Laparoscopic or Vaginal Hysterectomy in Women With Abnormal Uterine Bleeding: A Critical Review of Literature

Review Article

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ABSTRACT

Background: Hysterectomy is a major gynecological surgery. The surgical approach to hysterectomy is an important factor responsible for postoperative morbidity. Minimally invasive hysterectomies are preferred routes over the routine abdominal approach.

Objectives: To review the literature about the bases of choice between laparoscopic and vaginal hysterectomy routes for benign lesions and critically analyzes the different intra-operative and post-operative characteristics of these approaches in cases with benign pathologies.

Materials and Methods: Review of previously published articles in the English language only.

Results: No differences were found between laparoscopic and vaginal hysterectomies concerning their benefits and surgical outcome. However, LH is considered a longer operation and is associated with a higher cost and risks of urinary tract injuries. Management of adnexal pathologies is sometimes not applicable in cases of vaginal hysterectomy.

Conclusion: Surgeons should minimize abdominal hysterectomy rates by applying minimally invasive approaches. The vaginal approach is the preferred evidence-based recommended approach in patients with benign pathologies. The laparoscopic approach is recommended in cases where a vaginal route isn't applicable.

Key Words: Laparoscopic hysterectomy, laparoscopic-assisted vaginal hysterectomy, minimally invasive hysterectomy, vaginal hysterectomy.

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INTRODUCTION

Hysterectomy is considered a major gynecological surgery that is performed for a wide range of indications[1]. Annually, a large number of women undergo hysterectomies worldwide. 70% of these hysterectomy procedures are performed for benign indications presented mainly by abnormal uterine bleeding[2].

The surgical approach to hysterectomy is the most important factor responsible for postoperative morbidity. The approaches to hysterectomy are vaginal, abdominal, laparoscopic, and robotic-assisted laparoscopic hysterectomy[3]. Choosing between these methods depends on surgeons' experience, patients' preference, surgical indications, uterine size, and history of previous abdominal or pelvic surgeries[4].

Minimally invasive approaches such as vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH) offer cosmetic benefits, faster recovery, shorter hospital stay, and early resumption of normal activities over the routine abdominal hysterectomy (AH)[5]. Minimally invasive hysterectomies (MIH) need special skills which can be developed with time[6,7].

The laparoscopic route became an important approach for gynecological surgeons performing hysterectomies. It's a game changer since it has the power to minimize AH rates[8].

The first laparoscopic hysterectomy was performed in 1988 by Harry Reich in Pennsylvania, using bipolar coagulation and scissors for cutting ligaments and uterine arteries[9]. Technological developments in light sources,

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optics, and cameras and advances in surgical techniques have increased the utilization of LH[10].

LH has 3 subdivisions: 1) laparoscopic-assisted vaginal hysterectomy (LAVH) where a VH is assisted by laparoscopy but the laparoscopic component does not involve division of uterine vessels, 2) LH, where the laparoscopic component includes ligation of uterine arteries but part of the operation, is performed vaginally, and 3) total laparoscopic hysterectomy (TLH) where the entire operation, including suturing of the vaginal vault, is performed laparoscopically[11].

The vaginal approach for hysterectomy is the oldest and least invasive hysterectomy technique which fulfills the evidence-based requirements as a preferred route of hysterectomy for benign pathologies. Perhaps it should be referred to as a "non-invasive hysterectomy"[12]. The surgical skills of VH are the mark of a gynecologist[13].

VH is commonly performed in cases with uterine prolapse. Despite proven safety and effectiveness, it remains underutilized for the treatment of non-prolapse conditions[13].

This research was conducted with the aim of comparison between laparoscopic and vaginal hysterectomies and showing the bases for selection between these routes in benign indications.

AIMS AND OBJECTIVES

This study was designed to highlight the intra-operative and post-operative characteristics of laparoscopic versus vaginal hysterectomy. It reviews the basis for hysterectomy route choices on an individual basis.

MATERIALS AND METHODS

Review of previously published different article types in the English language addressing the comparison of laparoscopic and vaginal hysterectomy. In some kinds of literature, abdominal or LAVH were included in the comparative study. We also searched articles discussing criteria for the selection of different hysterectomy routes for different patients with benign lesions on an individual basis.

