

Supracervical Hysterectomy

This guideline has been reviewed by the Clinical Practice Gynaecology Committee and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

PRINCIPAL AUTHORS

Sari Kives MD, Toronto ON
Guylaine Lefebvre MD, Toronto ON

CLINICAL GYNAECOLOGY COMMITTEE

Wendy Wolfman (Co-Chair), MD, Toronto ON
Nicholas Leyland (Co-Chair), MD, Toronto ON
Catherine Allaire, MD, Vancouver BC
Alaa Awadalla, MD, Winnipeg MB
Carolyn Best, MD, Hamilton ON
Nathalie Leroux, MD, Montreal QC
Frank Potestio, MD, Thunder Bay ON
David Rittenberg, MD, Halifax NS
Renée Soucy, MD, Chandler QC
Sukhbir Singh, MD, Ottawa ON

Disclosure statements have been received from all members of the committee.

Evidence: The Cochrane Library, Medline, and Embase were searched for articles published in English from January 1950 to March 2008 specifically comparing VH and SCH with TAH in the prevention of sexual dysfunction, urinary dysfunction, and peri- and postoperative complications. Results were restricted to systematic reviews, randomized control trials/controlled clinical trials, and observational studies. Additional publications were identified from the bibliographies of these articles. Randomized controlled trials were considered evidence of the highest quality, followed by cohort studies.

Grey (unpublished) literature was identified through searching the websites of health technology assessment and health technology assessment-related agencies, clinical practice guideline collections, clinical trial registries, and national and international medical specialty societies.

Values: The quality of evidence was rated using the criteria described in the Report of the Canadian Task Force on Preventive Health Care (Table).

Recommendations

1. Vaginal hysterectomy is generally considered the first choice of surgical approach for most benign indications for hysterectomy, as it is associated with lower rates of morbidity, fewer postoperative complications, and a faster recovery time than abdominal hysterectomy. (I-A)
2. Women contemplating a vaginal, laparoscopic, or abdominal hysterectomy for the management of benign uterine disease should be reassured that hysterectomy is usually associated with improved quality of life, including improved sexual function, whether or not the cervix is removed. (I-B)
3. Supracervical hysterectomy should not be recommended as a superior technique to total abdominal hysterectomy for the prevention of postoperative lower urinary tract symptoms. (I-B)
4. Although supracervical hysterectomy may be associated with less blood loss and a shorter surgical time, these parameters have not been found to be clinically significant, and supracervical hysterectomy should not be recommended as a superior technique to total abdominal hysterectomy for the prevention of peri- and postoperative complications. (I-B)
5. Women considering a supracervical hysterectomy should be counselled that they may continue experiencing cyclic vaginal bleeding following the surgery. (I-B)
6. Women must be advised that they require routine cytological screening following a supracervical hysterectomy. (II-B)
7. Women who require a hysterectomy and who have a current or significant history of abnormal cervical cytological results should be counselled on the advantages of vaginal hysterectomy or total abdominal hysterectomy over supracervical hysterectomy. (I-B)

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Abstract

Objective: This guideline reviews the evidence relating to the potential benefits of the vaginal hysterectomy (VH) and supracervical hysterectomy (SCH) versus total abdominal hysterectomy (TAH) with respect to postoperative sexual function, urinary function, and peri- and postoperative complications. Laparoscopic options are not included in this guideline.

Options: Women considering hysterectomy for benign disease can be given the option of retaining the cervix or proceeding with a total hysterectomy.

Outcomes: The outcomes measured are postoperative sexual function and urinary function, and peri- and postoperative complications.

