Womb for debate: the complexities of early-age hysterectomies

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Purpose of review
Hysterectomy remains one of the most performed gynecologic procedures, yet its application in young and nulliparous individuals raises complex ethical, medical, and psychosocial considerations. As early detection of gynecologic conditions improves, requests for hysterectomy at younger ages may increase. This review examines the current literature on the morbidity, quality of life, psychological impact, and social implications of hysterectomy in younger patients.

Recent findings
Research indicates both benefits and risks associated with early-age hysterectomy. While it provides significant symptom relief for conditions such as chronic pelvic pain, endometriosis, and fibroids, studies also suggest an increased risk of cardiovascular disease, metabolic disorders, and psychological distress. Younger patients may experience residual symptoms and identity disruption, particularly in relation to fertility loss. While regret appears to be low in the short term, long-term data on patient satisfaction remain limited. In addition, hysterectomy plays a critical role in gender-affirming care, highlighting the need for individualized counseling.

Summary
Gynecology providers must engage in shared decision-making, providing evidence-based counseling on the benefits, risks, and alternatives to hysterectomy. Future research should focus on long-term outcomes, particularly in younger and nulliparous patients, to guide best practices and optimize patient-centered care.

Keywords
early-age hysterectomy, gynecologic surgery, medical ethics, reproductive autonomy

INTRODUCTION

Hysterectomies are one of the most frequently performed surgical procedures for women of reproductive age in the USA [1]. While hysterectomies for women in this age group can offer symptom relief from benign gynecologic conditions [1], it is important to consider potential risks on younger and nulliparous patients. An estimated 200 000 hysterectomies are conducted annually in the USA, and 85% of these surgeries are interventions for benign uterine conditions such as symptomatic fibroids, adenomyosis uteri, and chronic pelvic pain [2].

The approach to hysterectomy in young patients involves a complex and ethically challenging decision-making process. As advances in the early detection of conditions such as endometriosis continue, healthcare providers are likely to encounter more requests for hysterectomies at a younger age. Gynecologists are the main providers of information about the hysterectomy procedure and most women follow their gynecologist's advice [3]. Gynecologists must be well-equipped with the necessary evidence and data to effectively support and guide patients through this process.

It is important to consider the motivating factors contributing to a young patient's request for a hysterectomy. Many of these individuals suffer from debilitating conditions, such as chronic endometriosis, pelvic pain, heavy menstrual bleeding, or fibroids. For these patients, a hysterectomy may represent the only viable means to significantly improve their quality of life, including their mental health and sexual function [▪4,5]. For transgender and nonbinary individuals, a

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KEY POINTS

- The current literature on younger patient populations that undergo hysterectomies suggests that these patients are at greater risk, including early mortality and potential long-term regret over fertility loss.
- However, for some patients, a hysterectomy offers significant symptom relief without major impairment of sexual function.
- Future research should focus on the long-term outcomes of younger patients that receive hysterectomies, including longitudinal assessments of patient satisfaction with the procedure.

hysterectomy can be considered a critical component of gender-affirming care, which can mitigate dysphoria [6].

Conversely, there is substantial evidence that highlights the potential negative consequences of performing this procedure on younger patients. Studies have demonstrated an increased risk of cardiovascular and all-cause mortality in younger individuals undergoing hysterectomy, even in cases where ovarian preservation is achieved [7–12]. There is also evidence that women under 30 years of age who undergo hysterectomy for pelvic pain and endometriosis are more likely to have residual symptoms and detrimental impact on various aspects of their lives compared with women over 40 years of age [13]. In addition, evidence suggests that fertility loss following a hysterectomy in premenopausal women can result in identity disruption, as reproductive capacity is often linked to gender identity [14].

Another critical consideration is the potential for regret over the loss of fertility. A patient's priorities and life circumstances may evolve over time, but the loss of fertility because of a hysterectomy is permanent. It is thus essential to consider conservative management options before opting for definitive and irreversible surgical interventions in younger patients. Although some studies suggest overall regret after hysterectomy is low [15–17▪▪], even in women younger than age 35 [16], there is a gap in the research over long-term outcomes and satisfaction for patients who received hysterectomies at an early age. Moreover, there are no prospective studies that specifically compare younger and older populations.

This paper explores the current state of literature over hysterectomies for younger patients, with a focus on morbidity and mortality associated with this procedure, impact on quality of life, symptom management and sexual function, the potential for regret involved in decision-making, the effect on gender identity and mental health, and the social, cultural and reproductive rights implications arising from this decision.

