

Hysterectomy and alternative therapies

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Despite a recent series of well-controlled investigations into the effects of hysterectomy, the potential impact of the surgery on sexual function remains difficult to ascertain. It has become clear that, for many women, hysterectomy relieves symptoms that stand in the way of enjoyable sexual activity. However, past research has consistently revealed a significant minority of women who report that some aspect of their sexuality suffers as a result of hysterectomy. Understanding the mechanisms by which hysterectomy may influence sexual function, for better or worse, is important for assisting women in informed treatment decisions. With advances in nonsurgical alternatives to the treatment of uterine fibroids and other common indications for hysterectomy, appreciating the costs and benefits of this surgery has become particularly relevant. The majority of hysterectomies are not performed to treat life-threatening illness but rather are elective surgeries performed for benign conditions ("simple" hysterectomy); these procedures will be the primary focus of this chapter.

Historical perspectives

The symbolic importance of the uterus

The view of the uterus as a vital organ was embraced by many ancient physicians and philosophers in Western civilization. Interestingly, sexual gratification, defined in terms of orgasm, was for centuries considered a remedy for the "hysteria" caused by the diseased and displaced uterus.¹ More recent theoretic perspectives, particularly psychoanalytic interpretations, modernized the idea of an intrinsic association of the uterus with mental health.² However, the directionality of this relationship shifted, as typified by the explanation of many women's complaints as, "a psychic conflict sailing under a gynaecological flag".³ Thus, by the twentieth century, the view of hysteria had shifted to a psychically based, rather than organically based, phenomenon.

Politics and practice

Public concern has been raised about the appropriateness of hysterectomy for the treatment of benign conditions such as uterine fibroids and menorrhagia. The invasiveness, risks, and irreversibility of hysterectomy are prominent when compared to less invasive surgical and medical alternatives. An expert review panel recently determined that a substantial number of hysterectomies are performed in the absence of evidence-based indications,⁴ echoing earlier concerns about the possible misuse of the procedure.⁵

Citing deficiencies in patient education, decision-making autonomy, and informed consent among candidates for hysterectomy, some researchers and women's health advocates have sharply questioned the manner in which hysterectomies are recommended to women. Anecdotal reports of uninformed and even coercive treatment decisions abound.⁶⁻⁸ Previous studies suggest that concerns about sexuality are common among women who plan to undergo hysterectomy, although they might go undisclosed.⁹⁻¹¹ Inconsistent findings for negative sexual outcomes, in addition to the broad range of subjective experiences that may follow hysterectomy, create a difficult scenario for the clinician who wishes to provide patients with comprehensive but accurate information about hysterectomy.

Research on hysterectomy and sexual function

The effects of hysterectomy on sexual function are potentially numerous and difficult to measure reliably (see Chapters 7.1-7.3, 13.1-13.3, and 17.4 of this book). The majority of studies that have attempted to assess sexual outcomes have been based on retrospective self-reports, although prospective studies have become more common in recent years. Recent studies of hysterectomy have generally been more careful to examine potentially relevant moderators, such as hormonal status and surgical

technique. However, relatively little research to date has used valid and reliable self-report measures, diagnostic interviews, or physiologic indices of sexual function to assess outcomes. Several important design issues for future research are described below.

Timeline of the research

Prospective studies are generally preferable to retrospective studies because they allow changes in sexual function to be assessed pre- to posthysterectomy. It is possible, however, that assessment of sexual function just prior to hysterectomy does not provide a valid baseline.¹² Alterations of sexual function prior to surgery could inflate estimates of improvement in sexual function, although the magnitude of such an effect is debatable. Generally speaking, it is preferable to collect baseline data as far in advance of hysterectomy as possible, and at multiple time points if feasible.

Assessment instruments

The choice of appropriate assessment instruments is essential. Simple yes/no questions or vague, overly general questions (e.g., how is your sex life?) are inappropriate for studies that are designed to measure sexual outcomes. Measuring the frequency of sexual activity as an outcome variable is unreliable at best, since it does not reflect specific aspects of sexual function. Ideally, the researcher should use an instrument that has good internal consistency and test-retest reliability. The instrument should also be internally valid and able to discriminate between sexually functional and dysfunctional populations (for a review of validated instruments for measuring sexual function, see Meston and Derogatis¹³). To date, the self-report measures used in hysterectomy research have rarely met these criteria. Several valid methods of psychophysiological assessment are also available to the researcher when physiologic sexual response is an outcome of interest (for review, see Janssen¹⁴).

