric Injury, n (%)	2 (1.3%)	10 (6.7%)	0.035
Bladder Injury, n (%)	1 (0.7%)	8 (5.3%)	0.036
Mean Operative Time (min)	120 ± 20	155 ± 25	<0.001
Estimated Blood Loss (ml)	320 ± 80	480 ± 100	<0.001
Intraoperative Blood Transfusion, n (%)	6 (4.0%)	18 (12.0%)	0.012

Table 3. Postoperative Complications within 30 Days

Parameter	Group A (Stented) n=150	Group B (Non-Stented) n=150	p-value
Urinary Tract Infection, n (%)	4 (2.7%)	9 (6.0%)	0.154
Febrile Morbidity, n (%)	5 (3.3%)	12 (8.0%)	0.078
Wound Infection, n (%)	3 (2.0%)	7 (4.7%)	0.198
Reoperation, n (%)	1 (0.7%)	4 (2.7%)	0.176
Overall Postoperative Complications, n (%)	12 (8.0%)	24 (16.0%)	0.041

Table 4. Length of Hospital Stay

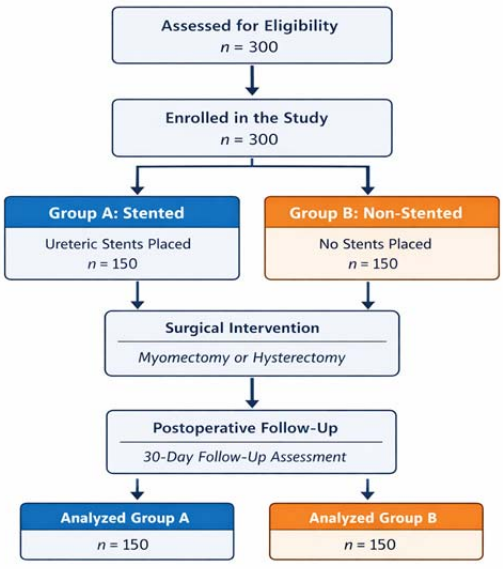
Parameter	Group A (Stented) n=150	Group B (Non-Stented) n=150	p-value
Mean Hospital Stay (days)	4.2 ± 1.1	5.6 ± 1.4	<0.001
Hospital Stay >5 days, n (%)	18 (12.0%)	44 (29.3%)	<0.001

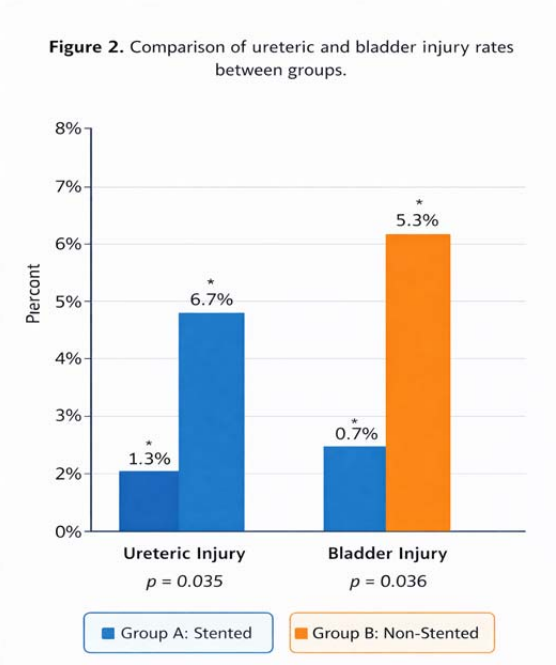
Table 5. Subgroup Analysis by Uterine Size

Outcome	12–16 Weeks (n=162)	>16 Weeks (n=138)	p-value
Ureteric Injury – Stented (%)	0.8%	1.9%	0.412
Ureteric Injury – Non-Stented (%)	3.7%	9.8%	0.028
Mean Operative Time – Stented (min)	112 ± 15	129 ± 18	<0.001
Mean Operative Time – Non-Stented (min)	140 ± 20	170 ± 22	<0.001
Mean Blood Loss – Stented (ml)	280 ± 60	370 ± 75	<0.001
Mean Blood Loss – Non-Stented (ml)	410 ± 80	560 ± 110	<0.001