TEXT OF REVIEW

Morbidity and mortality

There is conflicting evidence regarding the impact of hysterectomy on morbidity and all-cause mortality when this procedure is performed at a younger age. (Table 1). While the evidence of increased cardiovascular, neurologic, and somatic morbidity is stronger in cases of a concomitant oophorectomy [18], several studies have linked hysterectomy performed at younger ages to increased risks of cardiovascular and metabolic outcomes, even in cases of ovarian preservation [7–12]. In a cohort study involving over 2000 patients with a median follow-up of 21.9 years, women who underwent hysterectomy with ovarian preservation below age 35 exhibited a significantly increased risk of congestive heart failure, coronary artery disease, and arrhythmias, although these were relatively rare [9]. In addition, a nationwide cohort study in Korea involving over 100 000 women, with a median follow-up of 7.9 years, noted an increased risk of cardiovascular disease, particularly stroke, in women undergoing hysterectomy before age 50, even after excluding patients who underwent concomitant adnexal surgery [10▪]. A larger population study of 600 000 women in Australia found an increase in all-cause, cardiovascular, cancer, and other mortality over a median follow-up period of 24.2 years [7]. This study, as well as another nationwide population-based study in Taiwan with a follow-up period of 7.24 years, found that for women under 45, an increased risk of cardiovascular disease, stroke, and all-cause mortality was observed [7,11]. Importantly, these studies showed that hysterectomy was not associated with poorer long-term survival when performed at older ages [7,11]. In certain healthcare systems, hysterectomy before the age of 35 is regarded as a negative quality benchmark, necessitating special justification in quality assurance because of concerns about its long-term consequences [9].

Evidence from Gierach *et al*. [12] based on a prospective cohort study of over 50 000 women with a mean follow-up period of 22.1 years, demonstrated a step-wise increase in coronary heart disease mortality with hysterectomy alone (21% increase) and hysterectomy with bilateral oophorectomy (56% increase) when performed below age 35, and an increase in all-cause mortality with abdominal

Table 1 Morbidity and mortality associated with hysterectomy with ovarian preservation and hysterectomy with bilateral oophorectomy

Outcome	Hysterectomy alone (with ovarian preservation)	Hysterectomy with bilateral oophorectomy
Cardiovascular disease (CVD)	• Increased risk of coronary artery disease, congestive heart failure, and cardiac arrhythmias, especially in women less than or equal to 35 years [9] • Increased risk of cardiovascular disease [8,10▪] • No increased risk for increases in CVD risk factors [20,21]	• Increased risk of total cardiovascular disease, coronary heart disease, and stroke [8,19], especially in women less than 50 years [19] • Not independently associated with an increased rate of change in CVD risk factors [20,21]
Metabolic outcomes	• Increased risk of hyperlipidemia, hypertension, and obesity [9]	• Increased risk of hyperlipidemia, diabetes mellitus, and hypertension [19]
Cancer	• No significantly increased risk of breast, ovarian, lung, or colorectal cancer [11]. • Some sources suggest a decreased risk of cancer mortality [8]	• Reduced risk of ovarian cancer • Reduced risk of breast cancer in women less than 50 years • Increased risk of colorectal cancer, renal cancer, and potentially thyroid cancer. May reduce the combined risk of all cancers in women less than 50 years [19]
Stroke	• Increased risk [8,10▪,11], especially in women less than 45 years [11]	• Increased risk in women less than 50 years [19]
Dementia	• No data	• Increased risk in women less than 45 years [19]
Depression	• No data	• Increased risk in women less than 45 years [19]
All-cause mortality	• Increased risk in women less than 35 years [7,12] • No increased risk of all-cause mortality when compared with women with no hysterectomy if the surgery was done before the age of 50 [22]	• Increased risk when surgery is performed before the age of 45 [7] • Increased risk when surgery is performed before the age of 50 and not using menopausal hormone therapy [22] • Increased risk in young women (substantial heterogeneity between the study estimates) [19]

hysterectomy alone by the ages of 35 and 40. Similar to previously mentioned studies, these risks appear more pronounced in younger patients compared with those undergoing the procedure at older ages.

In addition, a recent systematic review found that hysterectomy with bilateral salpingo-oophorectomy in young women was associated with decreased risk of breast cancer but with an increased risk of colorectal cancer, cardiovascular diseases, coronary heart disease, and stroke [19]. The review also found that the procedure was associated with hyperlipidemia, diabetes mellitus, hypertension, dementia, depression, and possible premature ovarian failure in patients under 50 years of age [19].

