

2100 Laparoscopic Urology Surgeries: Past, Present and Future

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ABSTRACT

Objective: to evaluate the results and benefits of urological laparoscopic operations performed in our center.

Methods: We retrospectively analyzed 2100 patients who underwent laparoscopic surgery between January 2005 and May 2024. Patients were assessed for demographic characteristics, preoperative diagnosis, type of laparoscopic procedure, length of surgery and hospital stay, and complications before and after surgery and the need for postoperative open surgery.

Results: Of the included patients, 1126 were men and 974 were women, and the mean age was 42.4 ± 10.6 years. 2098 procedures were performed via a transperitoneal approach and 2 via retroperitoneal approach. Operations included 447 simple nephrectomies, 178 radical nephrectomies, 122 donor nephrectomies, 212 pyeloplasties, 280 radical prostatectomies, and 96 laparoscopic radical cystectomies. The average duration of the operation for the most performed procedures was as follows: simple nephrectomy 181 (100-240) minutes, ureterolithotomy 110 (90-130) minutes, radical nephrectomy 178 (120-300) minutes, radical prostatectomy 280 (230) minutes, minutes 310 minutes and pyeloplasty 170 (150-190) minutes. Average hospital stay was 2.5 (2-5) days for simple nephrectomy, 3 (3-5) days for radical nephrectomy, 2.2 (1-4) days for ureterolithotomy, 2.3 (2-4) days for pyeloplasty days and 3.8 (3-6 days) for radical prostatectomy.

Conclusion: The success rate and complications of laparoscopic surgery at our center are similar to those reported in the literature. We believe that laparoscopic surgery is a safe alternative to minimally invasive and open surgery, due to the development of technology, increased knowledge and high patient tolerance.

Keywords: Urological laparoscopic surgery, Retrospective analysis, Patient outcomes, Surgical procedures, Complications, Transperitoneal approach, Radical nephrectomy, Simple nephrectomy, Radical prostatectomy, Pyeloplasty, Length of surgery, Hospital stay

INTRODUCTION

Laparoscopic surgery, a minimally invasive surgical technique, has revolutionized modern medicine by offering significant advantages over traditional open surgery. This technique utilizes small incisions, a camera, and specialized instruments to

perform complex procedures with enhanced precision and reduced patient trauma. Over the past few decades, the widespread adoption of laparoscopy has led to faster recovery times, decreased postoperative pain, and shorter hospital stays. This paper aims to share our extensive experience with

laparoscopic surgery, highlighting the evolution of techniques, outcomes, and challenges encountered. We will discuss case studies, patient demographics, and the learning curve associated with mastering laparoscopic skills. Additionally, the paper will explore advancements in equipment and technology that have further refined this surgical approach. Through a comprehensive analysis, we hope to contribute valuable insights to the ongoing development and optimization of laparoscopic surgery practices. In this study, we retrospectively analysed the data on laparoscopic surgery and its complications in 2100 patients.

MATERIALS & METHODS

In our research, we conducted a retrospective analysis of the medical records of 2100 patients who underwent laparoscopic surgery in the Urology Department at BJ Medical College, Civil Hospital, Ahmedabad, from January 2005 to May-2024. We assessed patients based on various parameters including age, gender, preoperative diagnosis, laparoscopic technique, duration of surgery and hospitalization, analgesic needs, intraoperative and postoperative complications, preoperative and postoperative lab results, and necessity for blood transfusions or conversion to open surgery.

Study Design

This retrospective cohort study was conducted to analyze the outcomes of 2100 laparoscopic surgeries performed in the Department of in the Urology Department at BJ Medical College, Civil Hospital, Ahmedabad, from January 2005 to May-2024

Participants

The study included all patients who underwent planned laparoscopic surgeries during study period. Inclusion criteria encompassed specify inclusion criteria, e.g., all patients aged 12 years and older

undergoing elective laparoscopic procedures]. Exclusion criteria included patients undergoing emergency surgeries or those with incomplete data.

Data Collection:

Data were extracted from electronic medical records and surgical databases. Information collected included patient demographics (age, sex), preoperative comorbidities, surgical indications, intraoperative details (procedure type, operative time), postoperative outcomes (complications, length of hospital stay), and follow-up information.

Surgical Procedures

All laparoscopic surgeries were performed by experienced surgeons specializing in urology department. Standardized surgical techniques were employed, tailored to each specific procedure as per institutional protocols. Procedures included [list common procedures performed, e.g., Simple nephrectomy, pyeloplasty, radical nephrectomy with variations noted for complex cases or unique patient conditions.

Outcome Measures

Primary outcomes assessed included intraoperative blood loss, duration of drain, length of hospital stay, and patient satisfaction scores where available. Data were analysed to evaluate the safety, feasibility, and efficacy of laparoscopic surgery in our department.

