



ADVANTAGES OF LAPAROSCOPIC SURGERY IN UROLOGICAL PROCEDURES: A COMPREHENSIVE REVIEW

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ABSTRACT:

Introduction: Laparoscopy, known as keyhole surgery, involves conducting surgical procedures through small incisions, typically ranging from 0.5 to 1.5 centimetres, utilizing specialized telescopic equipment. The laparoscope, a crucial component of this technique, comprises a thin tube equipped with a camera and lenses. Compared to traditional open incision surgery, laparoscopic procedures offer various advantages, including reduced risk of complications such as lung infections and blood clots, mainly through early mobilization.

Objective: This study aims to assess the efficacy of laparoscopy in urological surgery, explicitly focusing on benign pathologies. A comprehensive literature review seeks to determine how much laparoscopic techniques can be successfully employed in urological procedures.

Methodology: Utilizing the Medline and Lilacs databases, relevant studies were selected for a comprehensive literature review. Qualitative analysis of the compiled data was conducted to evaluate the benefits of laparoscopic surgery in treating benign urological pathologies.

Findings: The review revealed several advantages of laparoscopic surgery in urological procedures for benign pathologies. These include reduced bleeding, decreased operational morbidity, shorter hospital stays, lower postoperative pain, improved aesthetic outcomes, and quicker return to normal activities. These findings underscore the potential of laparoscopy to enhance patient outcomes and recovery in urological surgery.

Discussion: The discussion explores the implications of the identified benefits of laparoscopic surgery in urological procedures. It highlights the potential of laparoscopy to minimize surgical complications and improve patient satisfaction and quality of life.

Conclusion: In conclusion, laparoscopic surgery presents numerous advantages in treating benign urological pathologies. By reducing bleeding, minimizing morbidity, and facilitating faster recovery, laparoscopy offers significant benefits over traditional open surgery techniques. Furthermore, the findings suggest that laparoscopic surgery may be particularly beneficial for specific patient populations, such as Islamic Witnesses, who have a lower incidence of bleeding and reduced need for transfusions.

KEYWORDS: Laparoscopy; Benign Pathology; Urological Surgery.

INTRODUCTION:

A gap has been detected in medicine, namely in the field of surgery, due to developments in computing, robotics, telecommunications, and endoscopic instruments. In the past, surgeons were obliged to make considerably bigger incisions (cuts), which frequently resulted in a great deal of discomfort and necessitated a lengthy recovery period. However, implementing new technology has allowed them to operate and work via smaller incisions (Schmitt et al., 2024; Shrivastava et al., 2024). Compared to traditional open surgery, laparoscopy, a keyhole procedure, is less invasive. During this procedure, a small camera, a laparoscope, is used to look at the interior of the belly. Laparoscopic imaging allows for transmitting views of the organs inside to a monitor, which then serves as a guide for the surgical intervention performed by the physician. As a result of the laparoscope's ability to magnify the image several times, the interior organs can be observed with greater clarity (Das et al., 2024; Territo et al., 2024).

Compared to traditional open surgery, laparoscopy, a keyhole procedure, is less invasive. During this procedure, a laparoscope, a small camera, is used to look at the interior of the belly. Laparoscopic imaging allows for transmitting views of the organs inside to a monitor, which then serves as a guide for the surgical intervention performed by the physician. As a result of the laparoscope's ability to magnify the image by several times, the interior organs can be observed with greater clarity (Larenas et al., 2024; Wang et al., 2024).

Minimally invasive surgery has been applied to a variety of benign (non-cancerous) and malignant (oncological or cancerous) urological problems. Additionally, it has been used for conditions affecting various urological organs (including kidneys, adrenal glands, ureter, bladder, prostate, and lymph nodes) (Guan et al., 2024; Jeong et al., 2024).