In contrast, two prospective cohort studies – one conducted on 3000 women over 11 years and the other on 1000 women over 25 years – found hysterectomy, with or without oophorectomy, was not associated with an increase in risk factors for cardiovascular disease compared with natural menopause [20,21]. Another large prospective, population-based study using data from 13 000 women followed over the span of 21 years concluded that hysterectomy with ovarian conservation before the age of 50 years did not increase the risk of all-cause mortality, regardless of hormone therapy use, although hysterectomy and bilateral oophorectomy with no subsequent hormone replacement therapy was associated with a higher risk of death [22].

Overall, while there is some conflicting evidence, the body of literature suggests there is some association between early-age hysterectomy and morbidity and, in some cases, mortality, even in cases of ovarian preservation. Given these potential risks, careful patient selection, thorough counseling, and consideration of alternative treatment options are essential in younger women undergoing

hysterectomy to ensure the best long-term health outcomes.

Quality of life, symptom improvement, and sexual function

Significant improvements in quality of life and symptom relief are commonly reported following hysterectomy, although it may be challenging to assess these differences in premenopausal versus postmenopausal women given the indications for surgery can vary with age and often involve the potential of malignant disease in older patients [16]. Some studies also suggest that hysterectomy provides effective symptom relief for conditions such as chronic pain and abnormal bleeding, as well as a statistically significant reduction in depression scores, improved quality of life, and improvement in performing activities of daily living [16,17▪▪,23–25]. However, there is a concern for the development of new pain and depression symptoms over the long term, particularly in patients who underwent concomitant oophorectomy [25].

In patients under 35, a prospective study involving over 1200 women found improved quality of life and sexual function postoperatively in the short term (6–12 weeks), regardless of the surgical route [26]. Similarly, a randomized-controlled study of 177 subjects also found no difference in changes in quality of sexual life, lubrication, sexuality, and body image between patients who underwent uterine artery embolization (UAE) versus hysterectomy in the first 2 years after the procedure [23].

In comparative studies, hysterectomies have often been associated with greater and more sustained improvement in quality of life and symptom severity compared with uterine-sparing alternatives such as UAE or myomectomy [18,27▪]. Conservative surgical options, while valuable, often require additional interventions over time. For example, recurrence rates following myomectomy are up to 30% [28].

Furthermore, the benefits of hysterectomy for patients suffering from endometriosis can be significant. Endometriosis is a major source of morbidity and loss of productivity among women [29], with the estimated direct healthcare cost for pelvic pain in the USA for women aged 18–50 years exceeding $800 million per year [30]. It is also the third leading indicator for hysterectomy in women aged 25–29 [13].

A population-based registry study with over 3 years of follow-up found that hysterectomy significantly reduced severe pain and improved patient satisfaction in women under 35 with endometriosis. However, this finding was based on a small cohort of just 11 patients [31]. On the other hand, a small cross-sectional survey study found that women under 30 were more likely to experience persistent symptoms – such as dyspareunia and dysuria – as well as feelings of loss and disruption in family and social responsibilities [13]. In addition, in cases of endometriosis excision with uterine conservation, up to 28% of patients do not experience the reduction in pain, up to 35% have symptom recurrence and some ultimately require additional surgery, often hysterectomy [28,31,32]. The available literature also suggests symptom recurrence in up to 62% of women after hysterectomy for endometriosis, with higher reoperation rates noted in cases of ovarian preservation [33–35]. Importantly, a recent retrospective study noted low compliance with hormone replacement therapy after premature surgical menopause, which may have a significant impact on patient's health [35].

Finally, other possible long-term effects of hysterectomy may include the early induction of menopause and tissue-related problems such as pelvic prolapse and incontinence, which occur at rates of up to 5% in the 15 years after surgery [4]. In a prospective cohort study of 257 women, Farquhar *et al*. [36] reported that menopause occurred an average of 3.7 years earlier in those who underwent hysterectomy compared with those who did not. Similarly, a recent meta-analysis found that hysterectomy negatively impacts ovarian function, particularly in women over 40 [37]. A separate prospective cohort study of over 800 women also identified an increased risk of earlier ovarian failure following hysterectomy without bilateral oophorectomy, though it remains unclear whether this effect is directly attributable to the surgery or underlying conditions [38]. Conversely, another prospective controlled study, which included younger women under 42, found no significant impact on ovarian function as measured by follicle-stimulating hormone levels. However, its small sample size of 56 patients and limited 2-year follow-up period may affect the generalizability of its findings [39].