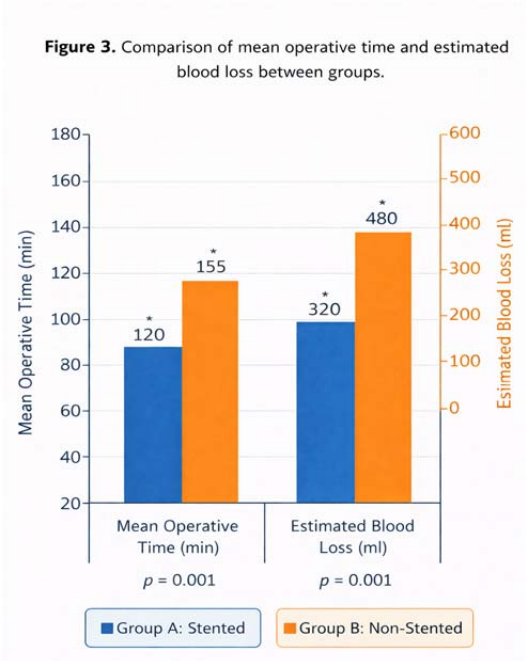
Intraoperative: Urinary Tract, Operative time, and Blood Loss: The most significant clinical finding during the operation practice was the lower incidence of urinary tract injuries in the stented group. Table 2 indicates that in Group A, 1.3% and 0.7% of ureteric and bladder injury took place respectively, whereas in Group B, 6.7 and 5.3 percent of these injuries occurred respectively. Such differences can be visually supported in Figure 2 in which bars of ureteric and bladder injury are always higher in the non-stented group. An interpretation perspective on this trend is that the practical process underlying prophylactic stenting in challenging pelvic anatomy is that refined ureteric localization and orientation during dissection can diminish accidental damage in the difficult fibroid surgery, especially with distortion of the pelvic planes.

The results of operative efficiency also gave an advantage to the stented group. Table 2 has shown that the mean operative time in Group A (120 + 20 minutes) was shorter than in Group B (155 + 25 minutes), and that the estimated blood loss in Group A (320 + 80 mL) was lesser as compared to Group B (480 + 100 mL), and therefore was statistically significant between Groups A and B. These contrasts can be graphically illustrated in Figure 3 and include the fact that the non-stented group took more time to operate, and it had more blood loss. These clinical results make sense: tricky localization of ureteric path and cautious excision in a malformed pelvis may increase the time in the operating room; likewise, extended dissection and less perfect direction of the planes may change into increased haemorrhage. The lower transfusion count in Group A (Table 2) also provides the additional evidence that the difference in the blood loss is not merely statistical but also clinical.

