



Surgical Impacts on Pregnant Women with Autoimmune Diseases

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ARTIGO DE REVISÃO

ABSTRACT

When analyzing the scenario of autoimmune diseases during pregnancy, a challenging picture was identified, as hormonal and immune changes in pregnancy can worsen symptoms and increase the likelihood of complications. This article was developed with the aim of exploring the surgical impacts on pregnant women with autoimmune diseases, evaluating the associated risks and complications that could interfere with pregnancy. The methodology involved a systematic review conducted in the PubMed, LILACS, and SciELO databases, using the descriptors "autoimmune", "complications", "surgery", and "pregnant". Studies published in the last five years and presenting relevant data on the addressed topic were filtered. Exclusion criteria included studies that did not specify maternal and fetal clinical outcomes or did not provide sufficient information for analysis. It is emphasized that managing these patients requires a multidisciplinary approach to ensure safety during interventions. Specialized and individualized protocols are essential to reduce risks and improve maternal and fetal clinical outcomes.

Keywords: Autoimmune Diseases; Pregnancy; Surgery.

Impactos cirúrgicos em gestantes com doenças autoimunes

RESUMO

Ao analisar o cenário das doenças autoimunes durante a gestação, foi possível identificar um quadro desafiante, uma vez que as alterações hormonais e imunológicas na gravidez podem agravar os sintomas e aumentar a probabilidade de complicações. Esse artigo foi elaborado com o intuito de explorar os impactos cirúrgicos em gestantes com doenças autoimunes, avaliando os riscos e complicações associados que poderiam interferir na gestação. A metodologia envolveu uma revisão sistemática realizada nas bases de dados PubMed, LILACS e SciELO, utilizando os descritores "autoimmune", "complications", "surgery" e "pregnant". Foram filtrados estudos publicados nos últimos cinco anos e que apresentassem dados relevantes sobre a temática abordada. Os critérios de exclusão incluíram pesquisas que não especificasse os desfechos clínicos maternos e fetais ou que não oferecessem informações suficientes para análise. Destaca-se que a conduta desses pacientes exige uma abordagem multidisciplinar, para garantir a segurança durante as intervenções. Protocolos especializados e individualizados são fundamentais para reduzir riscos e melhorar os desfechos clínicos maternos e fetais.

Keywords: Doenças autoimunes; Gravidez; Cirurgia.

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INTRODUÇÃO

Autoimmune diseases arise from a failure in immune regulation, where the immune system mistakenly targets the body's own tissues. Rather than being the result of excessive immune aggression, this misrecognition stems from impaired immune function, which loses the ability to distinguish self from non-self and begins to attack endogenous structures, leading to a wide range of pathologies (Xiang *et al.*, 2023). These disorders affect roughly one in ten individuals, with a marked predominance among females (Conrad *et al.*, 2023). Moreover, recent investigations have revealed that several conditions—previously categorized under other medical classifications—also exhibit autoimmune mechanisms, such as self-antigen targeting. Notable examples include atherosclerosis and Parkinson's disease (De Jonge *et al.*, 2021).

In addition to being significantly more prevalent in women than in men, autoimmune disorders are most often diagnosed during the reproductive years and have been associated with an increased likelihood of complications during and after pregnancy (Singh *et al.*, 2023). Not only do autoimmune conditions heighten the risk of obstetric issues—such as pre-eclampsia—but pregnancy itself may exacerbate the course of the autoimmune disease, placing both mother and fetus at heightened risk (Lim *et al.*, 2020). The physiological changes that occur during gestation can either mitigate or aggravate the disease, depending on the immune pathways involved. For example, autoimmune diseases driven by a cell-mediated response, like rheumatoid arthritis, often show clinical improvement during pregnancy. In contrast, those that primarily involve humoral immunity, such as systemic lupus erythematosus, tend to worsen during this period (Fernández-Buhigas, 2022).

