

Radical Surgery for Endometriosis: Analysis of Quality of Life and Surgical Procedure

Cristina M. De la Hera-Lazaro, Jose L. Muñoz-González, Reyes Oliver Perez, Rocío Vellido-Cotelo, Alvaro Díez-Álvarez, Leticia Muñoz-Hernando, Carmen Alvarez-Conejo and Jesús S. Jiménez-López

Endometriosis Unit, Gynaecology Service, Hospital Universitario 12 de Octubre, Madrid, Spain.

ABSTRACT

OBJECTIVE: The main aim of this study is to determine the improvement in quality of life in patients who have undergone radical surgery because of severe endometriosis.

PATIENTS AND METHODS: This nonrandomized interventional study (quasi experimental) was carried out between January 2009 and September 2014. A total of 46 patients with diagnosis of severe endometriosis were included. Radical surgery, including hysterectomy, was performed. Acting as their own control group, the patients were asked to fill in a validated questionnaire of quality of life [Endometriosis Health Profile-5 (EHP-5)] and a visual analog scale of pain at the moment of the preoperative visit (one month prior to surgery) and six months after the surgery.

RESULTS: Radical surgery for endometriosis was performed in 46 patients at our center over the period of six years. Among the patients, 73.9% of them had undergone previous surgery for endometriosis. In 82.6% of cases, a complete laparoscopic resection was carried out. Gastrointestinal tract resection was performed in 21.7%, and urinary tract resection was necessary in 8.7%. The mean age of the patients was 38.6 years. The rate of complications was 30.4%. Six months after the surgery, all items of the EHP-5 questionnaire had a lower score, which means an improvement in all aspects of quality of life related to endometriosis. The difference obtained between the scores before and after the surgery was statistically significant. The mean visual analog scale score before the surgery was 8.5, whereas it decreased to 1.4 after the surgery ($P < 0.001$).

CONCLUSION: Performing a radical surgery is a difficult decision to make; however, it can provide optimal results in terms of improvement of quality of life and, therefore, should be considered when conservative therapy fails.

KEYWORDS: deep endometriosis, radical surgery, quality of life

CITATION: Hera-Lazaro et al. Radical Surgery for Endometriosis: Analysis of Quality of Life and Surgical Procedure. *Clinical Medicine Insights: Women's Health* 2016;9 7–11 doi:10.4137/CMWH.S38170.

TYPE: Original Research

RECEIVED: December 11, 2015. **RESUBMITTED:** January 24, 2016. **ACCEPTED FOR PUBLICATION:** January 26, 2016.

ACADEMIC EDITOR: Nicole Powell-Dunford, Editor in Chief

PEER REVIEW: Five peer reviewers contributed to the peer review report. Reviewers' reports totaled 602 words, excluding any confidential comments to the academic editor.

FUNDING: Authors disclose no external funding sources.

COMPETING INTERESTS: Authors disclose no potential conflicts of interest.

COPYRIGHT: © the authors, publisher and licensee Libertas Academica Limited. This is an open-access article distributed under the terms of the Creative Commons CC-BY-NC 3.0 License.

CORRESPONDENCE: jjimenez.hdoc@salud.madrid.org; jjimenezme35426@gmail.com

Paper subject to independent expert single-blind peer review. All editorial decisions made by independent academic editor. Upon submission manuscript was subject to anti-plagiarism scanning. Prior to publication all authors have given signed confirmation of agreement to article publication and compliance with all applicable ethical and legal requirements, including the accuracy of author and contributor information, disclosure of competing interests and funding sources, compliance with ethical requirements relating to human and animal study participants, and compliance with any copyright requirements of third parties. This journal is a member of the Committee on Publication Ethics (COPE).

Published by Libertas Academica. Learn more about this journal.