Key Words: Hysterectomy, vaginal, supracervical, perioperative complications, postoperative complications

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Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care

Quality of evidence assessment*	Classification of recommendations†
I: Evidence obtained from at least one properly randomized controlled trial	A. There is good evidence to recommend the clinical preventive action
II-1: Evidence from well-designed controlled trials without randomization	B. There is fair evidence to recommend the clinical preventive action
II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group	C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D. There is fair evidence to recommend against the clinical preventive action
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	E. There is good evidence to recommend against the clinical preventive action
	L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

*The quality of evidence reported in these guidelines has been adapted from The Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.²⁶

†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the The Canadian Task Force on Preventive Health Care.²⁶

APPROACHES TO HYSTERECTOMY

Hysterectomy involves the removal of the uterine body and cervix, referred to as total abdominal hysterectomy, or the removal of the uterine body only at or below the level of the isthmus, referred to as supracervical hysterectomy. Hysterectomy may also be associated with removal of the ovaries and fallopian tubes (bilateral salpingo-oophorectomy). Currently, hysterectomy is one of the most frequently performed surgical procedures in Canada.¹ Since 1981, hysterectomy rates have decreased from 937 to 462 hysterectomies per year per 100 000 women \geq 20 years of age.² Patient satisfaction following hysterectomy has been evaluated and is consistently high. Hysterectomy usually is associated with improvement in lower tract urinary symptoms, whether or not the cervix is removed. As vaginal hysterectomy is associated with lower rates of morbidity, fewer postoperative complications, and a faster recovery time than abdominal hysterectomy, it is usually the first

choice of surgical approach when indications for hysterectomy are benign.^{3,4}

In Canada, 72% of hysterectomies are still performed abdominally in women under 40 years of age.⁵ It is not clear how many of these are supracervical hysterectomies, as this method is not uniquely identified in the Canadian Classification of Health Interventions, but SCH likely accounts for 10% of all hysterectomies performed in Canada.⁶ The advent of minimally invasive surgeries has led to an increasing number of hysterectomies being performed laparoscopically. At present there is insufficient evidence to compare laparoscopic subtotal with laparoscopic total hysterectomy; therefore, this guideline considers operations done by laparotomy.

Recommendation

1. Vaginal hysterectomy is generally considered the first choice of surgical approach for most benign indications for hysterectomy, as it is associated with lower rates of morbidity, fewer postoperative complications, and a faster recovery time than abdominal hysterectomy. (I-A)

During the 1940s, SCH was replaced almost universally by TAH because of the risk of cervical stump cancer and persistent blood-stained discharge associated with retaining the cervix. Surgical skills and availability of anaesthesia and antibiotics also allowed for longer and more complex surgeries. More recently, there has been a re-emergence of SCH, as some literature has suggested that retaining the cervix offers better postoperative sexual and urinary function and may protect the integrity of the pelvic floor.^{7,8} In the United

ABBREVIATIONS

LAVH	laparoscopically assisted vaginal hysterectomy
LSCH	laparoscopically assisted supracervical hysterectomy
MUI	mixed urinary incontinence
RCT	randomized controlled trial
SCH	supracervical hysterectomy
SUI	stress urinary incontinence
TAH	total abdominal hysterectomy
UII	urge urinary incontinence
VH	vaginal hysterectomy

States, the number of SCHs appears to be increasing simultaneously with a decrease in TAH.⁹ With the advent of minimally invasive surgical options, the laparoscopic SCH may be favoured over a total laparoscopic hysterectomy because it is perceived to be technically easier laparoscopically to leave the cervix behind. The superiority of SCH over TAH still remains largely theoretical and is not supported by a review of evidence.

RATIONALE FOR GUIDELINE DEVELOPMENT

This guideline provides a consolidation of a systematic review of the evidence supporting or opposing the use of SCH rather than TAH, and the consensus on whether or not SCH offers our patients an advantage in the prevention of sexual dysfunction, urinary dysfunction, and peri- and postoperative complications.

SEXUAL FUNCTION AND QUALITY OF LIFE

Four RCTs were identified that specifically address sexual function and/or quality of life after total versus supracervical hysterectomy.^{10–13} All 4 trials used objective, previously validated questionnaires to assess sexual function and/or quality of life,^{10,11} psychological well-being,^{11,12} and pain.¹² These 4 trials included only women undergoing a hysterectomy for benign indications. Exclusion criteria varied, but postmenopausal women were excluded in 3 of the 4 trials.^{10–12} Oophorectomy was the only concomitant procedure permitted in all 4 trials. Thakar et al.¹¹ also excluded women with comorbidities, including a body weight > 100 kg, previous pelvic surgery, and known endometriosis. Follow-up varied, ranging from a minimum of 7 months to a maximum of 24 months after surgery. One study also tested subjects 2 to 3 weeks prior to surgery.¹² All trials stated the method of randomization and included an intention-to-treat analysis. Adequate follow-up of > 80% was obtained in all 4 trials. All 4 trials were graded as good because either the outcome was blinded,¹¹ or the outcome was considered to be as objective as possible for a qualitative measure.^{10–13}