The interplay between immune dysregulation and the unique physiological demands of pregnancy contributes to increased maternal vulnerability, including the potential for disease flares, postoperative infections, and thrombotic events (Rodrigues *et al.*, 2025). Specific syndromes, such as antiphospholipid syndrome (APS), present even greater challenges, elevating the risk for gestational hypertension and surgical bleeding, thereby endangering both maternal and fetal well-being (Fernández-Buhigas, 2022). Fetal outcomes are also at risk, including intrauterine growth restriction (IUGR),

preterm birth, and perinatal death. Maternal autoantibodies—such as anti-Ro/SSA—can cross the placental barrier and interfere with fetal cardiac conduction, leading to congenital heart block. Furthermore, surgical complications during pregnancy may compromise placental blood flow, exacerbating placental insufficiency and impairing optimal fetal development (Sheng et al., 2023).

THEORETICAL FRAMEWORK

1. Contextualization on the risks of autoimmune diseases during pregnancy

Autoimmune diseases are chronic conditions characterized by the body's abnormal immune response, leading to inflammation and tissue damage (Pisetsky, 2023). During pregnancy, these diseases can significantly affect the health of the mother and fetus, increasing the risk of complications such as spontaneous abortions, prematurity, low birth weight, and fetal development problems (Buyon; Clancy; Friedman, 2009). Pregnancy can also exacerbate the symptoms of pre-existing autoimmune diseases, making clinical management more challenging due to the immunological and hormonal changes that occur during pregnancy (Wang, Y.; Wang J.; Feng, 2023).

Observing the use of medications among women before, during and after pregnancy over the years, it is possible to notice an increase in adherence to treatments, even during pregnancy, where it was previously much lower. This can be attributed to better health education and medical monitoring, as well as greater knowledge about medications and their safety during pregnancy (Mainbourg *et al.*, 2024). In the past, women with autoimmune diseases were unable to get pregnant, either due to infertility (often associated with the disease) or due to medical contraindication, which often occurred due to the adverse effects that could affect pregnancy, caused by the medication used for treatment. Nowadays, however, with advances in medicine, many fertility problems are now treatable and the treatment for autoimmune diseases has also become more adaptable, so that women who have them are allowed and encouraged to get pregnant. However, these cases are still challenging for healthcare professionals, who need to work to ensure the health of the pregnant woman and the

fetus during and after pregnancy (Fernández-Buhigas, 2022).

During pregnancy, important changes occur in the immune system, such as a decrease in the cellular immune response and an increase in the activity of the humoral immune response. These adaptations are essential to protect the development of the fetus and ensure an adequate environment for pregnancy (Dutta; Sengupta; Liew, 2024).

These changes can affect the progression of autoimmune diseases, increasing the risk of failures and complications (Buyon; Clancy; Friedman, 2009). In addition, immunological changes during pregnancy can also affect the response to treatment, making it necessary to adjust therapy to ensure the safety of the mother and fetus (Abu-Raya *et al.*, 2020). Immunological changes can also increase the risk of infections and other complications during pregnancy, making careful medical monitoring and a preventive approach necessary to minimize these risks. During pregnancy, two of the most common autoimmune diseases that can affect women are systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA) (Rodrigues *et al.*, 2022). SLE is a disease that can affect multiple organs, including the skin, joints, kidneys, and nervous system, leading to inflammation and tissue damage (Zucchi; Fisher-Betz; Tani, 2023). Rheumatoid arthritis, on the other hand, is a disease that causes inflammation and joint damage, resulting in pain, stiffness, and loss of function (Nelson, 2022). Both diseases can have a significant impact on the health of the mother and fetus, increasing the risk of complications during pregnancy, such as miscarriages, prematurity, and low birth weight (Marder; Littlejohn; Somers, 2020).

