ORIGINAL ARTICLE

https://doi.org/10.61910/ricm.v8i1.218

Evaluation of surgical outcomes of patients undergoing endometriosis treatment in a tertiary hospital in Belo Horizonte

MARIANA NICÁCIO CANTELLI[1], IZABELLA SIFFERT GIRUNDI BARROS[1], GABRIELA BRAGA MENEZES[2], KARLA DE CARVALHO SCHETTINO[2], JOÃO OSCAR DE ALMEIDA FALCÃO JUNIOR[2]

[1] FACULDADE DE CIÊNCIAS MÉDICAS DE MINAS GERAIS - BELO HORIZONTE, MINAS GERAIS
[2] HOSPITAL FELÍCIO ROCHO - BELO HORIZONTE, MINAS, GERAIS

ABSTRACT

Introduction: Endometriosis is a gynecological disease defined by the presence of endometrial implants outside the uterus, primarily affecting women of childbearing age. Treatment decisions are individualized, and both clinical and surgical treatment methods are available. The goal of surgery is the complete removal of all endometriosis foci, restoring pelvic anatomy, preserving reproductive function, and reducing the chance of recurrence. **Objective:** To evaluate the outcomes obtained in patients diagnosed with endometriosis who underwent surgical treatment in a tertiary hospital from January 2018 to December 2021. **Method:** This is a retrospective observational study conducted from the analysis of 104 medical records of patients diagnosed with endometriosis in a referral hospital between January 2018 and December 2021. **Results:** The median age of the patients is 37 years. The median surgical time is 160 minutes. The main surgical route is laparoscopy (96%). A multidisciplinary team was present in 54% of the procedures. General anesthesia was the most used anesthetic technique (83%). There were 4 intraoperative complications and 11 postoperative complications. The median hospital stay post-procedure is 56 hours. **Conclusion:** Surgical treatment of endometriosis, when correctly indicated, is crucial for improving patients' quality of life. The surgical route of choice should be minimally invasive, laparoscopic, or robotic, to minimize morbidities associated with the procedure. Surgery for endometriosis involves complex procedures and often requires a multidisciplinary team.

Keywords: Endometriosis; Laparoscopy; Treatment.

INTRODUCTION

Endometriosis is defined by endometrial tissue implants (gland and/or stroma) outside the uterine cavity, predominantly in the female pelvis. It is a chronic and inflammatory condition whose growth and development depend on estrogen, thus mainly affecting women during reproductive life and representing a diagnostic and therapeutic challenge.

The prevalence of endometriosis is still uncertain, but it is estimated that the disease affects 2 to 10% of the female population. The clinical spectrum of endometriosis is broad, and symptoms can range from minimal to severely debilitating. Symptoms of this disease include pelvic pain, dysmenorrhea, dyspareunia, and infertility. Consequently, endometriosis is associated with a significant impact on patients' quality of life, often related to

anxiety, depression, inability to cope with daily activities, reduced work productivity, difficulties in social life, and interpersonal relationships.

Early diagnosis of endometriosis is associated with better clinical outcomes, such as reduced anatomical distortion of reproductive organs and fewer pain episodes. Delayed diagnosis occurs in many cases and is associated with a lack of awareness in the medical community about endometriosis. Definitive diagnosis requires histological evaluation of the lesion, performed after surgical visualization and excision of the suspected focus. The combination of symptoms, signs, and imaging findings is usually reliable for clinical suspicion of diagnosis, and surgery should not be mandatory if the therapeutic benefits of intervention cannot be predicted.

The treatment of endometriosis aims to address primarily the pain and infertility associated with the disease. Clinical therapy is effective in controlling pelvic pain and should be the first choice in the absence of absolute indications for surgery. Clinical treatment is performed with hormones, neuromodulators, and anti-inflammatories. The goal is to alleviate pain symptoms and improve quality of life. Assisted reproduction can be offered to patients when indicated.

Surgical treatment should be offered in cases where clinical treatment fails. The objective of surgery is the complete removal of all endometriosis foci, restoring pelvic anatomy, preserving reproductive function, and reducing the chance of recurrence. The last decade has witnessed a progressive and substantial modification of therapeutic approaches for endometriosis. The minimally invasive intervention has gained prominence, achieving significant results for women with pain relief and the possibility of pregnancy, along with reduced surgical procedure risks. The progress of laparoscopic surgery allows patients with deep endometriosis to undergo safe treatment with rapid postoperative recovery and low morbidity. Through this therapy, it is possible to perform a complete excision of the foci using reference points and dissection of avascular spaces in the pelvis, thus avoiding major surgical complications.

