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Y MULTIDISCIPLINARY APPROACHES TO ENDOMETRIOSIS: NEW INSIGHTS INTO PAIN MANAGEMENT, PHARMACOLOGICAL TREATMENTS, AND SURGICAL INTERVENTIONS

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Igor Moreira Miguez Godoy

Igor Simões Martins

Maria Galvão Reimão

Arthur Carvalho de Oliveira Macêdo

Verena Coelho Lobão Azevedo

Cassio Dourado Kovacs Machado Costa

Paula Yasmin Camilo Coelho

Lorena de Oliveira Gonçalves

Ztheffny Holenk da Silva Tadaiewsky

Thalyssa Luciana Nascimento Pinto Canelas

Liana Mayra Melo de Andrade

Renata Michelle Martins Real

Abstract: Endometriosis is a chronic and complex gynecological disease characterized by the presence of endometrium-like tissue outside the uterine cavity. Given this, the present study aims to discuss multidisciplinary approaches to endometriosis, highlighting pain management, pharmacological treatments, and surgical interventions. The methodology applied was based on a literature review, using books and scientific articles from databases on the subject, between 2020 and 205. The results identified that pharmacological advances and evidence favoring surgical excision in deep lesions offer new tools, but the greatest gain in pain and quality of life outcomes comes from real and sustained integration between areas such as gynecology, rehabilitation, psychology, and pain management. Multidisciplinary centers, individualized protocols, and ongoing research on therapeutic combinations and long-term follow-up are necessary steps to improve outcomes in a disease that intensely impacts the lives of millions of people. In conclusion, it should be emphasized that the future of care for women with endometriosis depends on health policies that strengthen multidisciplinary reference centers, encourage long-term collaborative research, and promote equitable access to modern treatments. In this way, it will be possible to offer not only pain relief but also a significant improvement in the physical, emotional, and social well-being of patients.
Keywords: Endometriosis. Treatment. Drugs. Surgery.

INTRODUCTION

Endometriosis is a chronic and complex gynecological disease characterized by the presence of endometrium-like tissue outside the uterine cavity, most frequently located in the ovaries, pelvic peritoneum, and, in severe cases, in organs such as the intestine and bladder. This condition affects about 10% of women of reproductive age worldwide and is considered one of the main causes of chronic pelvic pain, infertility, and a significant reduction in quality of life (Al Hussaini *et al.*, 2024).

It is estimated that the average time between the onset of symptoms and diagnosis can vary between 7 and 10 years, reflecting difficulties in early identification and the heterogeneity of clinical presentation (Andrews *et al.*, 2025).

The impact of endometriosis goes beyond physical symptoms, as the disease is strongly associated with anxiety, depression, fatigue, and sexual dysfunction, creating a scenario of biopsychosocial suffering. These repercussions directly influence the personal, professional, and social lives of patients, generating high costs not only for health systems but also for the economic productivity and quality of life of affected women (Andrews *et al.*, 2025). Thus, endometriosis should be understood as a multifactorial and multidimensional condition that requires equally complex management strategies (Fang *et al.,* 2024).

Historically, the treatment of endometriosis has focused on two main lines: pharmacological therapies, especially hormonal, and surgical interventions. Although these approaches have satisfactory results in many cases, they are not universally effective and are often associated with recurrence or adverse effects (Tijani *et al.*, 2024).

Studies such as that by Pino-Sedeño *et al.* (2024) have emphasized that pain related to endometriosis does not result solely from the anatomical presence of lesions, but also from chronic inflammatory processes, peripheral and central sensitization, as well as psychosocial factors that modulate pain perception. This more comprehensive understanding of the phenomenon of pain ( ) reinforces the need to integrate different specialties and therapeutic approaches in patient care.