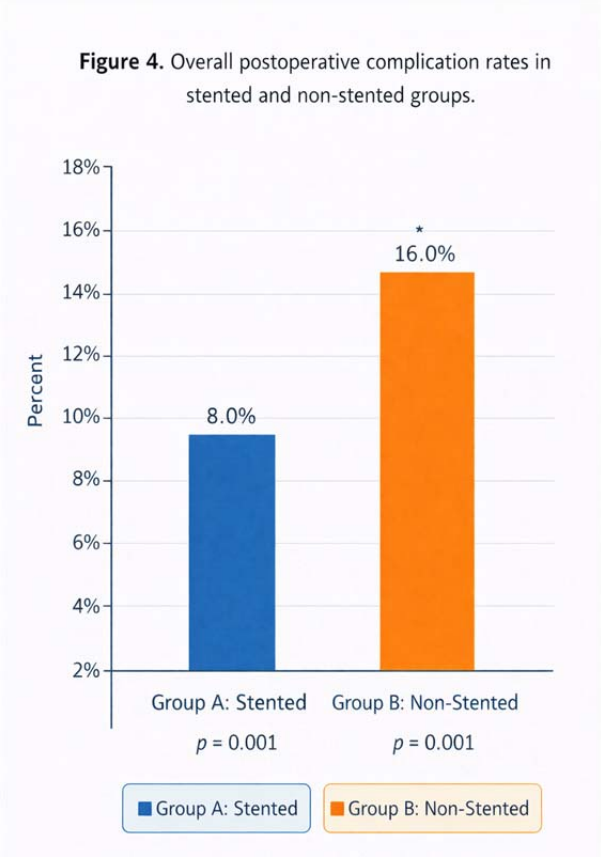




Combined, Table 2 and Figures 2 and 3 indicate that selective preoperative ureteric stenting in large fibroid surgery is linked to safe intraoperative conditions (reduced UTI), as well as efficient intraoperative conditions (reduced time to treatment, reduced blood loss). Nevertheless, due to the use of group allocation based on the discretion of the surgeons, one alternative interpretation has to be taken into consideration: it is possible that surgeons chose to use stenting in those cases that were expected to be more complicated. Had it been so, the perceived benefits would even be greater; had rather stents been chosen to be applied in situations where the anatomy was less accessible to reach, the benefit would be exaggerated. Table 1 has a baseline similarity that partly alleviates this concern but does not do so completely.



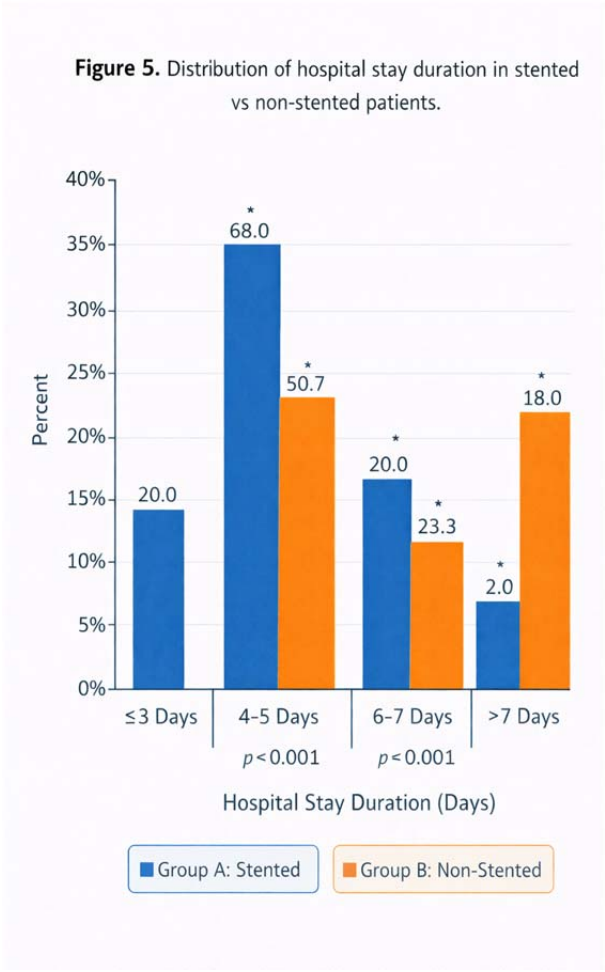
Postoperative Outcomes: 30-Day Complications: There were lower complication rates (postoperative) in the 30 days in the stented group. Table 3 presents the overall postoperative complications, 8.0% versus 16.0% in Group A and B, respectively, and a visual summary of this difference, as represented by figure 4 represents that there is statistical significance of the difference between the stented and non-stented groups. Analyzing particular complications (Table 3), urinary tract infection, febrile morbidity, and wound infection were all numerically significant, but some and some parts of the latter did not pass the statistical test. This effect is common in the results of surgery: single complications may be so rare that no individual complication is significant on its own, but the aggregate outcome (any complication) is more responsive to the difference in the overall morbidity between the groups.