Kupperman et al.¹⁰ conducted a randomized trial of 135 women (67 TAH and 68 SCH). Each woman was followed for 2 years. Baseline sexual functioning and quality of life variables were measured at randomization and again, with a telephone interview, at 1, 3, 9, and 15 months, and with clinic-based interviews every 6 months. At 2 years, both groups reported few problems with sexual functioning (mean score 82, SD 26 for SCH and 80, SD 26 for TAH). In addition, both randomization groups demonstrated substantial improvement in most measures of sexual functioning and health-related quality of life at 2 years. This

study was significantly longer than the other 3 trials, and its findings suggest that these results persist beyond 1 year.

The study by Thakar et al.¹¹ of 279 women (146 TAH and 133 SCH) was the only double-blind RCT. Each woman was followed for 1 year. A short-form, previously validated 36-question health survey (SF-36) and psychological outcome measure (GHQ: general health questionnaire) were used preoperatively and at 6 and 12 months postoperatively (0–100 scale). No statistical difference was found between TAH and SCH on the SF-36 and GHQ before and after surgery. The frequency of intercourse, desire for intercourse, orgasm, and initiation of intercourse did not differ significantly between the groups. In addition, most aspects of quality of life improved in both randomization groups. All aspects of mental health improved following hysterectomy. There was also a significant increase in the frequency of intercourse in both groups after surgery ($P = 0.01$). Deep dyspareunia was reduced significantly in both groups (46.2% to 6.6% SCH and 39.3% to 14.3% TAH) at 12 months ($P < 0.001$), but there was no statistical difference between groups.

Zobbe et al.¹³ conducted a randomized trial of 319 women (158 TAH and 161 SCH). Each woman was followed for 1 year. At the 12-month follow-up, there was no statistical difference between the 2 intervention groups regarding frequency of sexual desire, intercourse, masturbation, and orgasm, as well as quality of orgasm, vaginal lubrication, or satisfaction with sexual life ($P > 0.05$). Dyspareunia decreased significantly in both groups (89 women pre surgery and 22 post surgery $P = 0.009$). A multivariate logistic regression analysis identified preoperative satisfaction with sexual life, good relationship with partner, chronic disease, and use of hormone therapy as significant predictors of postoperative satisfaction with sexual life.

Flory et al.¹² conducted a randomized trial of 63 women (32 LAVH and 31 LSCH). Each woman was followed for 7 months. Two control groups of women who did not undergo hysterectomy were included. There were no differences among the 4 groups in sexual functioning overall ($P > 0.05$). There was significant improvement in sex drive, arousal, and sexual behaviour in the LAVH group, and significant improvement in sexual behaviour and sexual function in the LSCH group ($P < 0.01$). No significant difference in pain variables among the 4 groups was found ($P > 0.05$). Chronic pain in the abdomen and intensity of pain during gynaecologic examination was alleviated in both hysterectomy groups ($P < 0.01$). An overall postoperative improvement in depressive and psychological symptoms was also demonstrated in both hysterectomy groups ($P < 0.001$). Similarly, no statistical difference in adverse psychological effects was demonstrated among the

4 groups ($P > 0.05$). While the laparoscopic approach to the surgery is more modern, the findings about sexual function specifically are consistent, regardless of the approach to surgery.