In this context, multidisciplinary approaches have been gaining prominence in the clinical and scientific setting, where care models that bring together gynecologists, pelvic floor physical therapists, psychologists, anesthesiologists specializing in pain, and nurse coordinators have proven to be more effective in managing symptoms compared to isolated approaches. In addition, such models promote more efficient communication between professionals, greater patient adherence to treatment, and a comprehensive view of the condition, including reproductive, functional, and psychosocial aspects (Ross *et al.,* 2025).

Thus, the objective of this study is to discuss multidisciplinary approaches to endometriosis, highlighting pain management, pharmacological treatments, and surgical interventions.

METHODOLOGY

This study was developed through a literature review, with the objective of gathering, analyzing, and discussing recent evidence on multidisciplinary approaches to the management of endometriosis, with an emphasis on pain control, pharmacological treatments, and surgical interventions.

The articles were searched in the following scientific databases: PubMed/MEDLINE; LILACS (Latin American and Caribbean Health Sciences Literature) and SciELO (Scientific Electronic Library Online). The following descriptors and combinations of keywords were used, in English and Portuguese, with Boolean operators: "endometriosis" AND "multidisciplinary care"; "endometriosis" AND "pain management"; "endometriosis" AND "surgical treatment"; "endometriosis" AND "pharmacological treatment" and "endometriosis" AND "psychological interventions"

The inclusion criteria were articles published between 2020 and 2025; written in English, Spanish, or Portuguese; available in full; original studies, systematic reviews, clinical trials, meta-analyses, or narrative reviews that addressed the multidisciplinary management of endometriosis, covering at least one of the following aspects: pain management, pharmacotherapy, or surgical intervention.

The exclusion criteria were articles published before 2020; duplicate works in different databases; isolated case reports, editorials, and letters to the editor without original data; and studies with non-human populations or that did not directly address the topic of endometriosis.

Screening was performed in three stages: reading titles and abstracts for initial exclusion of articles outside the scope; reading potentially eligible articles in full to confirm inclusion criteria; and standardized data extraction.

Given this, a comparative analysis was performed between the studies to identify trends, benefits, limitations, and gaps in evidence. Whenever possible, differences in results between older studies were highlighted to assess technical evolution and consolidation of practices.

As this was a literature review, the study did not involve the collection of primary data from humans, thus dispensing with the need for submission to the Research Ethics Committee.

RESULTS AND DISCUSSION

Table 1 shows the selected articles, including aspects such as author, year, objective, methods, and results for a better understanding of the reading and discussion of the cases.

Throughout the articles analyzed, it was identified that pain associated with endometriosis is the result of interactions between local inflammation (cytokines, angiogenic factors), tissue invasion (deep lesions), peri-

