Perimenopausal androgen decline after oophorectomy does not influence sexuality or psychological well-being

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Objective: To determine whether oophorectomy during the perimenopause, with the associated decline in ovarian androgens, affects sexual function and psychological well-being negatively.
Design: Prospective, observational study comparing sexuality and psychological well-being in women after hysterectomy only (HYST) vs. hysterectomy and concomitant oophorectomy (HYST+BSO).
Setting: University hospital and district general hospital.
Patient(s): Three hundred sixty-two perimenopausal women scheduled for elective hysterectomy on benign indication were recruited and 323 (89%) completed the 1-year follow-up (217 in the HYST group and 106 in the HYST+BSO group).
Intervention(s): The patients were evaluated preoperatively and 1 year after surgery. Postoperatively, estrogen replacement therapy was recommended to all women in the HYST+BSO group and to HYST group subjects with climacteric symptoms.
Main Outcome Measure(s): Sex steroids (T, androstenedione, DHEA-S, and E_2) and sex hormone-binding globulin (SHBG) were measured. Free androgen index and free E_2 index were calculated. Sexuality (McCoy's Female Sex Questionnaire) and psychological well-being (Psychological General Well-Being Index) were evaluated.
Results(s): Preoperatively, no hormonal differences were found between the two groups. At 1-year follow-up, all sex steroid levels and indices were decreased and SHBG was increased in the HYST+BSO group. Ovarian sex steroids were decreased in the HYST group, whereas DHEA-S and SHBG were unaltered. Sexuality was unaltered in the HYST+BSO group, whereas decreased scores were found in 3 of 14 sexual variables in the HYST group. Psychological well-being was improved in both groups. There were no correlations between the observed changes (data 1 year after surgery, compared with preoperative data) in androgen levels and index and the observed changes in any aspect of sexuality or psychological well-being.
Conclusion(s): Hormonal changes after oophorectomy in conjunction with perimenopausal hysterectomy do not significantly change postoperative (1-year) sexual or psychological well-being. (Fertil Steril® 2005;83:1021–8. © 2005 by American Society for Reproductive Medicine.)

Key Words: Adrenal, hysterectomy, ovary, prophylactic oophorectomy, psychological general well-being, sex steroids, sexuality

Several biological, psychological, social, and interpersonal changes occur during the perimenopausal transition, and these events might directly or indirectly affect women's psychological general well-being and sexuality. Hysterectomy due to menorrhagia, uterine fibroids, or other benign causes is a common procedure at this stage of life. There are some studies indicating improvement in quality-of-life aspects, such as sexuality (1, 2) and psychological well-being (3, 4), after hysterectomy. However, the effects of concomitant oophorectomy at hysterectomy are controversial and unclear.

Sex steroids are assumed to play a central role in maintaining sexual function and psychological well-being (5, 6). Estrogen (E) insufficiency is assumed to contribute to impaired sexual function by causing vaginal dryness and decreased genital sensation (7). Estrogen insufficiency can be treated with E therapy; however, no standard androgen replacement therapy is as yet available.

During the last decade, a limited number of studies have addressed the question of whether oophorectomy during the perimenopause affects sexuality and well-being. In an interview/questionnaire study of women who had undergone hysterectomy with or without oophorectomy approximately 5–10 years before the study, women who had undergone concomitant oophorectomy reported a decline in sexuality more often than non-oophorectomized women (8). In the

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same study, a negative influence of oophorectomy on coital frequency and satisfaction from intercourse was also found. Another retrospective interview/questionnaire study reported less pleasure from coitus, less libido, and more lubrication problems in women having undergone simultaneous oophorectomy at hysterectomy, compared with those with intact ovaries, regardless of whether estrogens were given (9). These studies suggested that the change in sexuality was due to the loss of ovarian androgens rather than to other aspects of the changed physiologic or psychological state.