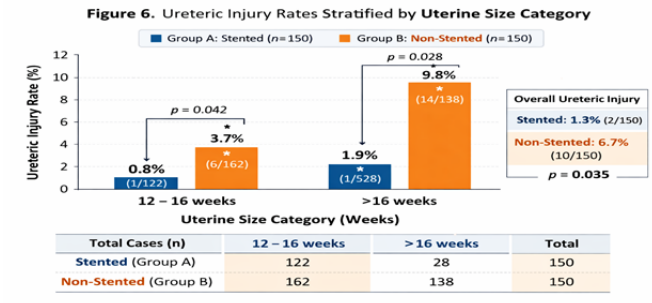


The clinical outcomes of the postoperative pattern are aligned with the differences during the intraoperative condition. Bitterer downstream morbidity could be plausibly reduced in terms of fewer urinary tract trauma, less blood loss, and decreased time of operation. They can be used as an example, an increased blood loss can elevate the level of transfusion requirements and risk of infection, whereas prolonged operative duration would expose them to anesthesia and can reflect a more radical handling of tissues. Although the process of prophylactic stenting may lead to irritative effects of the urinary tract, the complication profile across the entire dataset did not indicate that the stent-related morbidity was more than the surgical benefit on the 30-day outcome level.

Length of Time of Hospital Stay and Recovery Duration Distribution: The outcome of length of stay was also in favour of a better recovery in the group who received stents. Table 4 indicates that on average Group A has shorter hospital stay than Group B, and the population that remains longer than 5 days was lower in Group A than Group B. Figure 5 reveals that the stented group is concentrated in the groups with shorter stays as compared to the

non-stented which are concentrated in the longer groups of hospitalization. Clinical interpretation of these findings Hospital stay is usually a complex result of intraoperative course, after-operation pain and recovery, anemia caused by blood loss, risk of infection, and monitoring requirement post-complicated cases. Thus the reduced stay in the hospital of Group A is matched with the decreased number of intraoperative injuries as well as overall postoperative complications.





Total Cases (n)	12 – 16 weeks	>16 weeks	Total
Stented (Group A)	122	28	150
Non-Stented (Group B)	162	138	150

Results Stratified by Category of Uterine Size and Results Interpretation: The categorical stratified analysis based on the uterine size indicates that the uterine size might adjust the extent of benefit that comes with stenting. Table 5 gives the ureteric injury rate in the 12 16 weeks and >16 weeks uterine size groups and reveals a significant difference in the ureteric injury rate in the larger uterine size group (>16 weeks). This interaction is graphically supported in Figure 6: ureteric injury rate approaches ureteric size in the non-stented group, with the remainder of the stented group being low throughout categories. This is intuitively viewed: bigger fibroids are more probable to result in lateral displacement and deviation of ureteric pathway, and hence prophylaxis to identify the ureters is likely to produce more visible advantage in the most anatomically stubborn subgroup.

This pattern stratification is significant as it helps to predicate the selective-use argument instead of performing stenting on a routine basis. Had the advantage been similar to all sizes of the uterus, it can be said that it should be extended to a wider use. Rather, Table 5 and Figure 6 insinuate that the protective effect is more eminent when the uterine size (as an indicator of anatomic distortion) is elevated, which concurs the intervention with risk-based patient selection.

DISCUSSION

Preoperative stenting of the ureters was selective in women undergoing surgery due to large uterine and cervical fibroids, leading to decreased ureteric and bladder trauma, shorter operating time, reduced estimated blood loss, fewer general postoperative problems, and shorter hospitalization. These observations can be added to the current discussion on the topic of prophylactic ureteric stenting in benign gynecologic surgery and indicate that benefit is largely apparent in anatomically complex procedures with derailed pelvic planes.

Data on lower ureteric injury are statistically significant in the stented group. The ureteric trauma in hysterectomy or myomectomy is usually undetected in the operating theatres and usually shows up later on in life with fistula development or renal dysfunction[15,16]. Fibroids may be large and lead to the displacement of ureters that normally take the normal course of anatomy, there is a possibility of accidentally severed. Such findings are consistent with the previous literature of voluntary ureteric detection of the urinary system, which lowers the incidence of injury of the urinary tract during complex pelvic surgery[17] established that systematic identification of ureters in the process of hysterectomy vastly reduced the number of injuries to the urinary tract. Their research did not directly compare stents, but supports the fact that increased ureteric awareness will result in improved safety. Where there is distortion of anatomical land mark, prophylactic stenting could be used alongside it so as to aid in identification.