Author/Year	Objective	Methods	Results
Al Hussaini et al., 2024	To compare the effectiveness of hormone therapy, surgery, and complementary therapies in the management of endometriosis-related pain.	Narrative review based on clinical articles and trials published up to 2024.	Hormone therapies showed initial efficacy; surgery was most indicated in refractory cases; complementary therapies (physical therapy, acupuncture) showed adjuvant benefits.
Fang et al., 2024	To evaluate the role of multidisciplinary care in women with pelvic pain and endometriosis.	Systematic review of studies involving multidisciplinary teams.	Multidisciplinary models reduced pain intensity, improved quality of life, and therapeutic adherence, with moderate evidence of efficacy.
Ioannidou et al., 2024	Compare the effectiveness of different surgical interventions for endometrioma in relation to infertility.	Systematic review of clinical studies.	Surgical excision showed better fertility outcomes compared to ablative techniques, although with a potential risk of reducing ovarian reserv .
Hui et al., 2024	Compare surgery and non-surgical treatment for endometriosis-related pain during the COVID-19 pandemic.	Observational comparative study with patients undergoing different treatments.	Surgery remained superior in pain control, but non-surgical management proved useful as an alternative during periods of hospital restrictions.
Kalra et al., 2024	Evaluate excision versus ablation in endometriomas.	Cochrane systematic review of randomized clinical trials.	Excision reduced pain recurrence and cyst recurrence; ablation was associated with less impact on ovarian function.
Pino-Sedeño et al., 2024	To evaluate the effectiveness of psychological interventions in patients with endometriosis.	Systematic review with meta-analysis.	Psychological interventions (CBT, mindfulness) reduced perceived pain, anxiety, and depression, with improved quality of life.
Vannuccini et al., 2022	Review endocrine fundamentals of hormone therapies in endometriosis.	Narrative review based on clinical and physiological evidence.	Progestogens and hormonal contraceptives remain the first line of treatment; GnRH agonists/antagonists are effective but limited by adverse effects.
Viviano et al., 2024	Evaluate the efficacy of GnRH antagonists, with and without add-back therapy, in the treatment of endometriosis pain.	Systematic review and meta-analysis.	Antagonists showed significant efficacy in reducing pain; add-back therapy reduced adverse effects without compromising efficacy.
Tyson et al., 2024	Discuss the role of the endometriosis nurse coordinator in multidisciplinary models.	Narrative commentary based on clinical experience and literature.	The nurse coordinator optimizes the flow of care, improves communication between staff and patients, and increases the effectiveness of multidisciplinary services.
Tijani et al., 2025	Review current and emerging therapies for pain associated with endometriosis.	Comprehensive narrative review.	Highlights new hormonal modulators, GnRH antagonists, anti-inflammatory therapies, and multimodal options under investigation.
Wang et al., 2025	Review advances in the use of oral GnRH antagonists in the treatment of endometriosis.	Narrative review focusing on recent clinical studies.	Oral antagonists have demonstrated significant and rapid efficacy in pain; challenges include management of adverse effects and definition of optimal add-back regimens.

Table 1 - Selected articles

Source: Authors' data (2025)

pheral and central sensitization (changes in nociceptive processing), and psychosocial factors (Al Hussani *et al.,* 2024).

According to Al Hussaini *et al.* (2024), this complexity explains why hormone-only or surgical treatments do not always resolve chronic pain, so it is also necessary to address nervous system sensitization and comorbidities (anxiety, depression, pelvic floor dysfunction). Thus, interventions aimed solely at suppressing lesions (e.g., excision) should be combined with rehabilitation and pain management strategies for better long-term results.

In evaluating new insights into pharmacological treatments, Vannuccini *et al.* (2021) describe progestogens (e.g., dienogest, medroxyprogesterone) and contraceptives, which when combined continue to be recommended as first-line treatment for painful symptoms in many recent guidelines and reviews due to their efficacy, cost-effectiveness, and safety profile, in which they can reduce pain by suppressing the ovulatory cycle and reducing local estrogenic stimuli.

Wang *et al*. (2025) describe that oral GnRH antagonists (e.g., elagolix and other molecules in development) have emerged as an effective option for pain reduction with greater dosing flexibility and faster onset of action than classic agonists. According to the authors above, oral antagonists significantly reduce pain intensity and improve quality of life; however, adverse effects related to hypoestrogenism (bone loss, vasomotor symptoms) require the use of add-back therapy or reduced dose regimens as needed (Wang *et al.*, 2025).

With regard to NSAID therapy, it is still widely used as symptomatic treatment, but with limited efficacy when used alone for chronic pain. Tijani *et al.* (2025) explore targeted anti-inflammatory therapies, neuropathic pathway modulators, and immunomodulatory agents, many of which are in the early stages and show promising results in models but require more robust clinical trials.

The results of Tijani *et al.* (2025) point to a growing interest in combined pharmacological approaches (hormonal + pain modulator) to control both peripheral stimulation and central sensitization.

Viviano *et al*. (2024) explain that while some studies indicate the superiority of oral antagonists in rapid pain relief, other analyses point out that long-term benefits and safety profile (especially bone impact) still need extended follow-up. In addition, heterogeneity in outcomes (menstrual pain vs. chronic pelvic pain vs. dyspareunia) makes direct comparisons difficult, so it is recommended to individualize the therapeutic choice based on predominant symptoms, reproductive desire, and tolerance to adverse effects.