The excision of kidney cancer is one of the applications of minimally invasive surgery and laparoscopic surgical techniques. It is feasible to remove the entire kidney by making only three little puncture holes, each of which is between five and twelve millimetres in diameter and is typically no larger than a two-cent coin (see photos 1 and 2 below). When compared to the traditional open surgical removal of the kidney, which typically requires a significantly more significant surgical cut (sometimes more than 10 to 15 cm or 100 to 150 millimetres), this procedure is very different (He et al., 2024; Ricker et al., 2024a).

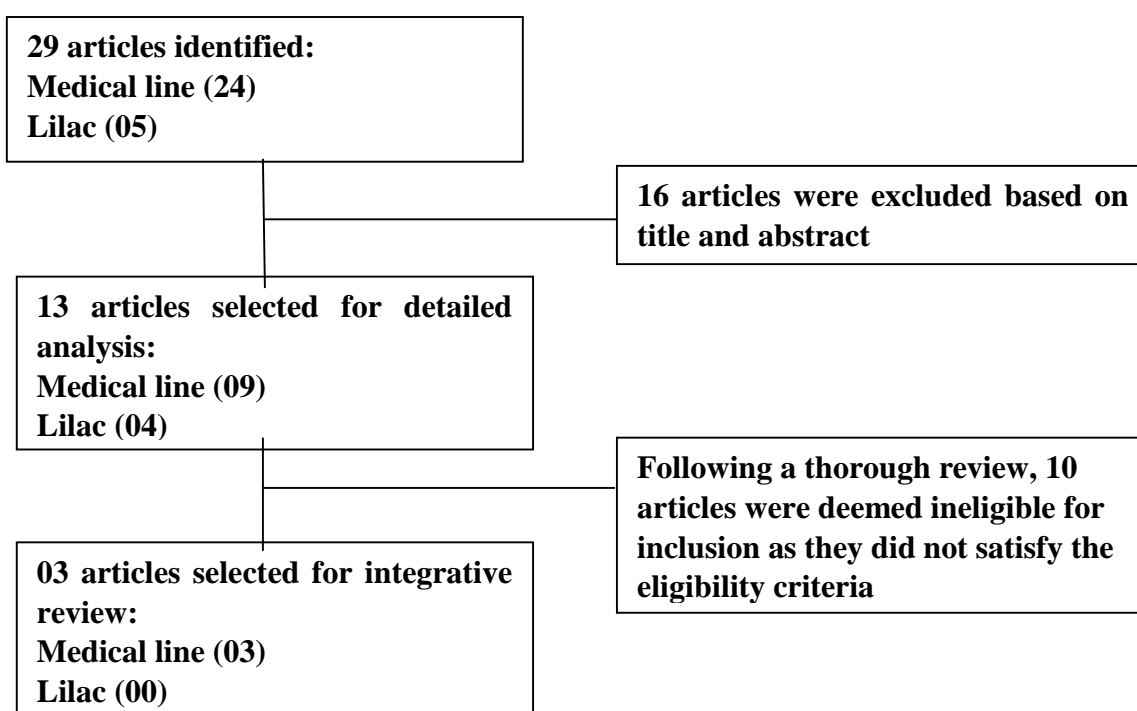
Like any other surgical operation, there is always the possibility of problems occurring. The physician must first do a comprehensive evaluation to determine the most suitable treatment for each patient. Nevertheless, in a small number of cases, it might be essential to forego laparoscopic surgery in favour of a standard open technique. This may be the case in circumstances such as a significant complication that arises during the procedure when the procedure is not progressing as the surgeon had anticipated it would (Esposito et al., 2024; Sonune et al., 2024).

One thing that should be brought to your attention is that a laparoscopic procedure is unsuitable for everyone. It is necessary to take into account the specific circumstances of everyone involved. Laparoscopic surgery may be avoided or discouraged by several circumstances, including severe, persistent obstructive pulmonary disease, past surgical procedures, and extreme obesity (S. Chen et al., 2024; Liu et al., 2024).

METHODOLOGY:

The current investigation is classified as an integrative literature review and takes a qualitative exploratory strategy. To survey the scientific production, the following question was asked: What are the advantages of using laparoscopy in urological procedures for benign pathological surgeries? (Dabi et al., 2024; C. Zhang et al., 2024).