Recommendation

2. Women contemplating a vaginal, laparoscopic, or abdominal hysterectomy for the management of benign uterine disease should be reassured that hysterectomy is usually associated with improved quality of life, including improved sexual function, whether or not the cervix is removed. (I-B)

URINARY DYSFUNCTION

Two RCTs specifically addressed urinary dysfunction after TAH compared with SCH.^{14,15} Three RCTs addressed urinary dysfunction as part of a larger study that also looked at peri- and postoperative morbidity.^{16–18} All of these trials included only women undergoing a hysterectomy for benign indications. Only 1 trial was reported as a double-blind controlled trial.¹⁶ Two were multicentre trials, but investigators were not blinded to the treatment assignment.^{14,17} All 3 trials used standardized questionnaires in addition to cystometry to assess urinary function.^{14,16,17}

The study by Thakar et al.¹¹ of 279 women (146 TAH and 133 SCH) was the only double-blind RCT. Each woman was followed for 1 year. Urinary function was assessed by use of twin-channel subtracted cystometry and uroflowmetry, as well as by the women's response to subjective standardized questionnaire. Urinary frequency, stress urinary incontinence, urgency, urgency incontinence, poor stream, interrupted stream, and incomplete emptying did not differ significantly between groups. ($P > 0.05$). In both groups, significantly fewer women had stress incontinence (subjective and by urodynamic testing), urgency, urinary frequency, nocturia, interrupted stream, and incomplete emptying at 1 year after surgery ($P < 0.05$).

Gimbel et al.¹⁸ conducted an RCT of 319 women (158 TAH and 161 SCH). Each woman was followed for 1 year. A non-validated questionnaire was administered at randomization and at 2, 6, and 12 months after surgery. The comparison of the 2 hysterectomy techniques showed a lower rate of all urinary incontinence in the TAH group (OR 0.46, 95% CI 0.23 to 0.95; $P = 0.03$) than in the SCH at 12 months. Although there was no significant difference found between the method of operation, and the 3 categories of urinary incontinence were examined individually, the TAH did show a larger reduction in SUI and MUI than the SCH group, resulting in the demonstrated overall reduction. No other differences between the women in the TAH and SCH groups regarding lower urinary tract symptoms were observed at the 12-month follow-up. ($P > 0.05$).

Overall urinary frequency decreased and double/triple (repetitive emptying) voiding increased in both groups at 1 year following hysterectomy (OR not provided). A multivariate logistic regression analysis identified preoperative incontinence, duration of surgery, and size of uterus, as the most important variables predicting urinary incontinence at 1 year after surgery.

Learman et al.¹⁷ conducted a randomized trial of 135 women (67 TAH and 68 SCH). Each woman was followed for 2 years. There was no differential improvement in urinary symptoms overall according to randomization group ($P > 0.05$). There was a statistically significant reduction of urgency incontinence, urinary urgency, sensation of incomplete emptying, frequent urination, and stress incontinence in the TAH group. There was a statistically significant reduction of urinary urgency, sensation of incomplete emptying, and frequent urination in the SCH group ($P < 0.05$).

Recommendation

3. Supracervical hysterectomy should not be recommended as a superior technique to total abdominal hysterectomy for the prevention of postoperative lower urinary tract symptoms. (I-B)

PERIOPERATIVE AND POSTOPERATIVE MORBIDITY

Three RCTs specifically addressed perioperative or postoperative complications of TAH compared with SCH.^{16–18} All 3 trials used objective measures abstracted from operative reports, pathology reports, and discharge summaries to estimate the intraoperative and postoperative complication rates. All 3 trials included only women undergoing hysterectomy for benign indications. Only 1 trial was reported as a double-blind controlled trial.¹⁶ Two were multicentre trials, but investigators were not blinded to the treatment assignment.^{15,17} Repeat hospitalizations were ascertained by cross-referencing abstracted data with diagnosis-related group codes on readmission to hospitals affiliated with each clinical centre and by assessing patients' reports of hospitalization every 3 months.¹⁷

Learman et al.¹⁷ conducted a randomized trial of 135 women (67 TAH and 68 SCH). Each woman was followed for 2 years. There were no statistically significant differences in procedure time, estimated blood loss, febrile events, length of stay, and surgical complications between the 2 randomized groups ($P > 0.05$). The rate of hospital readmission was somewhat greater in the SCH group, but the difference was not statistically significant (relative hazard 1.99, 95% CI 0.58 to 6.8; $P > 0.5$). Five percent of the SCH group experienced postoperative cyclical vaginal bleeding.