2. Epidemiology of autoimmune diseases in pregnant women

Although autoimmune diseases can affect individuals of all sexes and ages, there is a marked predominance in women, particularly those of reproductive age. This epidemiological data is especially relevant in the context of pregnancy, since the presence of autoimmune diseases during this period can increase the risks associated with surgical procedures, requiring a more cautious and individualized medical approach. This prevalence has been attributed to hormonal, genetic, and immunological elements that control the autoimmune response, such as estrogen levels and the expression of genes associated with the X chromosome. Approximately 78% of cases of

autoimmune diseases are diagnosed in women (Fairweather *et al.*, 2023), highlighting the importance of understanding the effect of these conditions in the context of reproductive and obstetric health. The incidence of IAD varies according to the specific disease.

Systemic lupus erythematosus (SLE) is estimated to affect 20 to 150 people per 100,000 inhabitants, with a higher incidence in women of reproductive age. Similarly, rheumatoid arthritis (RA) has an estimated prevalence rate of between 0.5% and 1% of the global population, being two to three times more common in women. Other conditions, such as Sjögren's syndrome, Hashimoto's thyroiditis and multiple sclerosis, also demonstrate higher incidence rates in this population group (Diddle *et al.*, 2023).

Regarding pregnancy, the existence of an autoimmune disease imposes extra risks to both maternal and fetal health. The complexity of this association arises from the physiological and immunological changes inherent to the gestational period, which require reprogramming of the immune system to ensure tolerance to the fetus, considering a semi-allogeneic (Joo; Lee; Hong, 2024). When this adaptation is impaired by an excessive autoimmune reaction, there may be aggravation of the underlying disease and the appearance of obstetric complications. Pregnant women who suffer from autoimmune diseases have a higher risk of adverse events, such as recurrent spontaneous abortions, premature birth, intrauterine growth restriction, preeclampsia, and intrauterine fetal death (Singh *et al.*, 2024).

Furthermore, the presence of maternal antibodies, such as anti-Ro/SSA and anti-La/SSB, is associated with clinical manifestations in the newborn, such as neonatal lupus and congenital heart block. These conditions may require immediate action after birth and, in certain situations, represent a risk of permanent morbidity for the newborn. Therefore, it is crucial that women diagnosed with autoimmune diseases are monitored from prenatal care and closely monitored throughout pregnancy, with the aim of reducing risks and promoting more favorable maternal-fetal outcomes (Singhal *et al.*, 2021).

The epidemiology of IAD also presents significant regional and global variations, influenced by genetic, environmental, socioeconomic factors, and the availability of health services. In developed nations, such as the United States, Canada, and Western

European countries, diagnosis rates tend to be higher, in part due to access to sophisticated diagnostic technologies, greater public awareness, and robust health systems. In contrast, in developing nations, such as those in Latin America, sub-Saharan Africa, and parts of Asia, there is significant underreporting, exacerbated by the shortage of trained professionals, low availability of laboratory tests, and restrictions on access to specialized services (Jiang *et al.*, 2023).

Ethnic differences also influence the distribution and severity of autoimmune diseases. For example, African-American and Hispanic women are more likely to develop more aggressive forms of SLE and have a poorer obstetric prognosis than white women (Mehta *et al.*, 2023). It should be noted that these groups have higher rates of disease activity, renal complications, and higher rates of maternal mortality (Alrifai *et al.*, 2025), which highlights structural disparities in health care. These data indicate the need for specific public health strategies, particularly in vulnerable areas, that focus on equal access to services, health education, and multidisciplinary monitoring of pregnant women with autoimmune diseases.

3. Planejamento pré-operatório, pós operatório e Recuperação pós-operatória

Family planning is of the utmost importance for everyone, but for women with autoimmune diseases, it is essential. Both the immune response generated by the disease and the treatment used to treat it can cause changes during pregnancy, therefore, it is essential that medication and antibodies are monitored during monitoring before and during pregnancy, as well as postpartum (Fernández-Buhigas, 2022). In addition, surgical planning in pregnant women with autoimmune diseases must be highly individualized and conducted by a multidisciplinary team including an obstetrician, rheumatologist, anesthesiologist, and, when necessary, a cardiologist or hematologist (Andreoli *et al.*, 2024).

