



BENIGN PATHOLOGY AND ADVANTAGES OF LAPAROSCOPY IN UROLOGICAL SURGERY

Ahmad Farooq^{1*}, Mohammad Mujtaba Khokhar²

^{1*}MBBS, Faisalabad Medical University FMU/PMC, Pakistan Email: ahmadfarooq31205@gmail.com

²Student, Shalamar Medical and Dental College, Pakistan Email: Mujtabakhokhar.med@gmail.com

Corresponding author: Ahmad Farooq

MBBS, Faisalabad Medical University FMU/PMC, Pakistan Email: ahmadfarooq31205@gmail.com

ABSTRACT:

Background: Laparoscopy, often known as keyhole surgery, involves performing surgical procedures through small incisions (0.5 to 1.5 cm) using miniature telescopic equipment. A laparoscope, equipped with a camera and lenses, facilitates this minimally invasive approach.

Methods: A comprehensive literature review was conducted using Medline and Lilacs databases to assess the efficacy of laparoscopy in urological surgery for benign pathologies.

Results: Compared to traditional open surgery, laparoscopy offers numerous advantages in urological procedures, including reduced bleeding, lower operative morbidity, shorter hospital stays, decreased post-operative pain, improved aesthetic outcomes, and faster recovery.

Conclusion: Qualitative analysis supports the conclusion that laparoscopy is highly effective in urological surgery for benign conditions, providing significant benefits such as reduced bleeding and quicker recovery times. Notably, data suggests decreased transfusion requirements among Jehovah's Witnesses.

KEYWORDS: Laparoscopy; Benign Pathology; Urological Surgery, Minimally invasive surgery, Urological surgery, Benign pathologies, Medline, Surgical outcomes, Postoperative recovery, Bleeding reduction.

INTRODUCTION:

A gap has been detected in the field of medicine, namely in the field of surgery, as a result of 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, the implementation of new technology has made it possible for them to operate and work via smaller incisions (Schmitt et al., 2024; Shrivastava et al., 2024). When compared to traditional open surgery, laparoscopy, which is also known as a keyhole procedure, is a less-invasive alternative. During this procedure, a laparoscope, which is a small camera, is used to look at the interior of the belly. Laparoscopic imaging allows for the transmission of 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).

When compared to traditional open surgery, laparoscopy, which is also known as a keyhole procedure, is a less-invasive alternative. During this procedure, a laparoscope, which is a small camera, is used to look at the interior of the belly. Laparoscopic imaging allows for the transmission of 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 applied to conditions affecting a variety of urological organs (including kidneys, adrenal glands, ureter, bladder, prostate, and lymph nodes) (Guan, Lovell, & Sendukas, 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 bigger surgical cut (sometimes more than 10 to 15 cm or 100 to 150 millimetres), this procedure is very different (He et al., 2024; Ricker, McCarron, Vrochides, & Martinie, 2024a).

Like any other surgical operation, there is always the possibility of problems occurring. To determine which treatment is most suitable for each patient, the physician must first do a comprehensive evaluation. 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 major complication that arises during the procedure; when the procedure is not progressing as the surgeon had anticipated it would (Esposito et al., 2024; Sonune, Dalvi, & Ninghot, 2024).

Table 1: References for Developments in Surgery

| Reference | Year |
|--------------------------|------|
| Schmitt et al., 2024 | 2024 |
| Shrivastava et al., 2024 | 2024 |

Table 2: References for Laparoscopy and Imaging

| Reference | Year |
|----------------------|------|
| Das et al., 2024 | 2024 |
| Territo et al., 2024 | 2024 |
| Larenas et al., 2024 | 2024 |
| Wang et al., 2024 | 2024 |

Table 3: Minimally Invasive Surgery in Urology

| Reference | Year |
|--------------------------------|------|
| Guan, Lovell, & Sendukas, 2024 | 2024 |
| Jeong et al., 2024 | 2024 |

Table 4: Applications and Techniques in Kidney Cancer Surgery

| Reference | Year |
|------------------------------------------------|------|
| He et al., 2024 | 2024 |
| Ricker, McCarron, Vrochides, & Martinie, 2024a | 2024 |