Data collected from a research and treatment center in a referral hospital in Belo Horizonte found a substantial increase in the number of patients undergoing surgical treatment for endometriosis at this institution, primarily through minimally invasive methods. In this context, the objective of this study is to evaluate the outcomes obtained in a group of patients diagnosed with endometriosis who underwent surgical treatment in the mentioned referral hospital from January 2018 to December 2021 through data collection from medical records and to estimate the correspondence of surgical and imaging findings in the present sample.

METHOD

Study Design

This is a retrospective and unicentric observational study approved by the Research Ethics Committee following Resolution 466/12 of the National Health Council (CAAE: 60186322.8.0000.5125; approval number: 5.546.562), in which patients undergoing surgical treatment for endometriosis by professionals from an integrated research and treatment center for endometriosis at a tertiary hospital in Belo Horizonte were evaluated from April 2021 to March 2022.

Sample

The sample included patients over 18 years of age undergoing surgical procedures for the treatment of endometriosis in a tertiary hospital from April 2021 to March 2022. Exclusion criteria were pregnant patients, patients diagnosed with gynecological oncological pathology, and patients with imprecise data in medical records that were insufficient for analysis.

Procedures

Data analysis and collection occurred from August 2022 to February 2023. A selection of patients was made through the search for surgical procedure codes and the search in the MV-PEP system (electronic medical record) of specific surgical forms. Information was collected regarding imaging findings, surgery date, ASA classification, surgical route, anesthetic technique performed, surgical procedures performed by the gynecology and multidisciplinary teams, surgical time, intraoperative complications, postoperative complications, and hospital stay duration.

Statistical Analysis

Data collected using the Redcap platform was later transferred to a table for statistical analysis. Categorical variables were presented as absolute and relative frequencies and continuous variables as medians. Associations between categorical variables were evaluated using the Chi-square test and Fisher's exact test.

RESULTS

Medical records of 104 patients admitted for surgical treatment of endometriosis in the referred hospital were evaluated. The median age was 37 years, with the first quartile equal to 32 years and the third quartile equal to 41 years. Regarding the socio-cultural data of the patients, it was observed that 63% of the patients were married, and regarding education, 74% had completed higher education.

The main complaints of the patients were dysmenorrhea (49%), dyspareunia (38%), and chronic pelvic pain (34%). Concerning the evolution of symptoms, 67 women (41%) declared that their symptoms were stable, while 64 (39%) declared that these were progressive. The median time to diagnosis between the onset of symptoms and diagnosis was 13 years.

A total of 104 patients underwent surgical treatment. The median surgical time was 160 minutes. The main surgical route performed was laparoscopy, corresponding to 96% of the procedures, followed by laparoscopy combined with robotics, corresponding to 4%. None of the patients underwent laparotomy.

It was observed that 44% of the procedures were performed exclusively by the gynecology team, while 54% were subjected to multidisciplinary team surgery, with 19% by the general surgery team, 48% by the coloproctology team, and 67% by the urology team. Surgeries performed exclusively by the gynecological surgery team correspond to 48 procedures.

Number of cases and surgical team involved

Percentage (% based on total evaluated patients: n = 104)	
General Surgery	2 (1,9%)
Coloproctology	50 (48%)
Gynecology	104 (100%)
Urology	7 (6,7%)

The median ASA (American Society of Anesthesiologists) classification of the patients was 1. Regarding the anesthetic technique performed, general anesthesia was the most used (83%), followed by general anesthesia with epidural with morphine (91%), general anesthesia with epidural without morphine (2%), and general anesthesia combined with spinal anesthesia (2%).