Gimbel et al.¹⁸ conducted an RCT of 318 women (158 TAH and 161 SCH). Each woman was followed for 1 year after hysterectomy. SCH had a shorter median operation time (70 minutes; range 34–165 vs. 85 minutes; range 35–255, $P < 0.001$) and women who underwent this procedure had less median perioperative blood loss than those who underwent TAH (250 mL, range 10–2500 vs. 400 mL, range 25–4500; $P < 0.001$). Postoperative complications were grouped into 4 categories according to severity and showed no difference between the 2 hysterectomy methods (OR 1.02, CI 0.55 to 1.88; $P = 0.95$). The overall complication rate was 41%. Twenty percent of the SCH group had cyclical vaginal bleeding postoperatively.

In the double-blind RCT of 279 women (146 TAH and 133 SCH) by Thakar et al.,¹¹ each woman was followed for 1 year. SCH had a shorter duration of surgery (59 minutes, range 39.6–80.2 vs. 71.1 minutes, range 47.7–84.5; $P < 0.001$), and women who underwent this procedure had less estimated blood loss (320.1 mL, range 49.1–591.1 vs. 422.6 mL, range 120.8–724.4; $P = 0.004$) and a shorter hospital stay than those who underwent TAH (5.2 days, range 4.3–6.3 vs. 6.0 days, range 1.3–10.7; $P = 0.04$). Immediate postoperative complications were greater in the TAH group: 9.8% (13) versus 27.4% (40) ($P < 0.001$), but delayed complications after discharge were greater in the SCH group: 10.5% (10) versus 6.2% (9) ($P < 0.001$). No visceral damage was sustained in either group. The majority of the immediate postoperative complications were pyrexia, retention of urine, and vault hematoma. Seven percent of the SCH group experienced cyclical vaginal bleeding.

Recommendation

4. Although supracervical hysterectomy may be associated with less blood loss and a shorter surgical time, these parameters have not been found to be clinically significant, and supracervical hysterectomy should not be recommended as a superior technique to total abdominal hysterectomy for the prevention of peri- and postoperative complications. (I-B)
5. Women considering a supracervical hysterectomy should be counselled that they may continue experiencing cyclic vaginal bleeding following the surgery. (I-B)

ADVERSE EFFECTS

Potential Harm of Leaving the Cervix at the Time of Hysterectomy

Cervical cancer

We identified 2 papers that specified the incidence of cervical cancer following a SCH. A case–control study of 1104 women who underwent SCH in Denmark between 1978 and 1988 revealed 2 cases of cervical cancer, for an overall

incidence of cervical cancer of 0.3% at 10 years. Both cases of cervical cancer occurred in women over the age of 50.¹⁹ Oats et al. looked at 1515 women treated for cervical cancer between 1946 and 1972 and found a 3.6% incidence of cervical cancer in the stump.²⁰ The incidence of cervical cancer is very low in both studies, but in view of the persistent risk, all women must continue to undergo routine cytological screening following a SCH.

Recommendation

6. Women must be advised that they require routine cytological screening following a supracervical hysterectomy. (II-B)

There are no data to suggest that screening is less adequate or less frequent following the removal of the corpus. A retrospective cohort study on cervical screening in the US demonstrated no difference in screening between women after SCH and women who had not undergone hysterectomy.²¹ Women with supracervical hysterectomies had the same rate of testing—approximately one test every 2.5 years—as their non-exposed counterparts (mean difference: -0.03 tests/year, $P = 0.62$). Additionally, a retrospective cohort study by Hannoun-Levi et al. identified 77 patients with an infiltrating carcinoma of the cervical stump and demonstrated similar treatment results in patients with carcinoma of the cervical stump and in patients with carcinoma of the intact uterus.²² The advantages of removing the cervix when it is potentially diseased should be presented to patients who are having a hysterectomy and who have a current or significant history of abnormal cervical cytological results. In the study by Learman et al.,¹⁷ 3 TAH patients had high-grade dysplasia in the cervical specimens despite the requirement for up-to-date Papanicolaou smears and the exclusion from the study of women with a previous history of cervical dysplasia. This may reflect limitations in the sensitivity of cervical cancer screening tests. It is also important to discuss the need for ongoing surveillance of the vaginal vault in women who have a total hysterectomy performed in the presence of cervical dysplasia.