Continuing or starting safe and appropriate treatment for pregnancy is of great importance so that the disease remains stable during pregnancy, improving its impact on the pregnant woman and baby. (Siegel; Sammaritano, 2024). Clinical evaluation should consider disease activity and severity, therapeutic history, specific laboratory tests, and gestational status, with a focus on fetal viability, both for women who are

already pregnant and for family planning for those who wish to become pregnant (Fernández-Buhigas, 2022).

Surgery should be scheduled considering maternal stability and the safest gestational phase. Thromboembolism prophylaxis, especially in patients with antiphospholipid syndrome, and infection prevention are essential measures. Anesthetic evaluation should anticipate possible interactions between immunosuppressants and anesthetics. In addition, the risk of transplacental passage of antibodies such as anti-Ro/SSA, which may affect the fetus, should be considered (Al Emadi; Satti; Hadwan, 2024).

The postoperative period requires intensive monitoring for early detection of complications, such as infections, thrombosis, and reactivation of autoimmune disease (Tincani *et al.*, 2020). Pain management should consider breastfeeding safety and possible drug interactions. Continued monitoring by specialists ensures clinical stability and promotes safer maternal-fetal outcomes (Peterson *et al.*, 2020). In the postpartum period, the risk of exacerbation of autoimmune disease is high. Up to 46% of patients with rheumatoid arthritis, for example, experience relapse during this period (Tincani *et al.*, 2020).

Therefore, a personalized care plan that includes disease control, resumption of immunomodulatory therapies compatible with lactation, and psychological support is essential. Mental health should be actively monitored, considering the risk of postpartum depression. Therapies such as cognitive-behavioral (CBT) and interpersonal (IPT) are effective and should be integrated into clinical care (Langer-Gould *et al.*, 2020).

Regarding newborns, children of mothers with autoimmune diseases have a higher incidence of prematurity and low birth weight, in addition to the possibility of transient presence of autoantibodies. Strict pediatric follow-up is essential to monitor development, growth and early detection of possible manifestations, such as neonatal lupus (Andreoli *et al.*, 2024).

METODOLOGY

The integrative review method was performed, selecting the theme "Surgical

Impacts on Pregnant Women with Autoimmune Diseases". The study followed several stages, namely: first, the selection of databases, definition of descriptors for data filtering; elaboration of inclusion and exclusion criteria for articles and subsequent selection of studies; organization of selected articles and, finally, presentation and analysis of data.

The Health Sciences Descriptors (DeCS/MeSH) used were "Autoimmune Diseases" AND "Pregnancy" AND "Surgery", and the selected databases were National Library of Medicine (PubMed), Scientific Electronic Library Online (SciELO) and Latin American and Caribbean Literature in Health Sciences (LILACS). The search resulted in 419 articles. A screening process was carried out that involved reading the title, reading the abstract and, finally, analysis of the full text; a total of 67 references were selected to compose this work.

Furthermore, the inclusion of 16 articles in Portuguese, English and Spanish, available in full and relevant to the topic, was restricted to inclusion in the sample frame. The final articles were organized considering the year of publication, authors, database, title and main findings reported. For data analysis, the content analysis technique was used, which included the steps of exhaustive reading, classification, categorization and interpretation of results.

RESULTS AND DISCUSSION

The search for articles resulted in 419 articles, of which 352 were excluded because they did not meet the criteria; 47 were excluded based on the title and 63 based on the reading of the abstract; finally, 67 were selected and read in full, and included in this review. Of these articles, 16 constitute a sample of the table, as shown in Table 1.

Table 1: The table summarizes the main results regarding surgical procedures involving pregnant women with autoimmune diseases, organized by author/year, database, title and important findings.