The following correspondence between suspected endometriosis lesions on imaging and surgical findings was observed:

Correspondence of Suspected Endometriosis Lesions in Imaging Examination and Surgical Findings (% based on total evaluated patients: n = 104)

Location	Imaging Examination	Surgical Finding
Anterior cul-de-sac	5 (4,8%)	24 (23%)
Intestinal lesion	29 (27,8%)	43 (41,3%)
Right uterosacral ligament	28 (26,9%)	74 (71,1%)
Left uterosacral ligament	25 (24%)	72 (69,2%)
Right ovary	16 (15,3%)	42 (40,3%)
Left ovary	14 (13,4%)	47 (45,1%)
Posterior cul-de-sac/ Rectovaginal septum	35 (33,6%)	75 (72,1%)

Considering the main procedures performed by the gynecology team, it is observed that the main procedure was the resection of the right uterosacral ligament (71%), followed by the resection of the left uterosacral ligament (69%), right ureterolysis (67%), and resection of the rectovaginal septum (50%).

Gynecological procedures performed

(% based on the total number of evaluated patients: n = 104)	
Chromotubation	35 (33,6%)
Adhesiolysis	15 (14,4%)
Right oophoroplasty	35 (33,6%)
Right oophorectomy	7 (6,7%)
Left oophoroplasty	42 (40,3%)
Left oophorectomy	5 (4,8%)
Resection of peritoneal lesions in the anterior compartment	24 (23%)
Resection of peritoneal lesions in the right lateral compartment	15 (14,4%)
Resection of peritoneal lesions in the left lateral compartment	22 (21,1%)
Resection of peritoneal lesions in the posterior compartment	40 (38,4%)
Resection of the right uterosacral ligament	74 (71,1%)
Resection of the left uterosacral ligament	72 (69,2%)
Resection of rectovaginal septum	52 (50%)
Resection of abdominal wall tumor	4 (3,8%)
Right salpingectomy	29 (27,8%)
Left salpingectomy	32 (30,7%)
Right ureterolysis	70 (67,3%)
Left ureterolysis	73 (70,1%)

Furthermore, analyzing the procedures performed by a multidisciplinary team, it is noted that the main procedure performed by the coloproctology team was colon resection (47%), followed by disc excision (29.5%), and finally shaving (23.5%). Regarding the urology team, partial cystectomy was the most performed procedure (71.4%).

Coloproctological procedures performed

(% based on the total number of evaluated patients: n = 50)	
Colon resection	24 (48%)
Disc excision	15 (30%)
Shaving	12 (24%)

Urological procedures performed

(% based on the total number of evaluated patients: n = 7)	
Partial cystectomy	5 (71,4%)
Double J stent placement	3 (42,8%)
Ureterectomy with reimplantation of the left ureter	1 (14,2%)

There were surgical complications in 4 cases, including increased bleeding without the need for blood transfusion during the surgery (1.9%), increased bleeding with the need for blood transfusion during the surgery (0.9%), and intestinal injury (0.9%).

Eleven postoperative complications were observed during the hospital stay, especially increased bleeding wi-

thout the need for blood transfusion (3.8%), abdominal distension beyond expected (1.9%), fever (1.9%), nausea and vomiting that hindered diet progression (0.9%), surgical reintervention (0.9%), increased bleeding with the need for blood transfusion (0.9%). The average hospital stay was 54 hours.

DISCUSSION

The significant delay in diagnosing endometriosis has a major impact on the quality of life of women affected by this disease worldwide. The average time between the onset of symptoms and diagnosis is 6 years. In this study, it was found that the median time for diagnosis between the first symptoms and the definitive diagnosis was 13 years. The diagnosis of endometriosis has been the subject of numerous studies involving biomarker evaluation techniques and imaging examinations. The application of imaging methods and their interpretation depends on the examiner's experience and skill, as in the case of ultrasound, as well as the availability of equipment, such as magnetic resonance imaging.

The main imaging techniques commonly used for diagnosing endometriosis are transvaginal ultrasound, with a sensitivity of 85% and specificity of 96%, which is more available and generally routine in initial investigations in primary care. Similarly, magnetic resonance imaging, with a sensitivity of 85% and specificity of 95%, is generally more available in more specialized health services. Current endometriosis guidelines indicate that transvaginal ultrasound and magnetic resonance imaging in the hands of experienced professionals are considered the gold standard for diagnosing deep pelvic endometriosis and ovarian endometriosis; however, negative imaging findings do not exclude endometriosis, especially superficial peritoneal endometriosis.

