Vaginal hysterectomy

Andrew Farkas

Vaginal hysterectomy represents the ultimate minimal access hysterectomy. The indications for the procedure extend well beyond those of prolapse. Good training and advances in surgical technique allow the removal of enlarged fibroid uteri as well as vaginal oophorectomy. This article also considers the complications which may follow.

Vaginal hysterectomy (VH) was reviewed in this journal by Feroze in 1977. Recent advances in laparoscopic and other minimal access surgery have brought into focus the scope and benefit of VH, so reappraisal of the procedure is timely. In this article the indications for hysterectomy and principles of the surgical procedure are considered, as well as special circumstances in which it is performed.

Hysterectomy is the most common non-pregnancy-related surgical procedure in American women; one-third of these women will have had a hysterectomy by the age of 65 years, 25% of these by the vaginal route (Wilcox et al, 1994). In a large cohort study from Oxford, it was found that 11.1% of 17 032 women in the study were known to have undergone hysterectomy (Vessey et al, 1992). Using lifetable methods, it was estimated that almost 20% of the subjects would have had a hysterectomy by the age of 55 years. Preliminary results from the Vaginal Abdominal Laparoscopic Uterine Excision (VALUE) study of hysterectomies reported to the Royal College of Obstetricians and Gynaecologists audit unit showed that 21% of women had VH and 4.2% 'laparoscopic hysterectomy' for dysfunctional uterine bleeding (Hall et al, 1998). Unpublished data from the VALUE study suggest that the overall rate of VH for benign disease, including for prolapse, is around 30%.

VH allows earlier mobilization and shorter hospitalization than abdominal hysterectomy. Outpatient VH has been shown to be possible in the USA (Stovall et al, 1992). Although unlikely to gain widespread acceptance in the UK, it suggests that the length of stay may be shortened (Clinch, 1994). It has been suggested that the rate of VH could be increased significantly to levels as high as two-thirds (Davies et al, 1998). Although the vaginal route carries many advantages over the abdominal, aiming at an arbitrary level should not be an end in itself.

ASSESSMENT

The indications for VH, alone or in combination with other procedures, are listed in *Table 1*. Urinary, bowel and sexual function should be assessed preoperatively. Any prolapse should be assessed and documented. The use of the

TABLE 1.
Indications for vaginal hysterectomy

Urogenital prolapse
Dysfunctional uterine bleeding unresponsive to medical treatment
Adenomyosis
Fibroids ≤ 12 weeks size
Fibroids ≥ 12 weeks size — operator dependent
Cervical intraepithelial neoplasia
Cervical and uterine malignancy

Mr Andrew Farkas is Consultant Obstetrician and Gynaecologist, Jessop Hospital for Women, Sheffield S3 7RE

International Continence Society (ICS) standardization of terminology of female pelvic organ prolapse requires considerable familiarization, but ensures a systematic approach to assessment of prolapse (Bump et al, 1996). The operation may be performed under regional as well as general anaesthesia. A prerequisite for VH is a trained surgeon.

Figure 1. Breisky's vaginal side wall retractors.

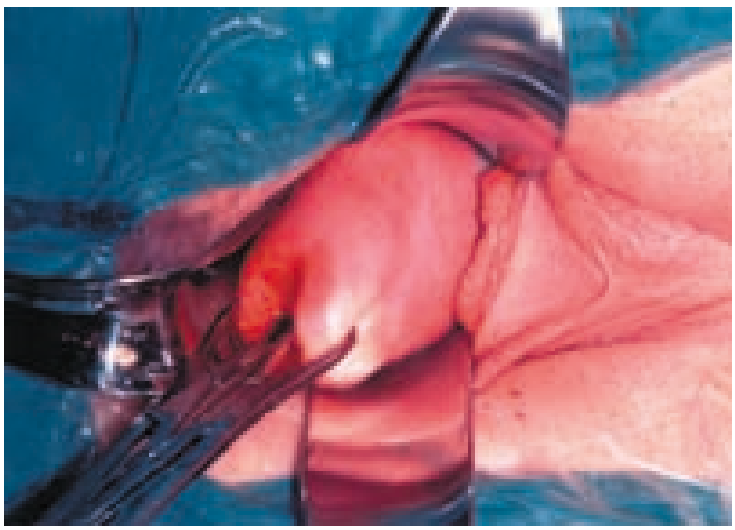

Figure 2. Traction on cervix at commencement of vaginal hysterectomy.