Regarding surgical interventions, the study by Kalra *et al*. (2024) shows that excision (complete removal of implants) tends to offer better pain control for deep lesions and endometriomas compared to superficial ablation/fulguration, with a lower recurrence rate of lesions in some studies. However, gains in fertility are less consistent, with several analyses suggesting that, for endometriomas, excision may decrease ovarian reserve if not performed with technical awareness. Thus, the surgical decision should be guided by pain relief, risk of ovarian damage, and reproductive goals (Kalra *et al.,* 2024).

Hui *et al*. (2024) indicate that surgery is clearly indicated in cases of deep endometriosis (sigmoid, bladder, parametrial) where removal reduces tissue load and relieves local pain, while for superficial endometriosis, surgery alone may not bring sustained pain relief without adjuvant treatment.

Other studies, such as that by Ioannidou et al. (2024), reinforce that technologies such as plasma energy, precise dissection, and microsurgical suturing have been studied to minimize ovarian damage during endometrioma cystectomy. The authors also highlight that

integrated teams and standardized care pathways can reduce the time to appropriate interventions, improve treatment adherence, reduce reported pain intensity, and improve quality of life.

Psychological interventions are also part of the treatment process, as indicated by Pino-Sedeño *et al*. (2024), who state that psychological interventions (CBT, pain-focused cognitive behavioral therapy, mindfulness techniques) result in significant improvement in perceived pain, as well as quality of life and comorbidities such as anxiety and depression. The integration of psychology into the care network is therefore indispensable.

In these cases, educational programs, support groups, and shared decision-making between the patient and the team (considering gestational desire, the impact of hormone therapy, and surgical risks) improve satisfaction and functional outcomes, demonstrating operational effectiveness and improved referral to complementary services (Tyson *et al*., 2024).

, pharmacological advances and evidence favoring surgical excision in deep lesions offer new tools, but the greatest gain in pain and quality of life outcomes comes from real and sustained integration between areas such as gynecology, rehabilitation, psychology, and pain management. Multidisciplinary centers, individualized protocols, and ongoing research on therapeutic combinations and long-term follow-up are necessary steps to improve outcomes in a disease that intensely impacts the lives of millions of people.

CONCLUSION

Throughout this study, it was observed that endometriosis remains one of the most challenging gynecological conditions, both for its clinical and psychosocial impact and for the complexity of managing the associated pain and infertility. The scientific literature shows that, although pharmacological and surgical advances have expanded therapeutic possibilities, the isolated approach of these modalities is rarely sufficient to ensure lasting relief of symptoms and satisfactory quality of life for patients.

New drugs, especially oral GnRH antagonists, represent a relevant alternative to traditional hormonal therapies, offering greater dosing flexibility and proven efficacy in pain control. However, long-term studies are still needed to better define their safety profiles, adherence, and impact on quality of life.

In the surgical field, excision of deep lesions remains the technique with the best results in pain reduction, but it requires a specialized team and caution in preserving ovarian reserve, especially in women with reproductive desires.

Despite these advances, the current scientific consensus reinforces that the greatest progress in the care of endometriosis comes from the implementation of multidisciplinary care models. Teams composed of gynecologists, pelvic physiotherapists and physical therapists, psychologists, pain specialists, and nursing professionals ensure a comprehensive view of the patient, allowing interventions directed not only at the anatomical lesion but also at the inflammatory, neurological, and psychosocial mechanisms that perpetuate chronic pain.

Therefore, it can be concluded that the management of endometriosis requires a broader view that overcomes therapeutic fragmentation and values integration between different areas of knowledge. The future of care for women with endometriosis depends on health policies that strengthen multidisciplinary reference centers, encourage long-term collaborative research, and promote equitable access to modern treatments. In this way, it will be possible to offer not only pain relief but also a significant improvement in the physical, emotional, and social well-being of patients.

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