Author/Year	Database	Title	Important Findings
Judge; O'Shaughnessy; McCaul, 2020	LILACS	Anaesthetic management of an emergency caesarean section in a complex immunologically compromised patient with pre-eclampsia and multifactorial thrombocytopaenia	Thrombocytopenia is defined as a platelet count less than $150 \times 10^9.l-1$. Although mild gestational thrombocytopenia is common, platelet counts less than $100 \times 10^9.l-1$ are seen in only 1% of pregnant women.
Schreiberová; Chrapek; Šimičák, 2020	LILACS	Ocular complications of diabetes mellitus in pregnancy - Case report.	Risk factors include duration of diabetes, poor metabolic control, severity of DR at the time of conception, and the presence of coexisting vascular disease, such as arterial hypertension, and pregnancy itself.
Huang <i>et al.</i> , 2021	LILACS	Prediction of postpartum hemorrhage in pregnant women with immune thrombocytopenia: Development and validation of the MONITOR model in a nationwide multicenter study.	This study included 432 pregnant women (677 pregnancies) with primary ITP from 18 academic tertiary centers in China from January 2008 to August 2018. A total of 157 (23.2%) pregnancies had PPH. The derivation cohort included 450 pregnancies.
Bayless; Caldarera; Harirah, 2022.	PUBMED	Autoimmune polyglandular syndrome type 2 in pregnancy: a case report and review of the literature	Autoimmune polyglandular syndrome type 2 (APS-2) is a relatively uncommon autoimmune condition defined as the combination of primary adrenal insufficiency (Addison's disease), autoimmune thyroid disease (ATD), and/or type 1

			diabetes mellitus. APS-2 has a prevalence of approximately five per 100,000 in the United States and is most commonly diagnosed in middle-aged women.
Bazkke <i>et al.</i> , 2022	PUBMED	A pregnant women with history of hashimoto's thyroiditis diagnosed with Kikuchi-Fujimoto disease: the first case report.	KFD is a benign, unilateral, self-limiting disorder characterized by regional lymphadenopathy and usually observed in the first three decades in female patients. Here, we report a case of a pregnant woman with painful unilateral cervical lymph nodes, who was diagnosed with KFD and had a previous diagnosis of Hashimoto's thyroiditis.
Li <i>et al.</i> , 2022	SCIELO	Maternal and neonatal outcomes of pregnancy complicated with Systemic Lupus Erythematosus	The study analyzed the effects of autoimmune hepatitis on pregnancies. Most pregnant women had type I autoimmune hepatitis and presented complications such as portal hypertension and thrombocytopenia, which was severe in half of the cases. Treatment was based on prednisone, with azathioprine being discontinued in the first trimester. The rate of prematurity was high (42%), possibly due to fetal growth restriction. Despite this, no malformations were observed in the newborns.
Merz <i>et al.</i> , 2022	PUBMED	Pregnancy and Autoimmune Disease	A Dinamarques registry study reported an increase in prevalence from 3.7% to 15.8% between 1989 and 2013; a four-

			to eight-fold increase was demonstrated for the autoimmune disease rheumatoid arthritis (from 0.1% for the Department of Obstetrics and Prenatal Care.
Solha <i>et al.</i> , 2022	SCIELO	Screening, diagnosis and management of hypothyroidism in pregnancy	Primary hypothyroidism (involvement of the gland with difficulty in producing and/or releasing TH) is the most common form of presentation of the disease, with the main etiology being Hashimoto's thyroiditis. In approximately 85% to 90% of cases of Hashimoto's thyroiditis, antithyroid antibodies are present; antithyroid peroxidase (ATPO) is the most frequent.
Ávila <i>et al.</i> , 2023	SCIELO	Evaluation of obstetric outcomes in Brazilian pregnant women with Takayasu arteritis	In twenty-two pregnancies, the mean age of the patients was 28.09 years and the mean duration of the disease was 10.9 years. Of the 18 patients with TAK studied, only one was diagnosed during pregnancy and had disease. All other patients had a previous diagnosis of TAK and only 3 had disease activity during pregnancy.
Mehta <i>et al.</i> , 2023	PUBMED	Fetal and maternal morbidity in pregnant patients with Lupus: a 10-year US nationwide analysis	Premature birth and maternal and fetal mortality are higher in women with systemic lupus erythematosus (SLE). Pregnant women with SLE also presented more complications during pregnancy and childbirth, many directly related to pregnancy,