Analyzing the collected data, it is observed that there was a low correspondence between patients' imaging exams and the procedures performed during surgery. Imaging findings were deficient in diagnosing endometrial lesions. Regarding implants in the anterior cul-de-sac, 5 patients (4.8%) presented these findings on imaging while 23% presented this finding during surgery. Intestinal lesions were observed in 4.8% of imaging findings and 41.3% of surgical findings. Lesions of the uterosacral ligament were present in 26.9% of patients and 71.1% of surgical findings. Lesions in the left uterosacral ligament were present in 24% of imaging findings and 69.2% of surgical findings. Endometriomas, which are implants of endometrial tissue in the ovaries, were present in 15.3% of the right ovary and 13.4% of the left ovary, while during surgery, the presence of these lesions was identified in 40.3% and 45.1% respectively. This demonstrates that imaging exams are important diagnostic aids, but negative findings do not exclude the possibility of findings during surgery.

It is observed that 96% of the surgeries for endometriosis treatment covered in this study were performed by video laparoscopy. This surgical method is considered the gold standard for the surgical treatment of endometriosis. Laparoscopy is a minimally invasive procedure and is associated with a lower endocrine-metabolic response to trauma, lower risk of postoperative complications, and shorter recovery time after the procedure. Robotic surgery, used in 4% of surgeries, is also a minimally invasive procedure and has similar advantages to video laparoscopy in terms of rapid postoperative recovery and low morbidity. However, robot-assisted video laparoscopy is associated with greater surgical precision compared to traditional laparoscopy.

The minimally invasive surgical technique, used in all surgeries in this study, has smaller incisions compared

to laparotomy, which reduces the chances of bleeding and infection. In this sense, minimally invasive surgery is associated with low rates of intraoperative complications such as increased bleeding without (1.9%) or with (0.9%) the need for blood transfusion during the operation. Additionally, the low percentage of postoperative complications (10.5%), especially increased bleeding without the need for blood transfusion (3.8%) and increased bleeding with the need for blood transfusion (0.9%), found in the analysis is worth noting. It is important to highlight that the low percentage of intraoperative complications (3.8%) and postoperative complications (10.5%) may also be related to the surgeons' expertise, the patients' age (median 37 years), and the ASA classification (median ASA 1).

A median surgical time of 160 minutes was observed, which can be explained by the performance of complex procedures, often multidisciplinary, with a low percentage of intraoperative complications (3.8%). Moreover, the median hospitalization time is 54 hours, which is necessary for recovery from general anesthesia (83%), general anesthesia with epidural morphine (9.1%), general anesthesia with epidural without morphine (2%), general anesthesia associated with spinal anesthesia (2%), recovery after medium-sized surgical procedure, and treatment of any postoperative complications (10.5%).

The objective of surgery for endometriosis treatment is the complete removal of all endometriosis foci. In cases of endometrial lesions located outside the reproductive organs, the assistance of other specialties is necessary to proceed with the excision of these foci. In this regard, 54% of the surgeries evaluated in this study involved a multidisciplinary team. The coloproctology team was present in 50 procedures, equivalent to 48% of the surgeries included in this work. The procedures of colon resection (47%), disc excision (29.5%), and shaving (23.5%) were performed to remove endometriosis from the intestinal wall. The urology team was present in surgeries where endometrial lesions and adhesions were found in the urinary tract (6.7%). The most performed procedure in these cases was partial cystectomy (71.4%). Finally, the general surgery team participated in surgeries where endometriosis lesions were found in abdominal organs, corresponding to 1.9% of cases.

CONCLUSION

In summary, early diagnosis of endometriosis is essential to improve the quality of life of patients. It is acknowledged that imaging exams, such as transvaginal ultrasound and magnetic resonance imaging, are important methods to aid in this diagnosis. The surgical treatment of endometriosis aims to remove the disease foci to provide symptom relief and improve fertility. The surgical approach of choice should be minimally invasive, either laparoscopic or robotic, to minimize morbidity associated with the procedure. Surgery for endometriosis treatment involves complex procedures and often requires a multidisciplinary team.

