Vasopressin during vaginal hysterectomy reduced blood loss without increasing infection rate


OBJECTIVE

To determine if the use of vasopressin to reduce blood loss during vaginal hysterectomy increases the risk of pelvic infection.

DESIGN

Randomized, double-blind, placebo-controlled trial. Allocation was by random number table in blocks. The study had sufficient power to detect a three-fold increase in infection rate.

SETTING

University hospital in the USA.

SUBJECTS

One hundred and seventeen women, mean age 44 years, who were undergoing vaginal hysterectomy, with or without salpingoophorectomy or vaginal reparative procedures. Women with
known cardiovascular disease or sensitivity to vasopressin were excluded. 19% of women were postmenopausal. An additional four randomized women (3%) were excluded from the analysis because of protocol violations and administrative errors.

**INTERVENTION**

Sixty-two women were randomized to receive vasopressin approximately four units in 18 mL saline and 55 women to receive 18 mL saline, injected at six sites around the cervix prior to beginning the procedure. Blood loss was estimated from the volume of suctioned blood and the number of bloody sponges. All women received intraoperative antibiotics.

**MAIN OUTCOME MEASURES**

Febrile morbidity (temperature >38.5°C in the first 24 hours after surgery or >38.0°C on two occasions after the first 24 hours), estimated total blood loss, change in hemoglobin and hematocrit.

**MAIN RESULTS**

The mean (±SD) total blood loss was 312±222 mL in the vasopressin group and 446±296 mL in the placebo group (p = 0.006, absolute treatment effect −134 mL, 95% CI −229 to −39, relative treatment effect −28%, CI −51 to −9) *. The mean postoperative decrease in hemoglobin was 2.1±1.4 g in the vasopressin group and 2.9±1.4 g in the placebo group (p = 0.02) and the mean decreases in hematocrit were 6.7±3.4 and 8.5±3.8%, respectively (p = 0.01). One woman in the vasopressin group required an intraoperative transfusion. At 5 and 10 min after injection, the mean changes in blood pressure were not significantly different between groups. Febrile morbidity developed in one woman (1.6%) in the vasopressin group, compared to four women (7.3%) in the placebo group (p = 0.19, relative risk 0.22, CI 0.03–1.42 *).

**CONCLUSION**

The use of vasopressin during vaginal hysterectomy reduced blood loss by 28% without increasing the risk of postoperative infection.

© 2002 Published by Elsevier Science Ltd. 1361-259X/02/$—see front matter
Commentary

Vasoconstrictive agents have played a role in gynecologic surgery dating back to the late 1960s. One of the first randomized controlled trials determined that the use of epinephrine during vaginal hysterectomy was associated with a 5.5-fold increase in infectious morbidity. This report did have an impact on traditional surgical practice, as many gynecologic surgeons have refrained from using such agents. Consequently, vasopressin has been judged guilty by association, despite its widespread use and difference in pharmacokinetics. More current studies have demonstrated the efficacy of vasopressin in reducing blood loss during abdominal hysterectomy without affecting the incidence of infection.

The present study is the first well-designed, randomized controlled trial utilizing vasopressin during vaginal hysterectomy. The study design had sufficient power to detect a four-fold increase in postoperative infection. The subjects randomized to the two groups had similar demographics and the study was conducted such that all participants, including the surgeons, were blinded throughout the study. Exclusion criteria ensured the enrollment of healthy subjects, as vasopressin may potentially alter cardiovascular function.

The article had a number of flaws in design and reporting that are noteworthy. The blood loss reported in the trial was based on the anesthesiologist’s calculation of suctioned blood and a sponge count. The authors could have been more rigorous in measuring blood loss, with a protocol that included weighing each sponge and having data collection performed by research personnel. The study included women undergoing vaginal hysterectomy with or without additional vaginal repairs and/or salpingoophorectomy. There was no information regarding the number of such procedures in either group, nor was there any discussion of measuring the blood loss of the vaginal hysterectomy separately from the additional procedures. Finally, the article lacked important information, such as uterine weight, operative time, and the presence or absence of morcellation techniques, which may have
played a role in the difference in blood loss and infection in the two groups.

Nevertheless, this is an important article, in that it describes the first randomized trial demonstrating that dilute vasopressin can be used in vaginal surgery without an increase in infectious morbidity rates. The authors chose a very safe dose of vasopressin (3.6 units) to avoid potential cardiovascular complications. Our own experience of injecting 10 units into the uterus during abdominal hysterectomy, as well as the experience of others,\[2\]\[3\] demonstrates that higher doses of the drug can be used without undue cardiovascular effects. The intravaginal injection not only reduces blood loss but also, in many cases, would help define the surgical plane for dissection of the vaginal mucosa away from the underlying endopelvic fascia. It is important for gynecologic surgeons to avoid intravascular injection of the drug and its use in women with known cardiovascular disease.

**Literature cited**


*Calculated from data in article.*