Table 5: Considerations and Contraindications for Laparoscopic Surgery

| Reference | Year |
|--------------------------------|------|
| Esposito et al., 2024 | 2024 |
| Sonune, Dalvi, & Ninghot, 2024 | 2024 |
| S. Chen et al., 2024 | 2024 |

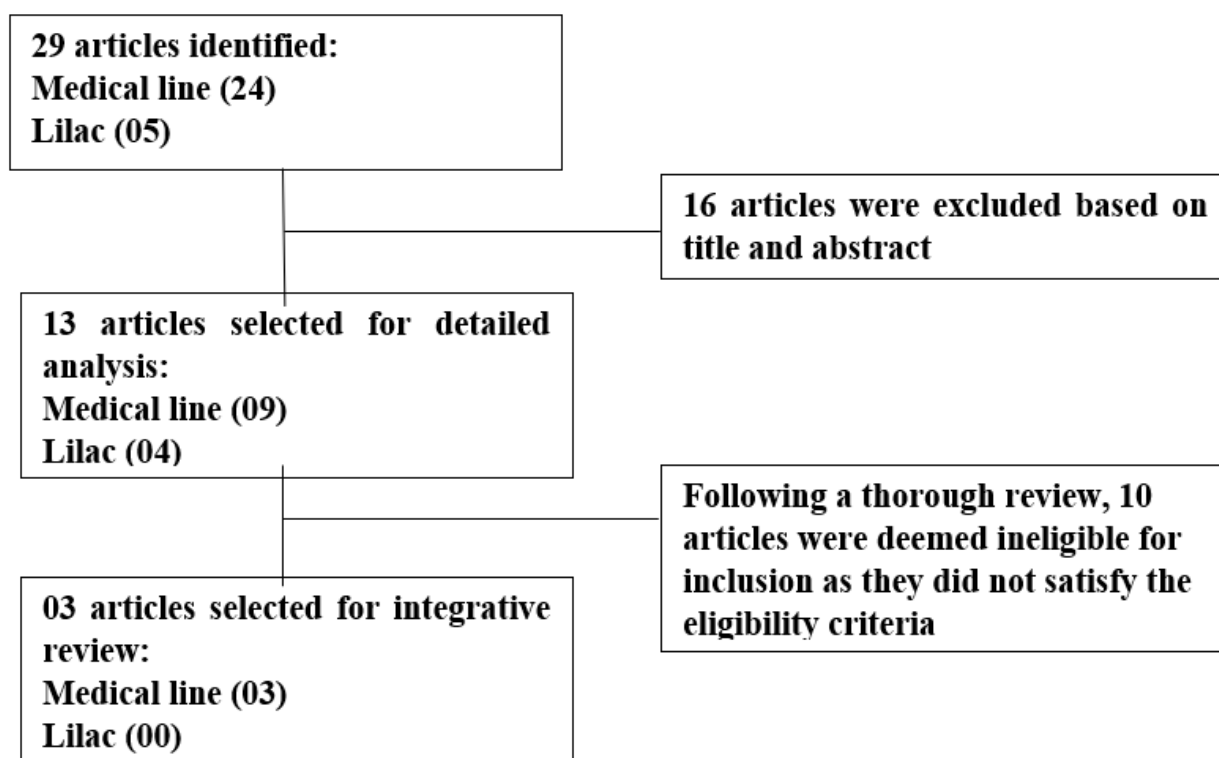
Liu et al., 2024

2024

One thing that should be brought to your attention is that a laparoscopic procedure is not suitable for all people. It is necessary to take into account the specific circumstances of everyone involved. Laparoscopic surgery may be avoided or discouraged by several circumstances, including serious persistent obstructive pulmonary disease, past surgical procedures, and severe obesity, amongst others (S. Chen et al., 2024; Liu et al., 2024).