Introduction

Endometriosis is a chronic, nonmalignant, estrogen-dependent disorder that affects 6%–10% of women of reproductive age. It is also the cause of pelvic pain in 50%–60% of the cases and accounts for up to 50% of infertility.¹ Its etiology remains unclear today, although a group of risk factors have been described, such as retrograde menstruation because of obstruction of menstrual flow, exposure to diethylstilbestrol during neonatal period, and prolonged exposure to endogenous estrogen.^{1,2}

Although endometriosis usually affects ovaries and peritoneum, deep endometriosis, defined as infiltration of the peritoneum by >5 mm, can affect other structures. Intestinal infiltration occurs in 6%–35% of the cases of deep endometriosis, while urinary tract involvement has been reported in 1%–5% of the cases (Fig. 1).³

The classic symptoms of endometriosis are dysmenorrhea, pelvic pain, dyspareunia, and/or infertility. When

gastrointestinal or urinary structures are involved, dyschezia, dysuria, or hematuria may also be present. Symptomatology and diverse imaging studies can approximate the diagnosis of the endometriotic lesions; nevertheless, the final diagnosis is obtained by surgery.^{4,5}

Because endometriosis is a chronic disease, medical treatment should be the first choice, while surgical procedures should be reserved for patients who do not respond to conservative treatments and whose symptoms greatly affect their quality of life. Radical surgery is proposed for these cases.

Radical surgery for endometriosis refers to the elimination of all possible endometriosis implants found in pelvic and abdominal cavity, including hysterectomy and bilateral adnexectomy, and excision of the deep endometriosis lesions that can involve the urinary and digestive organs, as well as the rectovaginal and/or vesicouterine space.³ It requires high specialization and a multidisciplinary approach (Fig. 2).⁶

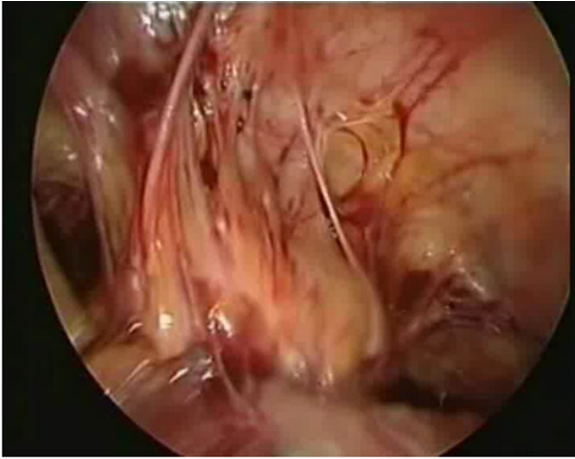


Figure 1. Great endometriotic nodule in vesicouterine fold.

The main aim of this study is to determine the improvement in quality of life in patients who have undergone radical surgery because of severe endometriosis. Secondary, we analyzed the clinical and surgical characteristics of the procedures.

Patients and Methods

Between January 2009 and September 2014, a total of 46 radical surgeries for endometriosis have been performed at our center. A nonrandomized interventional study was carried out (quasiexperimental). The study was approved by the local ethics committee of Hospital Universitario 12 de Octubre, Madrid, Spain (010/20008). The research complied with the principles of the Declaration of Helsinki.

The inclusion criteria were as follows: diagnosis of endometriosis by ultrasound or by previous surgery and severe symptoms because of endometriosis. All the included patients signed a written informed consent for radical surgery.

Severe endometriosis was defined according to the revised American Fertility Society classification stage IV. Acting as



Figure 2. The firm adhesences of the genital tract internal to the rest of pelvic organs are frequent, as in this case the sigma (called *frozen pelvis*).

their own control group, the patients were asked to fill in a validated questionnaire of quality of life [Endometriosis Health Profile-5 (EHP-5)] and a visual analog scale of pain at the moment of the preoperative visit (one month prior to surgery) and six months after the surgery.

EHP-5 questionnaire, a scaled-down version of EHP-30, contains 11 questions (items): five items (including pain, control and powerlessness, emotional well-being, lack of social support, and self-image) from the core questionnaire and six items (including work, intercourse, and worries about infertility, treatment, and relationship with children and medical professionals) from the modular questionnaire. The score given to each item ranged between 0 and 4 (never = 0, rarely = 1, sometimes = 2, often = 3, always = 4, and not relevant if not applicable).

The visual analog scale (VAS) of pain comprises a horizontal line 10 cm in length anchored by the verbal descriptors *no pain* (score of 0) and *worst imaginable pain* (score of 10). The patient was asked to place a line perpendicular to the VAS line at the point that represented her pain intensity.