Control for moderating variables

Hysterectomy is not a single, uniform procedure, and therefore it is preferable to control both for variables within the individual (such as menopausal status and psychologic symptoms) and variables pertaining to the surgery itself (such as surgical approach and ovarian status). Control for these variables may be accomplished by the design of the research or the data-analysis strategy, although the latter option may entail a substantial cost of statistical power. A discussion of putative outcome moderators appears later in this chapter.

Control or comparison groups

Within-group designs are appropriate for many research questions addressing hysterectomy and sexual function. However, two studies have noted that sexual outcomes after hysterectomy are similar to those of other, nongynecologic surgical operations.^{15,16}

None of the larger prospective studies on sexual outcomes have attempted to replicate these findings. Moreover, no research to date has prospectively compared the incidence of sexual complaints among women undergoing hysterectomy with that of the general population. Thus, it is unclear from many studies of hysterectomy and sexual function whether sexual outcomes reflect women's experiences of hysterectomy, surgery in general, poor health, or other causes. Including both no-surgery and nongynecologic surgery control groups in large-scale prospective research may help clarify effects that are specific to hysterectomy.

It is difficult to design and execute an outcome study that will yield meaningful results. Practical limitations too often force the exclusion of a desirable study procedure or study group. On the other hand, an overly controlled protocol may hold a number of variables constant at the expense of external validity. Thus, one of the researcher's most important tasks is to clearly define research objectives in a manner that will facilitate the delicate balancing of methodological rigor with methodological economy. Although there is great room for improvement in the body of research on hysterectomy and sexual function to date, the findings from these studies should not be wholly discredited. The remainder of this chapter will review key findings from past research.

Mechanisms by which hysterectomy may affect sexual function

Estimates of the prevalence of sexual problems after hysterectomy vary widely due to methodological inconsistencies among studies. Retrospectively, 17–27% of women report worse sexual adjustment after hysterectomy, whereas 22–71% report improved sexual function.^{17–20} However, retrospective comparisons are difficult to interpret due to a multitude of factors that may or may not be directly associated with hysterectomy.¹⁸ Only a handful of published studies have reported the number of new sexual complaints that have surfaced postoperatively. Rates of new sexual problems are 2–7% for dyspareunia, 9–21% for vaginal lubrication difficulty, 5–11% for low sexual desire, and 2–11% for orgasmic difficulty.^{20–24} Although these estimates are relatively low, they nevertheless represent a large number of women, given the high utilization of hysterectomy. At present, it is unclear which factors play a role in sexual outcomes after hysterectomy, although both psychologic and physiologic factors are likely to be influential.

Psychologic consequences

Anxiety prior to hysterectomy is common, and many women express specific worries about the impact of surgery on their sexuality (see Chapters 3.1–3.4). Dennerstein et al.¹⁷ found that women who endorsed anxiety about sexual issues prior to hysterectomy also tended to experience poorer sexual outcomes after hysterectomy, although no prospective studies have investigated this possibility.

Qualitative research suggests that concerns about sexual function after hysterectomy are seldom addressed effectively by health-care providers;¹¹ this may signify an opportunity to improve outcomes with proactive, sexuality-focused education prior to surgery.

The incidence of depression after hysterectomy has been studied closely over the past several decades (see Chapter 16.2). Depression has been associated with sexual problems²⁵ and may complicate sexual adjustment after hysterectomy.²² Earlier studies suggested that depression was alarmingly prevalent after hysterectomy, although most of these studies were poorly designed and did not account for psychiatric symptoms prior to hysterectomy (for review, see Khastgir et al.²⁶). More recent studies have failed to support a posthysterectomy depressive syndrome; in fact, they have revealed significant improvements in psychologic adjustment after surgery.²⁷⁻²⁹ Whether women who present with more severe psychosocial impairments are more likely to be recommended for hysterectomy is an interesting but unresolved question.