REFERENCES

1. Chapron C, Marcellin L, Borghese B et al. Rethinking mechanisms, diagnosis and management of endometriosis. Nat Rev Endocrinol 2019 Nov;15(11):666-682.
2. Becker Christian M, Bokor Attila, Heikinheimo Oskari, et al. ESHRE Endometriosis Guideline Group, ESHRE guideline: endometriosis. Human Reproduction Open 2022; (2).
3. Podgaec S. Endometriose. São Paulo: Federação Brasileira das Associações de Ginecologia e Obstetrícia (FEBRASGO) 2018.
4. Vercellini P, Viganò P, Somigliana E, Fedele L. Endometriosis: pathogenesis and treatment. Nat Rev Endocrinol 2014; 10:261.
5. Audebert A, Petousis S, Margioula-Siarkou C, et al. Anatomic distribution of endometriosis: A

reappraisal based on series of 1101 patients. Eur J Obstet Gynecol Reprod Biol 2018; 230:36.
6. De Cicco C, Corona R, Schonman R, et al. Bowel resection for deep endometriosis: a systematic review. BJOG 2011; 118:285.
7. Barnhart K, Dunsmoor-Su R, Coutifaris C. Effect of endometriosis on in vitro fertilization. Fertil Steril. 2002;77(6):1148–55.
8. Senapati S, Sammel MD, Morse C, Barnhart KT. Impact of endometriosis on in vitro fertilization outcomes: an evaluation of the Society for Assisted Reproductive Technologies Database. Fertil Steril 2016;106(1):164–171.e1.
9. Practice Committee of the American Society for Reproductive Medicine. Treatment of pelvic pain associated with endometriosis: a committee opinion. Fertil Steril 2014; 101:927.
10. Santos TMV, Pereira AMG, Lopes RGC, Depes DDB. Lag time between onset of symptoms and diagnosis of endometriosis. Einstein 2012;10(1):39–43.
11. Paolo Vercellini et al. Endometriosis: pathogenesis and treatment. Nat Rev Endocrinol. 2014 May;10(5):261-75.
12. Linda C Giudice. Clinical practice. Endometriosis. N Engl J Med 2010 Jun 24;362(25):2389-98.
13. A L Shafrir et al. Risk for and consequences of endometriosis: A critical epidemiologic review. Best Pract Res Clin Obstet Gynaecol. 2018 Aug; 51:1-15.
14. Stacey A Missmer et al. Incidence of laparoscopically confirmed endometriosis by demographic, anthropometric, and lifestyle factors. Am J Epidemiol. 2004 Oct 15;160(8):784-96.
15. Jennifer Brawn et al. Central changes associated with chronic pelvic pain and endometriosis. Hum Reprod Update. Sep-Oct 2014;20(5):737-47.
16. Dunselman GA et al. ESHRE guideline: management of women with endometriosis. Hum Reprod 2014; 29:400.
17. Engemise S, Gordon C, Konje JC. Endometriosis. BMJ 2010; 340:2168.
18. Ballard KD et al. Can symptomatology help in the diagnosis of endometriosis? Findings from a national case-control study-Part 1. BJOG 2008; 115:1382.
19. Guerriero S, Saba L, Pascual MA, et al. Transvaginal ultrasound vs magnetic resonance imaging for diagnosing deep infiltrating endometriosis: systematic review and meta-analysis. Ultrasound Obstet Gynecol 2018; 51:586.
20. Ramos ÉLDA, Soeiro VM da S, Rios CTF. Mulheres convivendo com endometriose: percepções sobre a doença. Ciência & Saúde 2018 Oct 17;11(3):190.
21. Mattos LA, Goncalves MO, Andres MP, Young SW, Feldman M, Abrão MS, et al. Structured ultrasound and magnetic resonance imaging reports for patients with suspected endometriosis: guide for imagers and clinicians. J Minim Invasive Gynecol 2019;26(6):1016-25.
22. Torres-Reverón, A., Rivera, L.L., Flores, I. *et al.* Environmental Manipulations as an Effective Alternative Treatment to Reduce Endometriosis Progression. Reprod. Sci 2018; 25: 1336–1348 .
23. Sinha R, Sanjay M, Rupa B, Kumari S. Robotic surgery in gynecology. J Minim Access Surg. 2015 Jan-Mar;11(1):50-9. doi: 10.4103/0972-9941.147690. PMID: 25598600; PMCID: PMC4290120.

THE AUTHORS DECLARE THAT THERE IS NO CONFLICT OF INTERESTS IN RELATION TO THIS ARTICLE.