Figure 3. Chelsea angled clamps applied bilaterally to tubo-ovarian pedicles following delivery of the uterus.

An absolute contraindication is suspected ovarian malignancy. Relative contraindications include moderate to severe endometriosis and adhesions. The role of laparoscopic assistance is discussed below. Previous caesarean section is not a contraindication to VH. On the contrary, dissection of the uterovesical fold may be easier vaginally.

Suitability for VH should be assessed preoperatively and confirmed at the time of surgery. Uterine enlargement is not a contraindication to VH. It should be possible to remove most uteri of a size equivalent to 12 weeks gestation through the vaginal route. Techniques for dealing with the larger uterus will be discussed. Descent of the uterus is advantageous, but not a prerequisite to VH.

PROCEDURE

The patient is usually placed in the lithotomy position. However, extension of the legs allows better access for the surgeon and assistants. Adequate assistance is essential. Usually one assistant suffices, but in difficult cases two assistants are necessary. Vaginal access is also important. Access may be improved by the use of angled vaginal side wall retractions (*Figure 1*). A Schuchardt paravaginal incision improves access and is used particularly in radical VH.

Preoperative antibiotic prophylaxis is standard. Practice varies concerning preoperative catheterization of the bladder. It is usual to catheterize the patient postoperatively, particularly if an anterior vaginal wall repair has also been performed. Practice also varies concerning the use of infiltration with adrenaline at the beginning of the procedure.

Detailed operative technique is described elsewhere (Feroze, 1977; Howkins and Hudson, 1993a; Nichols and Randall, 1996). The principles are to secure the pedicles of the uterosacral and cardinal ligament complex, uterine vessels and tubo-ovarian structures (*Figures 2* and *3*) in a systematic fashion, to obtain transverse vaginal vault support and to maintain a vagina of functional length and calibre. Pedicles may be large and difficult to secure if a clamp slips. A pedicle needle-passer may be used to secure the pedicle before clamping and division of the structure (*Figure 4*).

The uterosacral and cardinal ligaments are inserted the upper third of the vagina and into the cervix. It is vital to secure these ligaments

when performing VH. Similarly, repositioning and incorporating these ligaments into the vaginal vault at the end of the procedure is crucial in maintaining pelvic floor support and preventing vaginal vault prolapse. Such a technique is shown diagrammatically in *Figure 5*. The anatomical aspects of vaginal eversion after hysterectomy are considered (DeLancey, 1992). The critical importance of support of the upper third of the vagina (level 1), which is suspended from the pelvic walls by vertical fibres of the paracolpium (a continuation of the cardinal ligament), is emphasized.

There has been renewed interest in subtotal hysterectomy in response to the interest in conservation of the cervix and its role in sexual function. Doderlein's VH, in which the uterine fundus is delivered through an anterior colpotomy and the pedicles secured in the same order as in the abdominal procedure, may be modified to a subtotal procedure.

PROLAPSE

Surgery performed for significant urogenital prolapse may be especially difficult. It is crucial to identify the nature and extent of the prolapse. Commonly, there will be an enterocele sac. This must be identified, dissected off its attachments, plicated and excised.

A McCall-type culdoplasty (obliteration of the pouch of Douglas by plication and approximization of the uterosacral and cardinal ligaments, and elevation of the vaginal apex) is superior to a vaginal Moschcowitz-type procedure and also to simple peritoneal closure in preventing subsequent enterocele formation (Cruickshank and Kovac, 1999).