Recommendation

7. Women who require a hysterectomy and who have a current or significant history of abnormal cervical cytological results should be counselled on the advantages of vaginal hysterectomy or total abdominal hysterectomy over supracervical hysterectomy. (I-B)

Vaginal bleeding

Most surgeons routinely attempt to ablate the endocervical canal after removal of the corpus at the time of SCH. Persistent cyclical vaginal bleeding still occurs in up to 25% of women with a retained cervix following SCH. In a retrospective cohort by Van Der Stege et al., 25% of women

experienced regular vaginal bleeding following SCH.²³ Three RCTs^{16–18} described cyclical vaginal bleeding in 5% to 20% of women following SCH. The problem of cyclical vaginal bleeding exceeded acceptability in 2 women in the study by Gimbel et al.,¹⁸ and each had her cervical stump removed at 3 months after SCH. In the study by Learman et al.,¹⁷ persistent vaginal bleeding led to a trachelectomy in one SCH patient 15 months after hysterectomy.

COST

The direct costs following SCH have been shown to be similar to those following TAH. In a retrospective cohort study of 11 Ontario hospitals, the direct costs of TAH and SCH were comparable in community hospitals and teaching hospitals. There were, however, considerable variations in the mean direct costs for hysterectomy by surgical approach (e.g., \$955–\$1831 in the community hospital and \$1665–\$3190 in the teaching hospital for SCH). Additionally, the overall direct cost was much greater in the teaching hospitals for both SCH and TAH.⁶ A trial by Showstack et al. that randomized 120 women to receive either TAH or SCH found that overall resource use was similar at 12 and 24 months.²⁴

Women who undergo SCH still require regular cervical cancer screening, which may mean additional expenses in the case of abnormal Papanicolaou smears, including repeat cytologic studies, colposcopy, and treatment not incurred with women who have their cervix removed. Women presenting for definitive management of ongoing symptoms related to the cervical stump may choose a trachelectomy, which is associated with significant additional costs.

SUMMARY

Using the evidence, a November 2007 ACOG Committee Opinion states that

Recently published Level 1 evidence reveals no advantage of the supracervical hysterectomy with regards to surgical complications, urinary symptoms or sexual function for women undergoing hysterectomy for symptomatic uterine leiomyomata or abnormal uterine bleeding. The supracervical hysterectomy should not be recommended as a superior technique for hysterectomy for benign disease.²⁵

The 4 RCTs specifically addressing sexual dysfunction do not support the suggestion that removal of the uterine cervix at hysterectomy is detrimental to sexual satisfaction.^{10–13} In fact, regardless of operative technique used, sexual function and frequency of intercourse often improved, as did quality of life, mental health, intensity and frequency of pain, and frequency of dyspareunia.

The 3 RCTs^{15–17} specifically addressing urinary dysfunction do not support the suggestion that removal of the uterine cervix at hysterectomy is more detrimental to urinary function. Overall, SCH is not associated with any significant improvement in urinary function when compared with TAH; rather, women in both intervention groups had an improvement in urinary symptoms, specifically SUI and urgency.

The 3 RCTs^{16–18} specifically addressing peri- and postoperative complications do not suggest that removal of the uterine cervix at hysterectomy is detrimental. Two studies did demonstrate a longer operating time,^{16,18} greater estimated blood loss,^{16,18} and length of stay¹⁶ with SCH than with TAH. Differences in operation time and blood loss are unlikely to be clinically significant. The variation in length of stay was less than 1 day, which is also not considered clinically relevant. Perioperative complications were greater in the TAH group in one study,¹⁶ but the most commonly documented complication was pyrexia, which may not be clinically significant. The other 2 studies failed to demonstrate a difference in postoperative complications^{17,18} or in readmission rates.¹⁷

Although, in the past, data from uncontrolled series may have suggested there are benefits in preserving the cervix, a review of the recently published level 1 evidence reveals no advantage to the supracervical technique of hysterectomy with respect to sexual function, urinary symptoms, and surgical complications in women undergoing hysterectomy for benign indications.

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