The baseline characteristics of the patients (age and parity), the presence or absence of major symptoms associated with endometriosis [dysmenorrhea, dyspareunia, dyschezia, or chronic pelvic pain (CPP)], and the history of previous surgery for endometriosis were noted down at the preoperative visit. The type of surgery and the complications when there had been any were checked at the medical history record.

Statistical analysis was performed using the statistical package for the social sciences, version 17.0. Special importance has been given to the results derived from the improvement in the patients' quality of life after surgery, which have been studied with the sign test, for the comparative study of nonparametric means. Statistical significance was considered as $P < 0.05$.

Results

From January 2009 to September 2014, a total of 366 interventions for suspected endometriosis have been performed at our center; 46 (12.5%) of them were considered for radical surgery.

Patients. Characteristics of patients are listed in Table 1. The mean age of the patients was 38.61 years (range 28–45 years). A total of 30.4% (14) of the patients had no history of pregnancy. Before radical surgery, the most commonly reported symptoms were dysmenorrhea (78.3%) and dyspareunia (47.8%). A total of 34.8% (16) of the patients were treated at the Chronic Pain Unit of our center for CPP.

Approximately 28% (13) of the patients were treated with levonorgestrel-releasing intrauterine system. A total of 28% (13) of the patients were treated with GnRH analogues to induce pseudomenopause. A total of 73.9% (34) of the patients had undergone previous surgeries for endometriosis, up to three interventions in 13% (6) of the cases.

Table 1. Characteristics of the study population.

PARAMETER	DATA
Number of patients (n)	46
Age (years)	38.6 (24–45)
Number of previous pregnancy	
0	14 (30.4)
1	20 (43.5)
2	10 (21.7)
3	2 (4.3)
Number of previous surgery	
0	12 (26.1)
1	18 (39.1)
2	10 (21.7)
≥3	6 (13)
Main symptoms previous radical surgery	
Dysmenorrhea	36 (78.3)
Dyspareunia	22 (47.8)
Dyschezia	18 (39.1)
Chronic pelvic pain	16 (34.8)

Note: Values are expressed in *n* (%) or mean (range).

Surgical procedure, outcome, and complications. Surgical procedures performed are listed in Table 2. In all patients, surgical treatment was assessed in a multidisciplinary team consisting of gynecologists, general surgeons, and urologists.

Hysterectomy was carried out in 100% (46) of the patients, associated with one-sided/two-sided oophorectomy in 95.6% (44) of the cases. Gastrointestinal tract was involved in 10 (21.7%) patients; a multidisciplinary team consisting of gynecologists and general surgeons was necessary to perform surgery in these cases. Also, in four (8.7%) patients, urinary

Table 2. Surgical procedure and complications (*n* = 46).

SURGICAL PROCEDURE	DATA
Hysterectomy	46 (100)
One-/two-sided anexectomy	44 (95.6)
Bowel resection	10 (21.7)
Rectum–vaginal nodule resection	10 (21.7)
Bladder resection	4 (8.7)
Vaginal resection	2 (4.3)
COMPLICATIONS	DATA
Rectovaginal fistula	4 (8.7)
Intestinal anastomotic stenosis	4 (8.7)
Fever	4 (8.7)
Pelvic abscess	2 (4.3)
No complications	33 (71.7)

Note: Values are expressed in *n* (%).

tract resection was necessary, and therefore, the urologists were additionally consulted. In 82.6% (38) of the cases, a complete laparoscopic resection was carried out.

The rate of complications was 30.4% (14). Major complications occurred in eight (17.4%) patients: four (8.7%) patients with rectovaginal fistula and four (8.7%) patients with intestinal anastomotic stenosis. Neurological disorders did not occur. Up to now, none of the patients included have needed an intervention because of persistent pain. During the follow-up, none of the patients had undergone surgery in a different facility.

Response to the questionnaires. Regarding the results of the EHP-5 questionnaire, the initial response rate (preoperative questionnaire) was 100%. Six months after surgery, the questionnaire was completed by 100% of the patients.