Therefore, the search occurred through the LILACS and Medline databases in December 2022. The data collection was carried out using the descriptors "Laparoscopy," "Urological Surgery," and "Benign Pathology, articulated using the Boolean operator AND. The inclusion criteria that were set for the selection of scientific publications were materials that were published between the years 2012 and 2022 and were written in English. These materials are related to laparoscopic surgery in urology in scenarios of benign disease. Publications that were duplicated, publications that were a literature review, research conducted before 2012, and articles that were not pertinent to the issue were all excluded. (Jichen et al., 2024; Osman & Elawdy, 2024).



A list of studies that were incorporated in the integrated review is depicted in a flowchart located in Figure 1 – October/2022

RESULTS:

The literature search for this integrative review resulted in the identification of three publications. These articles were selected based on the criteria for inclusion and exclusion given in this research, as shown in Table 1 below (Ahmed, Helmy, Ahmed, & Abd-El-Aal, 2024; Ge et al., 2024).

YEAR	AUTHOR	TITLE	OBJECTIVE	METHOD	RESULTS
2013	Paiva	Laparoscopic Surgery: Experience of the Urology Service of the Getúlio Vargas University Hospital	To present the initial case series regarding laparoscopic surgery performed at the Urology Service of the Hospital Universitário Getúlio Vargas between January 2006 and December 2010.	Case study.	Laparoscopic access does not present limitations to its implementation as long as the surgeon masters the technical principles of open and laparoscopic surgery, has knowledge of the

					physiology and anatomy applied to the laparoscopic procedure, and has adequate instruments.
2015	Gutierrez	At the Hospital de Clínicas de Porto Alegre, an evaluation was conducted to determine the duration of surgical procedures and the recovery period observed in patients who underwent robotic hysterectomy and additional hysterectomy techniques.	This study aims to document the initial encounter of the Hospital de Clínicas de Porto Alegre in robotic hysterectomy to compare its data with other hysterectomy surgeries that have already been conducted in our country.	Cross-sectional study	The robotic group was responsible for the longest overall surgical time (180.7 minutes) among the four groups. In contrast, the group that underwent the most recent surgery had the shortest postoperative recovery time (23.7 hours). There was no significant distinction among the groups in examining intraoperative bleeding and postoperative problems. The analyzed postoperative pain data did not show any differences between the groups. The amounts of time required for docking and undocking were shown to have a learning curve, and there was a significant relationship between the overall amount of time spent on surgery and the patient's body mass index.
2015	Halinski	Laparoscopic Radical Nephrectomy in a Jehovah's Witness Patient: A Minimally Invasive Treatment Option.	Report the case of a Jehovah's Witness patient whose religious precepts support the refusal of blood transfusion and the option for laparoscopic radical nephrectomy.	Case study	

Table 1 – Distribution of the results of the selected articles

DISCUSSION:

In this research, the number of urological procedures performed via laparoscopy is increasing, most of which are complex and require considerable mastery of technique and experience on the part of the urologist (Ditonno et al., 2024).

According to the authors cited above, patients with large stones mainly located in the upper ureter and other minimally invasive therapy methods have failed; surgical removal of stones by laparoscopy is a viable option compared to open surgery. This type of laparoscopic removal corresponds to an effective and safe procedure, whose effectiveness and reduced morbidity suggest its use as a primary procedure, while classical endourological methods are ineffective (Y. Chen et al., 2024; Prata et al., 2024).

According to Paiva et al., laparoscopy provides patients with several significant benefits, including a reduction in the amount of bleeding that occurs, a decrease in the morbidity that occurs during surgery, an early departure from the hospital, a reduction in the amount of postoperative pain, more satisfactory cosmetic outcomes, and an early return to normal activities. Lastly, the findings of this research indicate that the learning and development of minimally invasive surgery would become a characteristic of urology specialist services. This is due to its advantages compared to conventional surgery (Dequirez, Wasserman, & Brucker, 2024; W. Zhang et al., 2024).