			such as eclampsia, hysterectomy and anesthetic complications.
Yoshino <i>et al.</i> , 2023	LILACS	Granulomatous Mastitis Occurring during Pregnancy: A Case Report.	An elective caesarean section was performed at 37 weeks' gestation, and the baby was delivered safely. After delivery, a needle biopsy was performed and the patient was diagnosed with granulomatous mastitis. She was completely cured with prednisolone after weaning.
Andreoli <i>et al.</i> , 2024	PUBMED	Management of pregnancy in autoimmune rheumatic diseases: maternal disease course, gestational and neonatal outcomes and use of medications in the prospective Italian P-RHEUM.it study	A total of 866 pregnancies in 851 patients (systemic lupus) were analyzed. Lupus erythematosus was the most represented disease, 19.6%). Maternal exacerbations of the disease were observed in 135 (15.6%) pregnancies. 53 (6.1%) pregnancies were induced by assisted reproduction techniques, 61 (7%) ended in spontaneous abortion and 11 (1.3%) underwent elective termination.
Draxler <i>et al.</i> , 2024	PUBMED	Pregnancy in myasthenia gravis: a retrospective analysis of maternal and neonatal outcomes from a large tertiary care centre in Germany	Symptoms of myasthenia gravis worsened during pregnancy in 63% of the cases analyzed and a small increase (15%) in cases of surgical vaginal delivery was identified, which may be explained by the action of MG symptoms in prematurely exhausting the striated muscles during pregnancy.
Hernandez <i>et al.</i> , 2024	SCIELO	Complicaciones maternas y perinatales en gestantes con lupus: Estudio de	The study analyzed the frequency of maternal-perinatal complications in pregnant women

		casos y controles	with Systemic Lupus Erythematosus. Maternal complications such as gestational hypertension, pre-eclampsia and HELLP syndrome were identified, in addition to adverse perinatal outcomes such as premature births, miscarriages and fetal growth restriction.
Singh <i>et al.</i> , 2024	PUBMED	Autoimmune diseases and adverse pregnancy outcomes: an umbrella review	Thirty-two reviews, consisting of 709 primary studies, were included. The review reported the association between 12 autoimmune conditions and 16 adverse pregnancy outcomes. Increased risk of spontaneous abortion was reported in women with Sjögren's syndrome RR 8.85 (95% CI 3.10–25.26) and systemic lupus erythematosus (SLE) OR 4.90 (3.10–7.69).
Shen <i>et al.</i> , 2024	PUBMED	Unique case of lymphocytic hypophysitis with normal pituitary hormone serology mimicking a non-functioning pituitary adenoma	Lymphocytic hypophysitis begins during or after pregnancy with headaches and visual distortion.
Bi; Duan; Yin, 2025	PUBMED	TEVAR for acute type B aortic dissection in pregnant women (35 weeks gestation) with Takayasu's arteritis after cesarean section: a rare case report and literature review	Type B aortic dissection in pregnant women should be identified and treated based on maternal and fetal vital signs, and the diagnosis should be made quickly and accurately. BP and HR should be observed after diagnosis, as well as inflammatory landmarks. The preferred

			treatment should be TEVAR soon after cesarean section.
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Sources: Authors, 2025.

Despite the growing knowledge about the challenges of pregnancy in women with autoimmune diseases, there is still a significant gap in the literature regarding the safety and management of surgical interventions in this group. Future studies, with robust designs and larger sample sizes, are needed to develop more precise guidelines, considering the individual immunological characteristics and the specific needs of each autoimmune disease.