METHODOLOGY:

The current investigation is classified as an integrative literature review, and it takes a qualitative exploratory strategy. To survey the scientific production, the guiding question that was formulated was as follows: 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 took place 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 review of the literature, research that was conducted previous to 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 search of the literature for this integrative review resulted in the identification of three publications. These articles were selected on the foundation of 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 along with additional hysterectomy techniques. | The objective of this study is to document the initial encounter of the Hospital de Clínicas de Porto Alegre in the field of robotic hysterectomy to compare its data with other hysterectomy surgeries that have already been conducted in our country. | Cross-sectional study | Among the four groups, the robotic group was responsible for the longest overall surgical time (180.7 minutes), whereas the group that underwent the most recent surgery had the shortest postoperative recovery time (23.7 hours). In terms of the examination of intraoperative bleeding and postoperative problems, there was not a significant distinction among the groups. The postoperative pain data that was analyzed |

| | | | | | |
|------|----------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | 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 body mass index of the patient. |
| 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 (Ditunno 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 not effective (Y. Chen et al., 2024; Prata et al., 2024).

According to Paiva et al., laparoscopy provides patients with several major 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 the advantages that it possesses in comparison 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).

Just like Paiva et al., Gutierrez reports the benefits of laparoscopy in the treatment of 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, Hernández-Hernández, Placeres-Hernández, & Castro-Díaz, 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, Cao, & Mao, 2024; Xue, Xiaoyan, Yanghao, Kang, & Jiwen, 2024).

The patient in this study had previously used only ferrous sulfate, vitamin B12, hemodilution, and folic acid during surgery. In this case, since it was a tumor measuring that was possible to use open or laparoscopic partial nephrectomy, but 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 Jehovah's Witnesses; larger 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 haematological 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, Carr, Leea, & Lewis).

CONCLUSION:

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

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 for the goal of diagnosing 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 the fact laparoscopic procedures in urological surgical treatment for benign conditions present several advantages in comparison with traditional accessible treatments. These advantages include a reduction in the amount of bleeding that occurs, a reduction 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 instance of Jehovah's Witnesses.

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

REFERENCES:

1. Ahmed, E. A., Helmy, M. Z., Ahmed, A.-R. T., & Abd-El-Aal, A. S. (2024). Laparoscopic value in the management of acute abdomen during pregnancy. *The Egyptian Journal of Surgery*, 43(1), 50-55.
2. Bilkhu, A. S., Wild, J., & Sagar, P. M. (2024). Management of retro rectal tumours. *British Journal of Surgery*, 111(1), znae012.
3. Billah, M. S., Sheckley, F., Nguyen, J., Iarajuli, T., Raver, M., Rudnick, B., & Ahmed, M. (2024). Single Port Modified Partial Nephrectomy: Novel Simultaneous Access to Peritoneal and Retroperitoneal Partial Nephrectomy, Initial Clinical Experience. *Journal of Endourology*(ja).
4. Chen, S., Chen, J., Zhang, J., Wang, K., Wei, J., Weng, M., & Zhu, L. (2024). Laparoscopic prostatectomy with complete urethral reconstruction for sexually active BPH patients. *Minimally Invasive Therapy & Allied Technologies*, 33(1), 29-34.
5. Chen, Y., Zheng, Y., Wang, P., Wang, Q., Yang, F., & Zhou, S. (2024). Single-port robotic surgery using the EDGE SP1000 surgical system in gynaecology: Initial experience of a single institution. *The International Journal of Medical Robotics and Computer Assisted Surgery*, 20(1), e2578.
6. Dabi, Y., Rockall, A., Razakamanantsoa, L., Guerra, A., Fournier, L. S., Fotopoulou, C., . . . Group, E. S. (2024). O-RADS MRI scoring system has the potential to reduce the frequency of avoidable adnexal surgery. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 294, 135-142.
7. Das, M. K., Rohith, G., Mandal, S., Gaur, A. S., Nayak, P., Kumaraswamy, S., . . . Tripathy, S. (2024). Intraoperative ultrasonography (IOUS)-guided vs conventional laparoscopic nephrectomy: a randomized control trial. *BJU International*, 133(1), 71-78.
8. Dequirez, P. L., Wasserman, M. C., & Brucker, B. M. (2024). Surgical management of bladder outlet obstruction due to functional and anatomical etiologies in women. *Neurourology and Urodynamics*.
9. Ditonno, F., Franco, A., Manfredi, C., Sturgis, M., Vourganti, S., Cherullo, E. E., . . . Antonelli, A. (2024). Minimally invasive adrenalectomy: a population-based analysis of contemporary trends, outcomes, costs, and impact of social determinants of health. *Urology Practice*, 10.1097/UPJ.0000000000000505.
10. Esposito, C., Blanc, T., Di Mento, C., Ballouhey, Q., Fourcade, L., Mendoza-Sagaon, M., . . . Escolino, M. (2024). Robotic-assisted surgery for gynaecological indications in children and adolescents: European multicenter report. *Journal of Robotic Surgery*, 18(1), 20.
11. Ge, S., Zeng, Z., Li, Y., Gan, L., Meng, C., Li, K., . . . Zheng, L. (2024). Comparing the safety and efficacy of single-port versus multi-port robotic-assisted techniques in urological surgeries: a systematic review and meta-analysis. *World Journal of Urology*, 42(1), 18.
12. Giunco, L., Hernández-Hernández, D., Placeres-Hernández, T., & Castro-Díaz, D. M. (2024). Management of Colovesical Fistulae: The Updated Evidence. *Current Bladder Dysfunction Reports*, 1-6.
13. Guan, X., Lovell, D., & Sendukas, E. (2024). Pioneering case: Robotic single port (SP) transvaginal NOTES (RSP-vNOTES) for hysterectomy in ten steps. *Intelligent Surgery*, 7, 1-6.
14. He, H., Li, T., Cui, M., Jiang, Q., Jiang, F., Li, M., & Liu, Y. (2024). Effect of two different laparoscopic techniques on postoperative wound complications in patients with benign gynaecological diseases: A meta-analysis. *International Wound Journal*, 21(2), e14382.
15. Ibis, M. A., & Sarica, K. (2024). Management of Ureteral Stones *The Ureter: A Comprehensive Review* (pp. 465-492): Springer.