Regret and decision-making

One of the central disputes surrounding the decision to perform an early-age hysterectomy concerns the potential for regret – in particular, regret over loss of fertility. This often derives from anecdotal reports of younger and nulliparous patients experiencing regret from fertility loss or feeling pressured into having a hysterectomy without being offered alternative treatment options [4]. When assessing

the potential for regret in younger populations, it is important to consider that young women who decide to undergo a hysterectomy may have undergone other, life-disrupting, medical treatments for extended periods of time without relief. In contrast, postmenopausal women more readily consider hysterectomy as a therapeutic option [28].

The available research suggests that regret after a hysterectomy is low, but does not include prospective long-term studies that measure a patient's feelings of regret over longer periods of time – 10 years or more. A small cross-sectional study of 71 patients by Bougie *et al*. [16] that measured regret following a hysterectomy, with a median of 5 years since the time of surgery, showed that over 90% of women under 35 reported satisfaction with their decision, and only 2.8% expressed regret. The study did not analyze whether regret could set in over a longer period after the surgery, when a patient's life circumstances, peer group, or attitude about starting a family may have changed.

Factors associated with regret include insufficient preoperative counseling and lack of patient knowledge of alternative treatment options, preexisting depression, unresolved symptoms or the development of new symptoms postoperatively, and the desire for future fertility [17▪▪]. Conversely, shared decision-making and perceived autonomy in the decision process are significantly associated with lower rates of regret [16]. This is particularly relevant in the context of the growing influence of social media on medical decision-making. Social media platforms serve as sources of health information, support, and empowerment – particularly among younger demographics – and play a pivotal role in shaping patient's perceptions of treatment options [40,41]. Many individuals report using online sources to fill knowledge gaps [42], which underscores the need for healthcare providers to be mindful of both the benefits and risks of such content. Misinformation, anecdotal experiences, and unrealistic expectations may all influence patient perspectives, making it essential for providers to engage in thorough, evidence-based counseling to ensure informed and balanced decision-making.

A study found that general practitioners and gynecologists were the most influential sources of information about hysterectomy for patients, and 76% of women who were scheduled to undergo a hysterectomy hoped for shared decision-making concerning their treatment [3]. The study by Bougie *et al*. [16] described that despite the majority of patients (69%) reporting failure of medical management before proceeding with hysterectomy, a small proportion (7%) of patients regret not trying additional conservative options before surgery, with larger proportion (19%) reporting the need for continued pain management treatments. These results suggest that preoperative counseling should be a principal component of this process and should address potential psychological and emotional impacts of fertility loss, particularly for younger and nulliparous women [14].

Although a systematic review on sterilization procedures suggested a twice-higher likelihood of regret in women under the age of 30, these findings may not fully translate to hysterectomy cases, as the procedure is primarily pursued for symptom relief rather than elective sterilization [43]. Another prospective study of over 400 women noted that regret often worsens postoperatively, with no differences in regret by age, and identified lower levels of depression in women with least regret [15]. However, the follow-up period for this study was limited to the first year after hysterectomy, which may not fully capture the impact of long-term regret.

Another retrospective cross-sectional survey study by Reddington *et al*. [17▪▪] found no association between age or parity at hysterectomy, on the one hand, and regret or relief on the other. This study reviewed data from 268 patients, with only 7% of respondents reporting regret over a median period of 7 years, but included a limited number of subjects (29 patients) under the age of 36 [17▪▪]. The study also suggested that a sense of regret in patients can be influenced by ethnicity, cultural background, sexuality, and feelings of loss of femininity [17▪▪]. Persistent grief related to fertility loss may be linked to increased psychological distress for some women, with approximately 20% of those under 35 expressing a desire to have another child after hysterectomy, particularly among nulliparous women and patients with an extensive history of infertility [14,16,44]. Despite this, the available research that looked at patient outcomes between 6 months and 2 years after surgery found that many women, over 96%, do not regret their hysterectomy given their symptom relief [45]. Age was significantly associated with the likelihood of choosing the same procedure again [16,45].