A source of confusion about the incidence of depression after hysterectomy is the fact that psychiatric morbidity may be elevated among women with gynecologic problems.²⁷⁻²⁹ It is reasonable to assume that stress due to pain and other symptoms of gynecologic conditions may contribute to psychologic maladjustment. Indeed, Ferroni and Deeble³⁰ noted that women with unresolved gynecologic illness reported more severe depressive symptoms than an age-matched group of women who had undergone hysterectomy for similar conditions. There is strong evidence that psychologic improvements after hysterectomy are attributable to symptom relief and improved health.^{21,24,31,32} Improved psychologic adjustment may also largely account for improvements on sexuality measures.³³ Not surprisingly, sexual function scores may be most improved among women who experienced the greatest health-related impairment prior to hysterectomy.^{34,35}

Psychologic adjustment to hysterectomy and its impact on sexual function may be affected by concerns about femininity, loss of fertility, and sexual attractiveness. Some women may view themselves as defeminized by hysterectomy surgery,^{11,30,32} and similar concerns may affect male partners of hysterectomized women.³⁶ Culture-specific beliefs may be influential in the perception of sexual changes and should be addressed sensitively.^{8,10,36} The scar left by abdominal hysterectomy may also raise body-image concerns, although vaginal and laparoscopic surgical approaches are viable alternatives in many cases. Hormonal changes after hysterectomy can also affect body image and health-related quality of life,^{11,37} and should be addressed comprehensively prior to surgery.

Physiologic consequences

The role of the uterus in the sexual response is unclear. Early studies by Kinsey et al.³⁸ suggested that uterine contractions accompany sexual arousal, but Masters and Johnson³⁹ later claimed that contractions occurred only at orgasm (see Chapter 6.4). Objective measurements of uterine tone during sexual

stimulation are scarce,^{39,40} and the extent to which uterine activity influences subjective sexual experiences is speculative.

Far more concern has been expressed regarding the impact of hysterectomy on the autonomic nervous pathways that are essential to the sexual response (see Chapters 4.1-4.4). The inferior hypogastric plexus is the immediate supplier of autonomic nerve fibers to the genital organs. This structure and its extensions may be at risk of damage by conventional hysterectomy techniques.⁴¹ It has been hypothesized that hysterectomy may disrupt pelvic autonomic pathways through the excision of the cervix and separation of the uterus from its supportive ligaments.⁴²⁻⁴⁵ Evidence of urinary, bowel, and sexual dysfunction after hysterectomy is scarce in most of the recent literature,^{20,21,46-48} although a few studies do suggest long-term adverse effects.^{15,49,50}

Using vaginal laser Doppler flowmetry, Richman and Sarrel⁵¹ observed no differences in resting vaginal blood flow pre- to posthysterectomy, suggesting no evidence of overt vascular damage to the vaginal tissues. However, disturbance of autonomic pathways could hypothetically interfere with the vaginal vasocongestive response during sexual arousal. Three studies have examined this possibility by measuring physiologic responses to sexual stimulation by vaginal photoplethysmography. Comparing women who had and had not undergone hysterectomy, with or without oophorectomy, Bellerose and Binik³⁷ found no significant differences in the magnitude of vaginal pulse amplitude or vaginal blood-volume responses to sexual film clips (see Chapter 10.1). In contrast, using a comparison group of women with uterine fibroids, Meston⁵² found that vaginal pulse amplitude responses to a sexual film were significantly lower among women who had undergone hysterectomy to treat fibroids. Maas et al.⁵³ compared vaginal pulse amplitude responses to sexual stimulation among women who had undergone both radical and simple hysterectomy, along with age-matched control women. The authors found that vaginal pulse amplitude responses to sexual stimulation were significantly less robust in the radical hysterectomy group than in controls. The authors noted a trend suggesting that the average magnitude of vaginal pulse amplitude responses among the simple hysterectomy group was between those of the radical and control groups; however, this trend was statistically nonsignificant. These three studies are limited by the fact that they involve retrospective, between-subject comparisons of vaginal pulse amplitude responses. To minimize the inherent variability in psychophysiologic data due to individual differences, the impact of hysterectomy on sexual arousal should ideally be investigated by within-subject, prospective designs.

Moderators of sexual outcomes after hysterectomy

Previous work has concentrated on several key factors that may influence sexual function after hysterectomy. Given conflicting

findings, as well as the quality and scope of past studies, it is premature to declare a consensus about any of these potential moderators. However, these factors should be closely examined in practice and future research.