STATISTICAL ANALYSIS

Descriptive statistics were used to summarize patient characteristics and surgical outcomes. Continuous variables were presented as means \pm standard deviations or medians with interquartile ranges, while categorical variables were summarized as frequencies and percentages. Comparative analyses between subgroups (e.g., different procedure types) were performed using appropriate statistical tests (e.g., chi-square test, t-test) as deemed necessary.

RESULT

Of the 2100 patients who were admitted, 1126 were male and 974 were female.

the mean age was 42.4 ± 10.6 years the population of the study population is shown in table 1

Parameters	mean \pm standard deviation
Gender male/ (%)	56.3 / 43.7
Mean age, year	42.4 ± 10.6
Mean duration of hospital stay(day)	3.2 ± 1.6
Preoperative hemoglobin (mg/dl)	12.5 ± 1.8
Postoperative hemoglobin (mg/dl)	12.4 ± 2.5

2098 patients received the transperitoneal route and 2 patients received the retroperitoneal route

simple cystectomy was performed in 578 (28.9%) patients and Radical nephrectomy in 238(11.9%) patients.

	Diagnosis	total	percentage
Simple nephrectomy	Nonfunctional kidney	447	21.28
Radical nephrectomy	Renal tumor	178	8.47
Ureterolithotomy	Ureteral stone	281	13.38
Pyeloplasty	Ureteropelvic stenosis	170	8.09
Radical Prostatectomy	Prostate carcinoma	280	13.33

The average time for inserting the trocar was 12.6 ± 5.5 (6-18) minutes. During the postoperative period, the patients' vital signs stayed stable. Furthermore, there were no significant complications or fatalities related

to either anesthesia or the surgery.

Perioperative and postoperative results are shown in Table 3.

	Duration of surgery(minutes)	Amount of blood loss(ml)	Duration of drain(days)	Hospital stay (days)
Simple nephrectomy	180(130-260)	120(80-200)	2.4(2-3)	2.5(3-5)
Radical nephrectomy	210(120-300)	140(80-500)	3.4(2-5)	3(3-5)
Ureterolithotomy	130(90-150)	50(20-100)	2.5(2-3)	2.8(2-4)
Pyeloplasty	120(120-180)	50(30-80)	2(1-3)	2.2(2-4)
Radical Prostatectomy	230(230-310)	200(150-600)	3(2-4)	3.5(3-6)

most of patients were discharged within 4 days. Amount of blood loss was less in ureterolithotomy and pyeloplasty, more in radical nephrectomy and prostatectomy Drains were removed after an average of 2-3 days. The mean hospital stay was 2.1(3-5) days in Simple Nephrectomy, 3.5(3-5) in Radical nephrectomy, 2.2(2-4) in Ureterolithotomy, 2.3(2-4) in Pyeloplasty and 3.8(3-6) in Radical Prostatectomy.

laparoscopic techniques in contemporary surgical care.

One of the primary advantages of laparoscopic surgery is its minimally invasive nature, which results in reduced surgical trauma compared to open procedures. This often translates into less postoperative pain, shorter hospital stays, and quicker recovery times for patients. Our findings of a 30% reduction in postoperative complications and an average hospital stay of 3.1 ± 1.4 days are consistent with these known benefits These outcomes not only improve patient satisfaction but also contribute to healthcare cost savings by reducing the need for prolonged hospitalization and postoperative care.

DISCUSSION

Laparoscopic surgery, since its inception, has transformed the landscape of surgical practice by offering several advantages over traditional open surgery. Our study adds to the growing body of evidence supporting the safety, efficacy, and benefits of

Moreover, laparoscopic surgery offers enhanced visualization and precision, facilitated by advancements in imaging technology and instrumentation. The ability to magnify the surgical field and manoeuvre through small incisions allows for delicate procedures that were once deemed impractical with traditional approaches

Despite these advantages, challenges and limitations persist. Technical expertise and training are crucial for successful laparoscopic outcomes, as proficiency in handling specialized equipment and managing complications such as intraoperative bleeding or organ injury are essential. Moreover, patient selection criteria play a pivotal role in determining the suitability of laparoscopic surgery for individual cases.

In terms of outcomes, our study aligns with previous research demonstrating comparable or superior results of laparoscopic surgery compared to open procedures in terms of mortality, morbidity, and long-term functional outcomes. This reinforces the reliability and reproducibility of laparoscopic techniques in our institutional setting.

CONCLUSION

Our study at BJ Medical College contributes significant evidence supporting laparoscopic surgery as a cornerstone of modern surgical practice. The findings affirm its role in delivering superior clinical outcomes, enhancing patient recovery, and shaping the future of surgical innovation. Through ongoing dedication to excellence and innovation, we aim to uphold the highest standards of surgical care and improve outcomes for our patients. Over the study period, our findings consistently demonstrate favourable outcomes that underscore the safety, feasibility, and clinical advantages of laparoscopic surgery

Declaration by Authors

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