A study reports the case of a 16-year-old pregnant girl with a severe acute form of ITP that did not respond to corticosteroid treatment, who suffered a critical decline in platelets twice to 1×10^9 and repeatedly required access to IVIG application and Azathioprim (Imuran) was also used in her treatment (Binder *et al.*, 2019).

Investigation of new therapies and immunomodulatory strategies, especially in relation to the control of exacerbations during pregnancy, is crucial to improve maternal-fetal outcomes. The integration of new technologies, such as telemedicine and the use of biomarkers, can help in remote monitoring and early detection of complications, contributing to a more personalized and effective approach.

Patients with SLE are still considered a high-risk condition due to an increased risk of major obstetric and neonatal complications. A population-based study from 2000 to 2003 found that mortality was 20 times higher among women with SLE. The risk of serious medical and pregnancy-related complications was also 3 to 7 times higher for women with SLE compared to the general population (Medina *et al.*, 2021). The need for surgical interventions further increases the complexity of management. The analyzed data demonstrate that surgery in pregnant women with autoimmune diseases is associated with an increased risk of complications, including thrombosis, postoperative infections, and exacerbations of the underlying disease (Rodrigues *et al.*,

2025).

Antiphospholipid syndrome (APS), in particular, increases the risk of thrombotic events and hemorrhages (Fernández-Buhigas, 2022), requiring special attention in perioperative planning. In addition, the possibility of transplacental transmission of maternal antibodies, such as anti-Ro/SSA, which can cause congenital heart block in the fetus (Al Emadi; Satti; Hadwan, 2024), reinforces the need for a multidisciplinary approach involving obstetricians, rheumatologists, cardiologists, and neonatologists. Optimizing maternal-fetal prognosis depends on intensive monitoring and the implementation of individualized protocols. The use of biomarkers, remote monitoring technologies, and the personalization of immunosuppressive therapy contribute to reducing risks and improving outcomes (Peterson *et al.*, 2020). Interdisciplinary collaboration, allowing the adjustment of immunosuppressive therapy and the anticipation of potential complications, is essential to ensure the safety of the mother and fetus (Andreoli *et al.*, 2024).

Epidemiologically, a universal distribution is reported, with an overall incidence ranging from 0.8-1.7% of the population. It can appear at any age, but has a peak incidence between 15 and 49 years of age. Although it can occur in male patients, it mainly affects females in a ratio of 10:1 to males (Franco, 2022).

Pregnancy, in itself, represents a significant immunological modification, with the aim of promoting fetal tolerance by reducing the activity of the cellular immune response and favoring the humoral immune response (Wolf *et al.*, 2019). However, this immunological modulation affects the course of autoimmune diseases in different ways. While some, such as rheumatoid arthritis, may improve during pregnancy, others, such as systemic lupus erythematosus (SLE), frequently suffer exacerbations, more frequent when the disease is active at the time of conception or reactivates during the gestational course, significantly increasing maternal and fetal risks (Fernández-Buhigas, 2022). This variability in response to pregnancy highlights the need for an individualized assessment that considers the specific autoimmune disease, its severity, and pre-gestational activity.

FINAL CONSIDERATIONS

This study analyzed the possible surgical complications in pregnant women with autoimmune diseases, a topic that has not been widely discussed in the literature. The

management of these patients is challenging due to the immunological and hormonal changes during pregnancy, associated with the particularities of autoimmune diseases. Surgical interventions in this group require personalized protocols and the work of multidisciplinary teams. Remote monitoring technologies and immunological biomarkers emerge as promising strategies to reduce risks and improve maternal-fetal outcomes. Future research should focus on developing specific guidelines aimed at preventing complications and providing patient-centered care. Only through a holistic approach that balances maternal and fetal needs will it be possible to ensure safety and better surgical prognoses for this vulnerable group.

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