There is no advantage in carrying out primary sacrospinous ligament fixation. No significant difference in vault prolapse or postoperative sexual function was found in a comparison with modified McCall culdoplasty (Colombo and Milani, 1998). The advantage of peritoneal closure at VH is inconclusive and thus is operator dependent (Lipscombe et al, 1996).

If coital function is no longer required the possibility of recurrent prolapse can be minimized by obliteration of the vagina by the removal of excess vaginal skin at the time of VH: in effect a colpocleisis.

LARGE UTERUS

There is increasing concern as to the effects of childbirth on the pelvic floor. Physiological processes have prepared the pelvis for parturition. Very little is known as to the unphysiological process of delivering a large uterus vaginally at hysterectomy. The uterus may be reduced significantly in size by the preoperative administration of gonadotropin-releasing hormone (GnRH) analogues.

Thus, it is feasible and safe to perform a number of hysterectomies vaginally which otherwise would have required abdominal surgery. Simply because it is technically possible for a skilled surgeon to remove a large uterus vaginally does not mean that it should be done routinely by all surgeons. The benefits must be considered against possible risks.

The key to VH for the large uterus is securing the uterosacral and cardinal ligament pedicles. Good access will mean better uterine descent. The further operative techniques involved in this

Figure 4. Gwillim needle-passer.

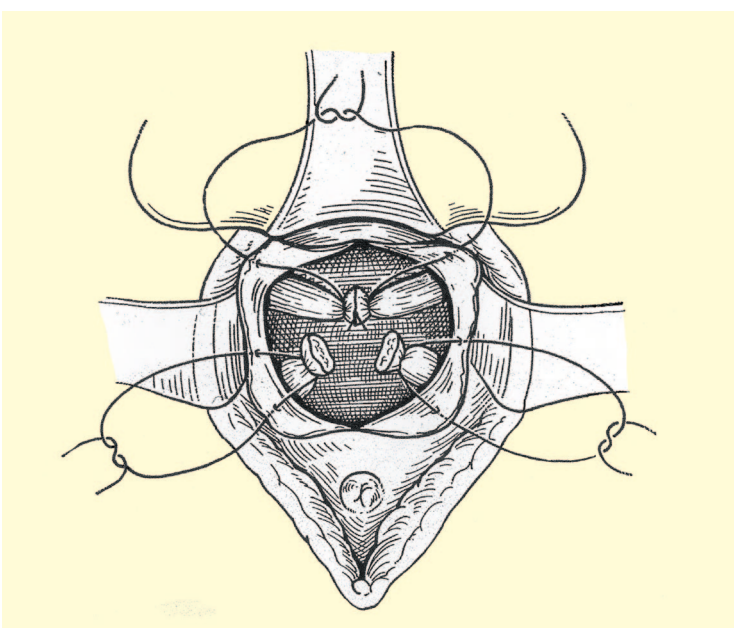

Figure 5. Diagrammatic representation of vaginal vault support. Uterosacral pedicles are tied to each other within the vaginal vault and also exteriorized at the 5 and 7 o'clock positions and tied to each other. The tubo-ovarian pedicles are exteriorized and tied to themselves, so rounding the vault.

surgery include bisection, myomectomy, morsellation and coring (Magos et al, 1996). These techniques are also applicable to VH in smaller uteri.

LAPAROSCOPIC-ASSISTED VAGINAL HYSTERECTOMY

Laparoscopic-assisted vaginal hysterectomy (LAVH) has been advocated as offering the advantages of VH together with those of a laparoscopic approach. These include laparoscopic assessment of the pelvis as well as treatment of extrauterine disease, such as moderate to severe endometriosis, dense adhesions or adnexal cysts.

However, most women undergoing hysterectomy do not have major extrauterine disease. Dysfunctional uterine bleeding and fibroids are typically the indications for surgery in more than two-thirds of cases (Davies et al, 1998). The cost of LAVH is higher than that of standard of VH. In a randomized comparison of LAVH with standard VH, the procedures were otherwise comparable (Summitt et al, 1992).