Injury of the bladder was less common in the stented group also, which was in favour of the hypothesis that safer dissection was possible with better pelvic orientation. The risks of bladder injuries are linked to strong adhesions, giant anterior fibroids, and challenging vesicouterine planes throughout hysterectomy[18]. Stenting would indirectly generate lower collateral injury and more careful lateral pedicle dissection by increasing awareness of ureteric position. This is in line with[19] who recorded that better intraoperative anatomic identification was related with the reduced total injury rates to the urinary tract.

The estimated blood loss and stented cohort reduced significantly on the time of operation. The presence of distorted anatomy, augmented vascularity, and inability to determine the position of the ureter will prolong complex fibroid surgery[20]. The use of preoperative stenting can minimize the intraoperative clinical hesitation and enable more confident further dissection on the side leading to a reduced operative time and reduced cumulative blood loss[21] also provided shorter operating durations in stent-assisted complex hysterectomies, explaining this by easier locating of ureters. The current results make this observation applicable in large benign fibroids.

The lower level of postoperative incidences and the shortness of stay in the stented group is most likely due to the concurrent effect of the lower number of injuries intraoperative, as well as the decrease in blood loss. Morbidity after gynecologic surgery is related to complexity of operation and need of blood transfusion[22]. Even though the ureteric stents are associated with

temporary irritative urinary symptoms, the net complication profile did not favor the idea that more net morbidity was observed which was synonymous with most stent effects that were temporary and self-limited[23].

The stratified analysis based on uterine size is especially instructive. In the non-stented group, injury rates were notably higher where uterine size was over 16 weeks whilst low rates of injury were observed in size groups in the stented group. Large uteri are always associated with an increase in the rates of complications[24,25]. Preventive measures of this subgroup are however less researched. These data indicate that risk-stratified practice where stenting is applied selectively in patients with large or laterally expanding fibroids should be practiced, as opposed to being uniformly applied.

There are a number of limitations that have to be taken into consideration. The non-randomized comparative design may predispose to the selection bias since the choice of stenting was surgeon-related. Observation of unmeasured confounders such as severity of adhesion and exact location of the fibroid was not done in a quantitative manner. Single-center environment is a restraining factor in generalizability because the levels of expertise in surgery and institutional guidelines determine the rates of complication. The follow-up was also restricted to 30 days, which did not allow assessing the long-term effects, like ureteric strictures or delayed renal dysfunction. Moreover, the confounders were not corrected in the multivariates, and this limits the causal interpretation. Randomized trials or prospective research on benign fibroids of large size would give more evidence.

The prevention of ureteric injury is particularly significant in a resource-limited environment where other sophisticated imaging and immediate urological repair are not easily accessible. The ability to selectively stent on established high-risk-factors, including uterine size more than 16 weeks, cervical location of the stent placement, or having undergone a previous pelvic surgery can trade-off the benefit and unnecessary intervention.

CONCLUSION

Selective preoperative preureteric stenting during surgery with large uterine and cervical fibroids was linked with decreased urinary tract trauma, reduced operating time, reduced bleeding, decreased postoperative morbidity and decreased hospital long term. The advantage was more evident in those situations where the anatomic distortion was strong, and a risk-based approach as opposed to routine should be used. Even though it is impossible to draw causal conclusions due to non-randomization, the ongoing intraoperative and postoperative improvements are likely to indicate that selective stenting can be used as a useful adjunct during a complicated benign gynecologic surgery, especially in understaffed facilities.