16. Jeong, C. W., Han, J. H., Byun, S. S., Song, C., Hong, S.-H., Chung, J., . . . Seo, I. Y. (2024). Rate of benign histology after resection of suspected renal cell carcinoma: multicenter comparison between Korea and the United States. *BMC cancer*, 24(1), 1-8.
17. Jichen, Q., JIANG, N., Liangliang, C., He, C., Jiang, F., & Yaping, Z. (2024). A new type of single-arm single-port micro-trauma laparoscopic surgery robot.
18. Larenas, F., Flores, I., Roman, C., Martinez, C., Gatica, T., Sanchez, C., & Fulla, J. (2024). Initial experience in urological surgery with a novel robotic technology: Magnetic-Assisted Robotic Surgery (MARS) in Urology. *Journal of Endourology(ja)*.
19. Liu, J., Zhang, B., Qi, P., Ren, X., Zheng, D., He, Y., . . . Yang, N. (2024). Transperitoneal vs retroperitoneal laparoscopic radical nephrectomy: a double-arm, parallel-group randomized clinical trial. *BMC urology*, 24(1), 1-10.
20. Mains, E. A., Nalagatla, S., McLellan, E., McKay, A., Trail, M., Good, D. W., . . . Hendry, J. (2024). Risk of isolated metastatic disease outside the abdomen is low in cT1a renal cancer: A retrospective analysis of a large cohort from the Scottish Renal Cancer Consortium. *Journal of Clinical Urology*, 20514158231223363.
21. Mendes, G., Madanelo, M., Vila, F., Versos, R., Teixeira, B. L., Rocha, M. A., . . . Ramires, R. (2024). Transperitoneal vs. Retroperitoneal Approach in Laparoscopic Partial Nephrectomy for Posterior Renal Tumors: A Retrospective, Multi-Center, Comparative Study. *Journal of Clinical Medicine*, 13(3), 701.
22. Osman, Y., & Elawdy, M. (2024). Ureteral Fistulae *The Ureter: A Comprehensive Review* (pp. 635-650): Springer.
23. Prata, F., Ragusa, A., Civitella, A., Tuzzolo, P., Tedesco, F., Cacciatore, L., . . . Fantozzi, M. (2024). Robot-assisted partial nephrectomy using the novel Hugo™ RAS system: Feasibility, setting and perioperative outcomes of the first off-clamp series. *Urologia Journal*, 03915603231220109.
24. Ricker, A. B., McCarron, F. N., Vrochides, D., & Martinie, J. B. (2024a). Robotic transduodenal pulpectomy: an alternative surgical technique for benign tumours at the ampulla of Vater. *Journal of Visualized Surgery*, 10.
25. Ricker, A. B., McCarron, F. N., Vrochides, D., & Martinie, J. B. (2024b). Robotic uncinete enucleation with trans mesenteric sleeve duodenectomy: a novel approach. *Journal of Visualized Surgery*, 10.
26. Schmitt, A., Crochet, P., Pivano, A., Tourette, C., Faust, C., Baumstarck, K., & Agostini, A. (2024). The Effects of a Laparoscopy by Single-Port Endoscopic Access in Benign Adnexal Surgery: A Randomized Controlled Trial: "Effects of a Laparoscopy by Single-Port in Benign Adnexal Surgery". *Journal of Minimally Invasive Gynecology*.
27. Sekito, T., Yamanoi, T., Sadahira, T., Yoshinaga, K., Maruyama, Y., Tominaga, Y., . . . Bekku, K. (2024). Current status and future perspectives on robot-assisted kidney autotransplantation: A literature review. *International Journal of Urology*.
28. Shrivastava, N., Bhargava, P., Jain, P., Choudhary, G. R., Jena, R., Singh, M., . . . Sandhu, A. S. (2024). Robot-assisted ureteric reconstructive surgeries for benign diseases: Initial single-centre experience with point of technique. *Urologia Journal*, 03915603241229144.
29. Sonune, M. S., Dalvi, A. S., & Ninghot, A. D. (2024). Surgical audit of minimally invasive adrenalectomy retrospective observational study. *Asian Journal of Medical Sciences*, 15(1).
30. Souli, A., Alves, A., Tillou, X., & Menahem, B. (2024). Iatrogenic ureteral injury: What should the digestive surgeon know? *Journal of Visceral Surgery*.
31. Stibbsa, P., Carr, D., Lee, D., & Lewis, G. Sclerotherapy Cyst Ablation Via Drainage Catheter Instilled Fluids Under Image Guidance: A Comprehensive Overview.
32. Tao, C., Cao, Y., & Mao, C. (2024). Analysis of the therapeutic efficacy of laparoscopic treatment for fibroepithelial polyps of the ureter in children. *Journal of Endourology(ja)*.
33. Territo, A., Di Buono, G., Buscemi, S., Mantica, G., Falco, V., Palacios, V. H., . . . Crisan, N. (2024). Evaluation of predictive factors for i-CLARAS (intraoperative complications in