LAVH requires skill and training in endoscopic surgery and the availability of appropriate equipment. It also increases operating time (Summitt et al, 1992). Vaginal approaches to oophorectomy are discussed below. Laparoscopic surgery has made a significant impact on VH in the field of malignant disease of the cervix (Dargent and Mathevet, 1995). Laparoscopic pelvic lymphadenectomy is followed by VH. Postoperative morbidity and hospitalization is shortened. However, the results of long-term follow-up are awaited.

VAGINAL OOPHORECTOMY

Performing oophorectomy in VH would significantly increase the number of VHs. Indications include women having a hysterectomy with a family history of ovarian cancer, severe premenstrual syndrome and prophylactically in women over 45 years of age (Davies et al, 1996).

The place of VH, and particularly of vaginal oophorectomy in endometriosis, is debatable. A number of techniques have been developed including the use of special clamps and of endoloop sutures (Hoffman, 1991; Sheth, 1991). Vaginal oophorectomy may be aided by the use of transvaginal endoscopic techniques (Hefni and Davies, 1997).

MALIGNANCY

Hysterectomy may occasionally be indicated for cervical intraepithelial neoplasia, usually when the condition has recurred and/or there are other factors. In such circumstances VH is usually an appropriate route for hysterectomy.

The role of laparoscopic surgery together with VH has been discussed. In the UK Schauta's radical VH is an uncommonly performed operation. However, it has a place in the treatment of cervical and endometrial malignancy (Massi et al, 1996). The operative procedure is described in detail by Howkins and Hudson (1993b).

COMPLICATIONS

The commonest complication following VH is that of febrile morbidity which is frequently associated with vault haematoma. Transvaginal ultrasound examination has revealed a vault haematoma rate of 25% (Thompson et al, 1998). However, the rate of clinically detected vault haematomata is less. If problems or complications occur conversion from vaginal to abdominal hysterectomy is possible. Although in well-selected patients this happens only rarely, it should be viewed as safe surgery rather than as failure.

Much of the literature concerning complications after hysterectomy is anecdotal. However, in a systematic review a significantly greater incidence of bladder injury was found in LAVH compared with total abdominal hysterectomy (1.8% *vs* 0.4%; Meikle et al, 1997). A recent report suggested that VH was more often associated with some adverse events, mainly postoperative infection, than abdominal and laparoscopic hysterectomy (Meltomaa et al, 1999). Intraoperative complications occurred in 1.7% of the abdominal hysterectomy group, and 3.9% and 4.5% respectively in the vaginal and laparoscopic hysterectomy groups.

KEY POINTS

- Vaginal hysterectomy is associated with quicker recovery and shorter hospitalization.
- The current rate of vaginal hysterectomy (30%) could be increased.
- Vaginal oophorectomy may be possible, so extending the indications.
- Securing the uterosacral/cardinal ligament complex and vault fixation is essential.
- The commonest complication is febrile morbidity associated with vault haematoma.
- Adequate training is essential.
- Compared with abdominal hysterectomy, both short and long-term sequelae remain unresolved.

CONCLUSION

Despite the slight fall in hysterectomy rates in recent years, in part as a result of advances in medical management of dysfunctional uterine bleeding, the operation remains one of the most commonly performed in the UK. The indications for performing the operation through the vaginal route extend well beyond those of prolapse. It is assumed that VH carries a lower morbidity than abdominal hysterectomy. Before advocating a significant change in practice it is important that this assertion should be tested. It is to be hoped that the final data from the VALUE study, which includes nearly 40 000 hysterectomies for benign indications, will give a clear answer.

Vaginal surgery involves many techniques common to abdominal surgery. However, gynaecological trainees are usually more familiar with operating through the abdominal route. Specialist registrars should have specific training and gain adequate experience in vaginal surgery. HM

Conflict of interest: none.

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