The results of randomized cross-over trials is another source of information about the role of androgens in sexuality and well-being, demonstrating that exogenous androgens improve some aspects of female sexuality and, in some cases, psychological general well-being as well (10–12). However, because these studies were performed with androgen doses leading to supraphysiologic blood levels or were performed on women with sexual dysfunctions, the data obtained do not necessarily apply to the clinical state after oophorectomy.

Thus, the combined experience from the retrospective studies indicating negative effects of prophylactic oophorectomy on sexuality and the pharmacologic androgen treatment trials have led to the established notion that the loss of ovarian androgens after oophorectomy during the perimenopause affects sexuality and psychological well-being negatively (13). However, even if the risk of ovarian cancer after hysterectomy is reported to be lower than in non-hysterectomized women (14), the risk of cancer in retained ovaries might cause concern to many women. Retaining the ovaries at hysterectomy will also lead to a substantial number of these women having to undergo another major surgical procedure later in life for an adnexal mass, a benign and asymptomatic condition in the majority of cases (15).

To test whether oophorectomy affects sexuality and psychological well-being negatively, a prospective study with comparisons of changes in hormonal, sexual, and psychological variables after hysterectomy plus bilateral salpingo-oophorectomy and hysterectomy only was carried out.

MATERIALS AND METHODS

Study Population and Design

The study was approved by the Ethics Committee of Sahlgrenska Academy, and all participants gave their informed consent for participation. The study design and results have been approved by the institutional review board at the Department of Obstetrics and Gynecology, the Sahlgrenska Academy.

The inclusion criteria were age 45–55 years, last menstruation ≤12 months previously, sexually active (at least one episode of intercourse per month during the past 6 months), being part of a partner relationship, and scheduled for hysterectomy on benign indication. Women with psychiatric or medical conditions that might interfere with the studied parameters and those who had previously sought medical help for sexual problems were excluded. The study population of Swedish women was recruited (1996–1999), operated on, and followed-up at the Sahlgrenska University Hospital or Borås Hospital.

The preoperative evaluation was performed within 2 months before surgery. A physical examination was carried out, and blood samples were taken and stored at −20°C until analysis. The women completed the preoperative questionnaires, including questions regarding socioeconomic and health data and hormone replacement therapy (HRT) use, and the McCoy Female Sex Questionnaire (MFSQ, see below) and the Psychological General Well-Being Index (PGWB, see below) were completed.

Subjects received written information about the possible advantages and disadvantages of prophylactic oophorectomy and met the surgeon for a preoperative informative discussion. The written information mentioned the possible disadvantages of prophylactic oophorectomy (change in endocrine environment with possible negative effects on sexuality and psychological well-being) and the possible advantages of prophylactic oophorectomy (prevention of ovarian cancer and avoidance of future surgery for benign adnexal mass). The women chose either to undergo hysterectomy only (HYST group) or hysterectomy with concomitant bilateral salpingo-oophorectomy (HYST+BSO group). All women in the HYST+BSO group and women in the HYST group with climacteric symptoms were advised to take E therapy after surgery.

The main indication for hysterectomy was bleeding disorders. In the HYST+BSO group, 62% reported irregular menstruations, compared with 42% in the HYST group ($P \leq .01$).

All patients were scheduled for a follow-up visit 1 year after surgery, to which they were invited by mail. Women who did not attend received another mailed invitation and a telephone call if they did not respond to the mailed invitation. At follow-up, a physical examination was performed, and blood samples were taken. The participants received the same questionnaires as before surgery (MFSQ, PGWB, and HRT use) to fill out at home and to return by mail.

Of the 362 included women, 323 women (89%) completed the 1-year follow-up. Of these 323, 217 women chose hysterectomy only, and 106 chose hysterectomy with concomitant prophylactic oophorectomy (Fig. 1). Twenty-six women (12%) in the HYST group underwent unilateral salpingo-oophorectomy because ovarian cysts were discovered during surgery, and malignancy could not be ruled out. Histologic evaluation showed that all these adnexal cysts were benign.

Subtotal hysterectomy was more common in the HYST group (24%) than in the HYST+BSO group (4%). There were no differences between the two groups regarding educational level, smoking habits, employment, occupational