- laparoscopic renal and adrenal surgery): a multicentre international retrospective cohort study. *Scientific Reports*, 14(1), 1372.
34. Vaddi, S. P., Khetavath, S., Reddy, K. R., Prasad, M. D., & Battini, J. (2024). Percutaneous Basket-guided Transurethral CystoLithoTripsy—An Innovation for the Management of Bladder Stones. *Journal of Association of Southern Urologists*, 1(1), 27-29.
 35. Wang, Y., Butaney, M., Wilder, S., Ghani, K., Rogers, C. G., & Lane, B. R. (2024). The evolving management of small renal masses. *Nature Reviews Urology*, 1-16.
 36. Xue, Y.-T., Chen, J.-Y., Yan, X.-L., Lin, F., Chen, D.-N., Zheng, J.-J., . . . Zheng, Q.-S. (2024). A computed tomography-based comprehensive standardized adrenal tumour scoring model for predicting the perioperative outcomes of retroperitoneal laparoscopic adrenal surgery. *Quantitative Imaging in Medicine and Surgery*, 14(1), 489.
 37. Xue, Y., Xiaoyan, L., Yanghao, T., Kang, W., & Jiwen, S. (2024). Patient satisfaction analysis of robot-assisted minimally invasive adrenalectomy: a single-centre retrospective study. *Journal of Robotic Surgery*, 18(1), 39.
 38. Zhang, C., Li, Q., Fang, F., Wei, S., Lu, Q., & Guan, X. (2024). Transvaginal NOTES hysterectomy with the Chinese robotic single port platform of two cases. *Intelligent Surgery*.
 39. Zhang, W., Deng, L., Yang, F., Liu, J., Chen, S., You, X., . . . Qi, X. (2024). Protocol: Comparing the efficacy and safety of three surgical approaches for total hysterectomy (TSATH): protocol for a multicentre, single-blind, parallel-group, randomized controlled trial. *BMJ Open*, 14(1).