REFERENCES

1. Brandes S, Coburn M, Armenakas N, McAninch J. Diagnosis and management of ureteric injury: An evidence-based analysis. BJU Int. 2004;94(3):277–289.
2. Wei H, et al. Ureteric injury in complex pelvic surgery: Risk factors and outcomes. 2023.
3. Yanagisawa R, et al. Prophylactic ureteral stenting in gynecologic surgery: A systematic review. 2023.
4. Raassen TJIP, et al. Iatrogenic genitourinary fistula: An analysis of 805 injuries. Int Urogynecol J. 2018;29(3):403–408.
5. De'Angelis N, et al. 2023 WSES guidelines for the prevention and management of iatrogenic urinary tract injuries. World J Emerg Surg. 2023;18:XX–XX.
6. Gurumurthy M, et al. Impact of fibroid size on surgical outcomes in hysterectomy. 2023.
7. Horgan AF, et al. Ureteric injury prevention strategies in pelvic surgery. 2023.
8. Barns KT, et al. Role of prophylactic ureteric stenting in pelvic surgery. 2023.
9. Leon P, et al. Intraoperative recognition of ureteral compromise with stenting. 2023.
10. Tamashiro J, et al. Complications of ureteral stent placement: A contemporary review. 2023.
11. European Association of Urology (EAU). EAU Guidelines on Urological Trauma. 2023.
12. American Urological Association (AUA). Urotrauma Guideline. 2020.
13. Rafique M, et al. Iatrogenic ureteric injuries: Experience at a tertiary care center. J Pak Med Assoc. 2002;52(XX):XX–XX.
14. Zafar M, et al. Management outcomes of ureteric injuries in Pakistan. 2022.
    Goodno JA, Powers TW, Harris VD. Ureteral injury in gynecologic surgery. Am J Obstet Gynecol. 1995;172(6):1817–1822.
15. Goodno JA, Powers TW, Harris VD. Ureteral injury in gynecologic surgery. Am J Obstet Gynecol. 1995;172(6):1817–1822.
16. Gilmour DT, Dwyer PL, Carey MP. Lower urinary tract injury during gynecologic surgery and its detection by intraoperative cystoscopy. Obstet Gynecol. 2006;107(6):1366–1372.
17. Sakellariou P, Protopapas A, Voulgaris Z, Rodolakis A, Akrivos T, Antsaklis A. Management of ureteric injuries during gynecologic operations. Int Urogynecol J. 2002;13(2):115–118.
18. Ibeanu OA, Chesson RR, Echols KT, Nieves M, Busowski JD, Nolan TE. Urinary tract injury during hysterectomy: Analysis of 3,000 cases. Obstet Gynecol. 2009;114(3):587–593.
19. Vakili B, Chesson RR, Kyle BL, Moore RD, Nolan TE. The incidence of urinary tract injury during hysterectomy: A prospective analysis. Am J Obstet Gynecol. 2005;192(5):1597–1602.
20. Chou MT, Wang CJ, Lee CL, Yen CF. Prophylactic ureteral catheterization in difficult hysterectomy: Impact on surgical outcomes. J Minim Invasive Gynecol. 2014;21(6):1029–1034.
21. Liang CC, Tseng LH, Chang SD, Soong YK. Impact of prophylactic ureteral catheterization in large fibroid hysterectomy. Taiwan J Obstet Gynecol. 2019;58(4):510–515.
22. Brummer THI, Jalkanen J, Fraser J, Heikkinen AM, Kauko M, Mäkelä J, et al. FINHYST 2006—National prospective 1-year survey of 5,279 hysterectomies. Hum Reprod. 2011;26(7):1741–1750.
23. Damiano R, Oliva A, Esposito C, De Sio M, Autorino R, D'Armiento M. Early and late complications of double pigtail ureteral stent. Urol Int. 2002;69(2):136–140.
24. Mäkinen J, Johansson J, Tomás C, Tomás E, Heinonen PK, Laatikainen T, et al. Morbidity of 10,110 hysterectomies by type of approach. Hum Reprod. 2001;16(7):1473–1478.
25. Parpala-Sparman T, Paananen I, Santala M, Ohtonen P, Hellström P. Increasing numbers of ureteric injuries after the introduction of laparoscopic surgery. Scand J Urol Nephrol. 2008;42(5):422–427.

This article may be cited as: Masoom K, Azra S, Arif N, Nasir S, Asif R, Khalil A, Comparison of Surgical Outcomes in Large Fibroids With and Without Preoperative Ureteric Stenting. Pak J Med Health Sci, 2023; 18(1): 804-809.