As shown in Table 3, before surgery, the worst scores were for the items of functional impotence (mean 3.2 out of 4), dyspareunia (mean 2.8 out of 4), pain (mean 2.7 out of 4), and emotional well-being (mean 2.6 out of 4). Six months after the surgery, all items had a lower score, which means an improvement in all aspects related to endometriosis. The difference obtained between the scores before and after the surgery was statistically significant in every item, except the concern about fertility and childbearing (During the last four weeks, how often because of your endometriosis have you felt depressed at the possibility of not having children/more children). The patients referred a significant improvement in pain, control, and powerlessness (During the last four weeks, how often because of your endometriosis have you felt as though symptoms are ruling your life?), emotional well-being, self-image, and sexual relationships.

Regarding the results of the VAS of pain one month before and six months after surgery, the average score given preoperatively was 8.6, whereas it decreased to 1.5 after the surgery, achieving statistically significant difference ($P < 0.001$).

Discussion

Endometriosis is a disease that can significantly affect quality of life and sexual function. Deep endometriosis can affect genital and extragenital systems, such as the gastrointestinal and urinary tract. Management should be carried out by a multidisciplinary team consisting of gynecologists, colorectal surgeons, and urologists.^{3,7}

In several cases, medical treatment or conservative surgery is not enough to reduce the symptoms caused by the disease. In these cases, radical surgery should be considered, particularly when the gastrointestinal tract or the urinary tract is involved.^{3,6,8} Radical surgery refers to the elimination of all possible endometriosis implants found in pelvic and abdominal cavity, including hysterectomy and bilateral adnexectomy. Intestinal resection performed in cases of deep endometriosis that compromises the rectum can help to improve digestive symptoms and thereby quality of life and sexual well-being.⁸

**Table 3.** Results of Endometriosis Health Profile-5 questionnaire one month prior to surgery and six months after surgery.

ITEM	PRE-SURGERY	POST-SURGERY	P
Pain	2.7	0.2	$P < 0.0001^*$
Control and powerlessness	3.2	0.4	$P < 0.0001^*$
Emotional well-being	2.6	0.5	$P < 0.0001^*$
Social support	1.3	0	$P < 0.001^*$
Self-image	2.4	0.3	$P < 0.0001^*$
Work	2.5	0.2	$P < 0.0001^*$
Relationship with child/children	1.7	0.1	$P < 0.001^*$
Sexual relationship	2.8	0.7	$P < 0.001^*$
Feelings about medical profession	1.2	0	$P < 0.0001^*$
Feelings about treatment	2	0	$P < 0.0001^*$
Feelings about infertility	1.04	0.5	$P < 0.7$

Notes: The score given to each item ranged between 0 and 4 (never = 0, rarely = 1, sometimes = 2, often = 3, always = 4, and not relevant if not applicable). The results are expressed as mean value. *Statistical significance was considered as $P < 0.05$.

In this study, we obtained a statistically significant improvement in the quality of life of patients six months after radical surgery. Despite the improvement in quality of life, performing a radical surgery is a difficult choice due to the complexity of the surgery, the high rate of complications, and the side effects (premature menopause and infertility). This option should be restricted to patients for whom medical treatment and conservative surgery fail.

In a study conducted by Shakiba et al⁹ that compared conservative surgery ($n = 120$) with radical surgery ($n = 120$) over seven years, the authors reported a rate of reoperation because of persistent or recurrent symptoms in patients for whom the uterus and ovaries were excised of 8%. In this study, up to now, none of the patients included have needed a reoperation because of persistent pain.

Regarding the surgical approach, it is noted in the literature that laparoscopy has been associated with lower rates of complications when compared to laparotomy approach (18.3% vs 49%) (9–10). Nieboer et al¹⁰ further asserted that laparoscopic hysterectomy resulted in improvement in the quality of life when compared to laparotomy. Laparoscopic approach also allows performing pelvic nerve sparing more easily.⁵ However, there is still a high incidence of urinary, rectal, and sexual neurological dysfunction described in the literature when radical surgery is performed. This can also worsen the quality of life after surgery. In this study, 82.6% of the surgeries were performed with a laparoscopic approach. The patients were inquired about any changes in urinary (frequency and incomplete voiding), bowel (severe constipation), and sexual functions (arousal and vaginal lubrication). During the immediate and long-term postsurgical follow-up, no associated neurological dysfunction was observed.