Radicality of hysterectomy

Radical hysterectomy for gynecologic cancer has received considerable attention due to higher levels of postoperative urinary, bowel, and sexual dysfunction than are typically reported with simple hysterectomy (see discussion⁵⁴⁻⁵⁸). Because radical hysterectomy entails a higher degree of tissue removal and tissue damage than simple hysterectomy, the two procedures should be examined separately in terms of outcomes. Comparing sexual outcomes of the radical and simple procedures is also confounded by psychologic factors, namely, that the former is performed to treat lethal illness, whereas the latter is an elective treatment for benign conditions. Among the few studies that have directly compared sexual outcomes of both surgeries, Maas et al.⁵³ found that vaginal pulse amplitude responses to sexual stimuli were lower among women who had undergone radical hysterectomy compared to simple hysterectomy. The authors hypothesized that radical hysterectomy may cause greater neurologic impairment than simple hysterectomy, thereby attenuating the vasocongestive response. This hypothesis is supported by anatomic studies of the uterus and its supportive ligaments. Butler-Manuel et al.^{42,59} found that the cardinal and uterosacral ligaments contain significant amounts of autonomic (particularly sympathetic) nerves and ganglia that are associated with the inferior hypogastric plexus. The authors noted that transection of these ligaments at their origin (as in radical hysterectomy) was associated with more extensive nerve damage than transection at the insertion point at the uterus (as in simple hysterectomy). Radical hysterectomy techniques designed to minimize nerve damage show promise (for review, see Maas et al.⁶⁰), but as yet have not been compared rigorously to traditional techniques.

Surgical approach

Most hysterectomies are performed either vaginally or via abdominal incision, with laparoscopically assisted procedures comprising a third, less utilized approach. Although one retrospective study concluded that the abdominal route has a more negative impact on sexual function than other approaches,⁶¹ the majority of studies that have specifically examined this question have found no differences in sexual outcomes among the surgical approaches.^{21-23,34,62}

Removal of the cervix

In modern practice, the uterine cervix is often removed during hysterectomy. However, concern has been raised regarding the potential role of the cervix in the sexual response. The cervix is innervated with autonomic and sensory nervous tissue, and stimulation of the cervix may contribute to sexual arousal and

orgasm (for discussion, see Hasson⁴³). To the extent that the cervix can appreciably influence sexual responses, its removal may result in less satisfactory sexual outcomes. This hypothesis was supported by Kilku et al.,^{63,64} who reported that subtotal (supracervical) hysterectomy was associated with better outcomes in terms of dyspareunia and orgasm. More recently, several well-controlled, prospective trials of total and subtotal hysterectomy have reported no significant differences in sexual outcomes between the total and subtotal procedures.^{23,65,66} These findings suggest that the role of the cervix in sexual response, if any, is not likely to be uniform across women.

Ovarian conversion or removal

Although concerns about the long-term safety of hormone therapy may give pause to many clinicians, it is common for women to undergo oophorectomy (surgical removal of ovaries) at the same time as hysterectomy (see Chapters 5.5 and 7.2). In premenopausal women, this procedure brings about immediate "surgical menopause", characterized by significant reduction in levels of estrogen, testosterone, and other sex steroids.⁶⁷ The loss of these hormones could affect sexual function broadly. In particular, estrogen loss may be accompanied by insufficient vaginal lubrication, whereas reduced testosterone may affect sexual desire and subjective sexual arousal.^{68,69} Retrospective studies have found that women who have preserved their ovaries tend to experience more positive sexual outcomes than women who have undergone oophorectomy, even when hormone therapy is considered.^{19,37,70,71} However, findings are inconsistent across studies,²² and the specific aspects of sexual function that are affected by oophorectomy are not well established.

Psychiatric morbidity prior to hysterectomy

Prospective studies have largely invalidated the view that hysterectomy is a risk factor for mental illness, while at the same time suggesting that preoperative mental health may affect psychologic and sexual outcomes. Rhodes et al.²² reported that preoperative depression negatively influenced outcomes of sexual desire, lubrication, orgasm, and pain, although Helstrom et al.³⁵ failed to find any effect of psychiatric history on sexual function. This discrepancy may be attributable to different definitions of psychiatric complaints (e.g., limited to depression in the Rhodes et al. study), and it calls for the inclusion of psychiatric variables in future outcome studies (see Chapters 17.2 and 17.3).