In this sense, it is interesting to note that laparoscopic access does not expose limitations to its application, especially if the surgeon has mastered the technical principles of laparoscopic and open surgery, has knowledge of the anatomy and physiology applied to laparoscopy and has access to adequate instruments (Billah et al., 2024; Ibis & Sarica, 2024).

Like Paiva et al., Gutierrez reports the benefits of laparoscopy in treating benign pathologies. Among these, we highlight the creation of smaller incisions, the reduction of postoperative pain, the rapid recovery, the possibility of access to activities, and the reduced surgical morbidity (Mains et al., 2024; Mendes et al., 2024).

This study reports that since the first laparoscopic hysterectomy, many efforts have been made to improve electrosurgical equipment, optical systems, and uterine manipulators. This has made the widespread diffusion and use of video laparoscopic hysterectomy possible, replacing the preferred abdominal route. To expand the use of minimally invasive surgery, robotic surgery was developed, which facilitated the use of laparoscopy through the adoption of more ergonomic and precise movements, reinforcing the benefits mentioned above (Giunco et al., 2024; Ricker, McCarron, Vrochides, & Martinie, 2024b; Souli, Alves, Tillou, & Menahem, 2024).

The work of Halinski et al. includes the case study of a patient of the Jehovah's Witnesses religion who does not accept the use of blood and its derivatives as replacement therapy. As a solution to this problem, cell salvage can be used, an automated process in which blood is collected entirely from the surgical field, centrifuged, washed, filtered, and reinfused into the patient (Tao et al., 2024; Xue et al., 2024).

The patient in this study had previously used only ferrous sulfate, vitamin B12, hemodilution, and folic acid during surgery. Since it was a tumor measuring, it was possible to use open or laparoscopic partial nephrectomy. Still, there was the possibility of hemorrhagic damage during and after the operative procedures. Halinski et al. emphasized that even with the positive results of laparoscopy in Islamic Witnesses, more extensive series with minimally invasive techniques are expected for this audience to offer safe treatments (Bilkhu, Wild, & Sagar, 2024; Vaddi, Khetavath, Reddy, Prasad, & Battini, 2024; Y.-T. Xue et al., 2024).

Finally, they point out that hematological preparation after surgery is essential for the application to Jehovah's Witnesses during major surgical interventions, linked to the use of laparoscopy, responsible for lower levels of bleeding and transfusion requirements (Sekito et al., 2024; Stibbsa et al.).

CONCLUSION:

According to the findings of this research, laparoscopy is a method that allows for the operation of the patient's abdomen through small incisions. This allows the patient to recover from surgery more quickly and with less discomfort. An instrument that resembles a slender, illuminated wand, known as a laparoscope, is utilized. This instrument is coupled to a small device, which transmits photographs to a video display.

During the operation, a catheter is used to drain the bladder, while an intravenous line is used to provide drugs and fill the bladder with fluids. After making between three and five small incisions in the belly, the laparoscope and surgical equipment are inserted into the patient's abdominal cavity. Taking this into perspective, the objective of this study was to evaluate the benefits of utilizing laparoscopy in urinary procedures to diagnose benign pathology.

Based on the qualitative analysis of the data that is accessible through the sources that make up this integrative review, it was determined that laparoscopic procedures in urological surgical treatment for benign conditions present several advantages in comparison with traditional accessible therapies.

These advantages include a reduction in the amount of bleeding that occurs, a decrease in the morbidity of the treatment, a rapid discharge from the hospital, a reduction in postoperative pain, more adequate aesthetic effects, and an early return to normal activities. There are fewer instances of bleeding and a decreased requirement for transfusions that have been documented in the example of Islamic Witnesses.

It is understood that new studies on this topic are needed. Considering that the research has recorded numerous benefits, it is suggested that studies be carried out that also highlight the limits and risks of laparoscopy in urological surgery, especially in benign pathologies.

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