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RESEARCH ARTICLE

DOES SURGICAL APPROACH INFLUENCE EARLY RECOVERY IN LAPAROSCOPIC SIMPLE NEPHRECTOMY? A RETROSPECTIVE COMPARATIVE STUDY

Dr.Varun Chauhan and Dr.Virendra Soni

Department of Urology and Transplantation Surgery, Institute of Kidney Diseases and Research Center and Dr. H.L. Trivedi Institute of Transplantation Sciences (IKDRC-ITS), Ahmedabad, India

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Corresponding author:
Dr. Sakshi A. Sonule

ABSTRACT

Introduction: Laparoscopic simple nephrectomy can be performed via transperitoneal or retroperitoneal approaches. The influence of surgical approach on early postoperative recovery remains under discussion. Material and methods: This retrospective comparative study included 50 patients undergoing laparoscopic simple nephrectomy between January 2025 and December 2025. Patients were divided into two groups: transperitoneal (n = 25) and retroperitoneal (n = 25). All procedures were performed by a single surgeon using a standardized technique. Outcomes analyzed included operative time, blood loss, time to oral intake, bowel recovery, postoperative pain (VAS), hospital stay, and cosmetic satisfaction. Results: The retroperitoneal approach demonstrated significantly faster bowel recovery (1.2 ±0.4 vs. 2.1 ±0.6 days; $p < 0.001$), earlier oral intake (1.1 ± 0.3 vs. 1.8 ±0.5 days; $p < 0.001$), lower postoperative pain scores (VAS day 1: 3.1 ±0.8 vs. 4.5 ±1.0; $p < 0.001$), and shorter hospital stay (2.8 ±0.7 vs. 4.0 ±1.1 days; $p < 0.001$). Cosmetic satisfaction was significantly higher in the retroperitoneal group ($p = 0.002$). Operative time and blood loss were comparable. Conclusions: Retroperitoneal laparoscopic nephrectomy is associated with faster recovery, reduced pain, and superior cosmetic outcomes compared to the transperitoneal approach.

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INTRODUCTION

Laparoscopic simple nephrectomy is considered the standard treatment for benign non-functioning kidneys [1]. It can be performed using either a transperitoneal or retroperitoneal approach [2]. The transperitoneal route offers a wider working space and familiar anatomical landmarks, whereas the retroperitoneal approach allows direct access to the kidney without entering the peritoneal cavity [3]. Early recovery parameters such as bowel function, pain, and hospital stay are increasingly important in current surgical practice. This study aims to compare early postoperative outcomes between these two approaches.

MATERIAL AND METHODS

Study design: Retrospective comparative study.

Study population: A total of 50 patients undergoing laparoscopic simple nephrectomy between January 2025 and December 2025 were included.

Inclusion criteria

- Patients with benign non-functioning kidney
- Patients undergoing laparoscopic simple nephrectomy

Exclusion criteria

- Suspected or confirmed malignancy
- Previous major abdominal surgery
- Conversion to open surgery

Study groups

- Transperitoneal group (n = 25)
- Retroperitoneal group (n = 25)

Surgical technique : All procedures were performed by a single surgeon using a standardized laparoscopic technique.

Outcome measures

- Operative time
- Estimated blood loss
- Time to oral intake
- Time to bowel recovery
- Pain score (VAS, postoperative day 1)
- Length of hospital stay
- Cosmetic satisfaction (Likert scale)

Statistical analysis: Statistical analysis was performed using Student's t-test and Chi-square test. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1. Baseline Characteristics

Parameter	Transperitoneal (n=25)	Retroperitoneal (n=25)	p-value
Age (years)	45.2 ± 10.3	43.8 ± 9.7	0.62
Gender (M/F)	14/11	15/10	0.78
BMI	24.5 ± 2.8	24.1 ± 3.1	0.65

Table 2. Intraoperative Outcomes

Parameter	Transperitoneal	Retroperitoneal	p-value
Operative Time (min)	118 ± 20	125 ± 22	0.21
Blood Loss (ml)	110 ± 40	95 ± 35	0.18

Table 3. Postoperative Recovery

Parameter	Transperitoneal	Retroperitoneal	p-value
Oral Intake (days)	1.8 ± 0.5	1.1 ± 0.3	<0.001
Bowel Recovery (days)	2.1 ± 0.6	1.2 ± 0.4	<0.001
Pain Score (VAS Day 1)	4.5 ± 1.0	3.1 ± 0.8	<0.001
Hospital Stay (days)	4.0 ± 1.1	2.8 ± 0.7	<0.001

Table 4. Cosmetic Outcome

Satisfaction Level	Transperitoneal	Retroperitoneal	p-value
High	10	18	
Moderate	9	6	
Low	6	1	0.002

DISCUSSION

The present study demonstrates that the retroperitoneal approach is associated with significantly improved early recovery outcomes. The absence of bowel manipulation likely contributes to earlier return of bowel function and faster resumption of oral intake [4,5]. Postoperative pain was significantly lower in the retroperitoneal group, which may be attributed to reduced peritoneal irritation. Additionally, cosmetic outcomes were superior due to less visible anterior scarring [6,7].

Although operative time was marginally longer in the retroperitoneal group, the difference was not statistically significant and is likely to improve with surgical experience. These findings are consistent with previously published studies comparing both approaches [8,9].

CONCLUSIONS

Retroperitoneal laparoscopic simple nephrectomy offers superior early recovery, reduced postoperative pain, and improved cosmetic outcomes compared to the transperitoneal approach.

ETHICS STATEMENT

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee. Due to the retrospective design, informed consent was waived.

CONFLICT OF INTEREST: The authors declare no conflict of interest.

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