Sexual function prior to hysterectomy

Among studies to date, one of the most consistent predictors of sexual difficulties after hysterectomy has been poor sexual function prior to surgery.^{18,22,34,66,72} A notable exception to this trend is the presence of dyspareunia prior to hysterectomy, which is often relieved after the removal of diseased uterine tissue.^{20-22,48,66}

Relationship with partner

Several studies have reported a significant influence of the sexual partner's emotional support and quality of relationship on sexual outcomes after hysterectomy (see Chapters 8.1 and 8.2).^{18,22,66,72} The sexual partner's attitudes and beliefs regarding hysterectomy have the potential to dramatically influence a woman's posthysterectomy sexual life, although drastic shifts in the partner's behavior appear to be more prevalent in myth than in reality. Lalos and Lalos⁷³ reported numerous misconceptions about female anatomy and fears about hysterectomy among a sample of male partners of women scheduled to undergo hysterectomy. The extent to which this may affect sexual feelings for the partner undergoing surgery is unclear. However, women themselves may feel apprehensive about their partners' (particularly men's) ignorance of hysterectomy and sexuality.³⁶

Alternatives to hysterectomy

A number of treatment alternatives are available for benign gynecologic conditions.⁷⁴ To date, few studies have directly compared the sexual outcomes of hysterectomy and alternative treatments. However, a few recent clinical trials suggest that alternatives to hysterectomy do not necessarily result in better sexual outcomes.

Endometrial ablation and resection

A randomized trial of endometrial ablation versus vaginal hysterectomy failed to show any differences between the two patient groups on a measure of sexual function.⁷⁵ Similarly, a retrospective comparison of abdominal hysterectomy and roller-ball endometrial ablation revealed no significant differences in sexual outcomes.⁷⁶

Medical management

Hurskainen et al.⁷⁷ reported 5-year follow-up comparisons of treatment with a levonorgestrel-releasing intrauterine device or hysterectomy for menorrhagia. Five-year change scores on measures of sexual satisfaction, sexual problems, and partner satisfaction were minimal and not significantly different between the two groups. Kupperman et al.⁷⁸ studied a group of women who were dissatisfied with their current medical treatment regimens for abnormal uterine bleeding and were randomized to receive either hysterectomy or expanded medical treatment. This study allowed for flexibility in medical management as well as crossover to hysterectomy when additional medical treatments were unsuccessful. The results indicated that women who underwent hysterectomy showed greater improvement in sexual desire at the 6-month and 2-year follow-up periods, and less interference of pelvic problems during sexual activity at the 6-month follow-up.

Because sexual function was not assessed comprehensively in these studies, these results should be interpreted cautiously. The lack of data from validated sexual function measures, the limitations of the study samples (e.g., willingness to be randomized), and the absence of controlled studies of other hysterectomy alternatives (such as myomectomy and uterine fibroid embolization) suggest a strong need for additional research on alternative treatments before drawing conclusions about their sexual outcomes relative to hysterectomy.

Conclusions and recommendations

Less invasive alternatives to hysterectomy are not effective or appropriate for all patients, and a number of women will ultimately face the choice of whether to undergo hysterectomy. Although many studies have suggested that sexual function is unchanged or improved after hysterectomy, there is compelling evidence that a significant proportion of women undergoing hysterectomy experience undesirable sexual outcomes. Preliminary evidence suggests that negative sexual outcomes may have a physiologic basis, although psychologic reactions may also contribute. Assessing the risk of negative sexual outcomes for any given individual is a daunting task. Collaborative and deliberative treatment planning is recommended to help women fully understand, and ultimately accept or reject, the risks of surgery. The patient's consent to hysterectomy should be prefaced by substantial instruction and an opportunity to discuss any viable alternatives.

It should be recognized that the potential for negative sexual outcomes may be substantially outweighed by the need to relieve symptoms of illness. Optimally, health-care providers should be proactive and sensitive in addressing the sexual concerns of patients considering hysterectomy. A discussion of sexual function prior to surgery may reveal important considerations for treatment and recovery. A woman with severe dyspareunia secondary to uterine fibroids, for example, may face a dramatically different posthysterectomy experience than a woman whose otherwise enjoyable sexual activity has been disrupted by unpredictable uterine bleeding. Given the complexity of individual cases, caution should be exercised in the interpretation of frequently publicized claims that hysterectomy "improves" sexual function for "most" women.

Finally, considering the patient's psychologic well-being prior to surgery may be an important but overlooked aspect of clinical management. Pre-existing psychologic problems may hinder adjustment to hysterectomy and should be carefully monitored. Psychosocial support may play a vital role in adjustment after surgery. Although the role of the patient's sexual partner in outcomes is understudied, it seems reasonable to assume that the partner should usually be considered in the discussion of hysterectomy. Reactions from partners, friends, family, community, and other social supports are potentially critical factors in the woman's psychologic and sexual outcomes after hysterectomy.

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