Gender identity and mental health

Hysterectomy carries significant implications for mental health, particularly for young individuals. Research suggests that quality of life improvements following a hysterectomy can extend to psychological well-being, with reductions in anxiety, depression, and chronic stress related to debilitating symptoms such as pelvic pain or abnormal bleeding [4▪,5]. However, for younger patients, the psychological impact of fertility loss may complicate

postoperative outcomes. Studies have noted a correlation between reproductive capacity, menstruation, and gender identity, with the loss of fertility potentially leading to identity disruption in some individuals [14,46].

A qualitative, interview-based study suggested that identity disruption can be tied to societal constructs where the uterus is viewed as the embodiment of femininity and its absence can lead to negative psychological effects, including grief and a sense of lost purpose [47]. This study also proposed that the healthcare system's approach to hysterectomy, particularly its emphasis on preserving the uterus despite patient suffering, is overly paternalistic given that it values the uterus as central to womanhood [47]. Although the loss of the uterus has been associated with psychological harm, some women report feeling a greater sense of femininity posthysterectomy, free from constraints of heavy bleeding and pain that previously restricted their activities and social lives [14].

In the context of transgender and nonbinary individuals, there is literature that suggests hysterectomies represent a critical aspect of gender-affirming care and can contribute to alleviating gender dysphoria and enhancing mental health outcomes [6,48]. Specifically, for patients assigned female at birth who identify as male or nonbinary, removal of the uterus may help resolve discomfort and psychological distress associated with incongruence between gender identity and reproductive anatomy. Studies have shown that gender-affirming surgeries, including hysterectomy, are associated with improved mental health outcomes and quality of life, mitigation of gender dysphoria, and are associated with a low prevalence of regret postoperation [6,48–51].

However, a small retrospective cohort study of 25 subjects reported findings that over half of transgender patients between the ages of 18 and 33 years old receiving testosterone hormone therapy reported postoperative vaginal bleeding concerns associated with atrophy and granulation tissue [52]. On the other hand, a large cross-sectional study of over 150 000 patients with hysterectomy, including more than 500 transgender men, found that postoperative complication rates within 30 days of surgery were statistically comparable between transgender patients and cisgender women [53]. Additional research on long-term mental health outcomes and rates of regret for transgender patients is necessary to develop an understanding of this patient group and assess any long-term risks or complications.

Social, cultural, and reproductive rights implications

From a social perspective, early-age hysterectomy can have profound implications on a woman's life. While this procedure can alleviate severe symptoms and improve quality of life, enabling women to participate more fully in social and economic activities, it also results in permanent and potentially life-altering fertility loss. Extensive preoperative counseling that fully informs the patient of the surgery's consequences should be handled with caution and empathy and should be centered on patient autonomy. When offering such counseling, providers should bear in mind that they should not advise the patient based on their own beliefs, but have an ethical duty to provide patients with enough information to make an informed decision on whether to undergo the procedure.

Cultural factors also play a crucial role in the decision-making process for hysterectomy, particularly among different ethnic groups. The loss of fertility may carry a stigma, particularly in societies where fertility and motherhood are closely tied to a woman's identity and social standing. A review article described that African American and White women often approach the decision to undergo hysterectomy differently, influenced by cultural traditions, ideals, and access to healthcare resources [54]. These differences are not rooted in the varying cultural contexts and healthcare experiences, disparities, and perceptions of symptoms among these groups.

Finally, recent literature suggests that the current political environment concerning reproductive rights significantly influences the perception and decision-making around hysterectomy, especially in the wake of changing legal landscapes. Notably, sterilization rates have increased following the overturning of *Roe v. Wade*, highlighting a shift in how individuals approach definitive solutions to reproductive control [55]. For young individuals, opting for hysterectomy can represent a proactive stance on reproductive autonomy, but the procedure raises ethical concerns for providers, who must ensure that decisions are made with a full understanding of the risks and without external pressure.

CONCLUSION

Given the increased frequency of hysterectomies for premenopausal patients, it is important for medical providers to fully understand all associated benefits and risks of the procedure. The available literature on younger patient populations that undergo hysterectomies suggests that this population

faces greater long-term cardiovascular and mortality risks, as well as some risk of future regret over fertility loss. However, recent studies also indicate that the risk of regret is minor and that many patients that receive the procedure experience symptom relief and improved quality of life, including for transgender patients. More prospective, longitudinal studies on patient outcomes after hysterectomy at an early age would help illuminate the long-term impact of the procedure. Neither the benefits nor the risks of hysterectomies for younger-age populations should be dismissed by providers as this literature develops.

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