Our study has several limitations. The number of patients included in the study is small ($n = 46$), and, although

our results reached statistical significance, they may not be widely applicable. The short-term follow-up can ignore long-term complications (such as increased cardiovascular events and increased all-case mortality) and pain recurrence in our group.

Conclusion

Although this study had only a small population of patients, most of the results were statistically significant. Based on these results, it is concluded that after radical surgery there was an improvement in all of the aspects analyzed, except of questions related to fertility. Additionally, the improvement in the quality of life of patients was reflected in the lower score on the VAS of pain after surgery. Endometriosis is a complex disease that can affect our patient's daily life. This study shows that radical surgery can provide optimal results in terms of improvement in the quality of life. However, due to its overall rate of postoperative complications, it should be considered only when conservative therapy is not enough and always with a multidisciplinary approach.

Current Knowledge on the Subject

Endometriosis is a complex disease that can impressively affect a patient's daily life and requires a multidisciplinary approach. Traditionally, radical surgery has been performed in patients resistant to conservative treatments. The decision to perform a radical surgery is difficult to carry out because of its complexity.

What this Study Adds

Radical surgery can provide optimal results in terms of improvement in the quality of life of patient and, therefore, should be considered when conservative therapy fails to deliver the expected results.



Acknowledgments

The authors thank Carlos Holguera, Alvaro Tejerizo, and Gregorio López for their technical assistance.

Author Contributions

Study conception and design: CMDH-L, JLM-G, ROP, and JSJ-L. Acquisition of data: CMDH-L, RV-C, and AD-Á. Analysis and interpretation of data: CMDH-L, JLM-G, AD-Á, and ROP. Drafting of manuscript: CMDH-L, JLM-G, JSJ-L, LM-H, and CA-C. Critical revision: JLM-G, ROP, and JSJ-L.

REFERENCES

1. Giudice LC. Endometriosis. *N Engl J Med*. 2010;362:2389–2398.
2. Cosin R, Gilabert-Estellés J, Ramón LA, et al. Influence of peritoneal fluid on the expression of angiogenic and proteolytic factors in cultures of endometrial cells from women with endometriosis. *Hum Reprod*. 2012;25:398–405.
3. Muñoz JL, Jiménez JS, Tejerizo A, et al. Rectosigmoid deep infiltrating endometriosis and ureteral involvement with loss of renal function. *Eur J Obstet Gynecol Reprod Biol*. 2012;162:121–124.
4. Miyashita M, Koga K, Takamura M, et al. Dienogest reduces proliferation, aromatase expression and angiogenesis, and increases apoptosis in human endometriosis. *Gynecol Endocrinol*. 2014;30(9):644–648.
5. Deguara CS, Pepas L, Davis C. Does minimally invasive surgery for endometriosis improve pelvic symptoms and quality of life?. *Curr Opin Obstet Gynecol*. 2012;24(4):241–244.
6. Ceccaroni M, Clarizia R, Bruni F, et al. Nerve-sparing laparoscopic eradication of deep endometriosis with segmental rectal and parametrial resection: the Negrar method. A single-center, prospective, clinical trial. *Surg Endosc*. 2012;26:2029–2045.
7. Chalermchokchareonkit A, Tekasakul P, Chaisilwattana P, et al. Laparoscopic hysterectomy versus abdominal hysterectomy for severe pelvic endometriosis. *Int J Gynaecol Obstet*. 2012;116:109–111.
8. Kossi J, Setälä M, Mäkinen J, Härkki P, Luostarinen M. Quality of life and sexual function 1 year after laparoscopic rectosigmoid resection for endometriosis. *Colorectal Dis*. 2012;5:102–108.
9. Shakiba K, Bena JF, McGill KM, Minger J, Falcone T. Surgical treatment of endometriosis: a 7-year follow-up on the requirement for further surgery. *Obstet Gynecol*. 2008;111:1285–1289.
10. Nieboer TE, Hendriks JC, Bongers MI, Vierhout ME, Kluivers KB. Quality of life after laparoscopic and abdominal hysterectomy: a randomized controlled trial. *Obstet Gynecol*. 2012;119:85–91.