RESULTS

VH and LH, being minimally invasive approaches, do not require a large abdominal incision, offer cosmetic benefits and, thus are typically associated with shortened hospitalization and faster postoperative recovery compared with AH[6]. The slow adaptation to minimally invasive techniques is attributable to a lack of adequate exposure and training during residency[8].

Despite being more invasive, AH still is the most common route for hysterectomy[6,14]. This can be explained by the unawareness of patients about the benefits of MIH, the lower cost of surgery through the abdominal route, and surgeons find it easier and more convenient to perform AH[5].

Since 2003, Ribeiro et al. reported better results of VH in terms of operative time and inflammatory response and recommended considering LH when the vaginal approach is not feasible for the treatment of benign diseases[15].

The proportion of LH has gradually increased. Although there are longer surgeries, the main advantages are the magnification of anatomy, the ability to treat other pelvic diseases, and to achieve complete hemostasis[16].

One possible unintended consequence of laparoscopy has been the declining use of VH[17]. This has resulted in decreased exposure to VH during obstetrics and gynecology residency training leading to less use of this technique[18].

Patients are considered candidates for VH if the uterus was accessible vaginally through a wide pubic arch allowing easy access to the uterus, a wide vagina >2 fingerbreadths or 3 cm in width to facilitate a vaginal approach and preserved easy uterine mobility[19].

With a history of cesarean delivery, bladder tears can occur regardless of the chosen hysterectomy route[20]. A possible advantage of VH in cases with previous cesarean delivery is that the dissection of the bladder begins from a lower less scarred area, than when attempted by the laparoscopic or abdominal route[21].

Hysterectomy usually can be safely performed using the vaginal approach in nulliparous women[22]. It can be performed in women with a uterus >12 weeks, using several debulking techniques, without an increased rate of complications[23].

The success of removing the ovaries through the vaginal route varies greatly[24]. If there is uncertainty surrounding its success, LAVH should be employed first[25].

When pathology is not confined to the uterus, and if the success of the vaginal route is unreliable, then it is advisable to perform a laparoscopy to restore anatomy before undertaking VH[26]. If minimal pathology is found, the surgeon can safely proceed with VH. In case of moderate pathology with free cul-de-sac, laparoscopic assistance might be taken (LAVH)[6]. In case of severe pathology with obliterated cul-de-sac, an abdominal approach would be safer[27].

Complications of surgical procedures are similar whatever the approach for hysterectomy, including

hemorrhage, urinary and bowel injuries, anesthetic problems, pulmonary thromboembolism, postoperative infection, and postoperative vault complications[8].

Complications of LH may be related to the positioning of the Veress needle and trocars like hemorrhage, bowel injury, vascular injury, and subcutaneous emphysema. Anesthesia complications related to insufflations and pneumoperitoneum are others related to LH. Trocar-site incisional hernias can be a late complication[8]. During LH, a ureteral injury may occur while cutting dense adhesions, trying to stop bleeding close to the ureter with bipolar cautery, or in the process of ligating the uterine vessels[28].

VH is associated with complications in 5.2% of women[29]. The most common complications are cuff infection, abscess, and incidental dissection bladder injury[30]. Ureteral injury is relatively rare, but pelvic organ prolapse increases the risk[31].

A systematic review in 2019 showed that no difference was found in the rate of overall complications between VH and LH. No difference was detected between the 2 methods regarding either intra-operative blood loss or length of postoperative hospital stay. However, VH was associated with a shorter operating time and significantly lower pain scores at 24 h after surgery than LH[32].

DISCUSSION

The surgical approach to hysterectomy is the determining factor for postoperative morbidity. Many studies were done to compare the various routes of hysterectomies to reach a consensus about the best route[6].

American College of Obstetricians and Gynecologists (ACOG), American Association of Gynecologic Laparoscopists (AAGL), and the committees on behalf of the Society of Gynecologic Surgeons (SGS) all express their support for VH as the preferred approach for benign disease[6,33].

VH for non-prolapsed uterus is the treatment of choice for many appropriately selected patients in whom hysterectomy is indicated and who are operated on mainly by abdominal or laparoscopic approaches[25]. VH offers the greatest benefit to patients with significantly lower rates of morbidity and mortality and society with less cost[34].

Studies recommend the avoidance of AH in cases where VH is not applicable. LH which offers a good exploration of the intra-pelvic and intra-abdominal anatomy is rather preferred instead of AH[6]. With LH, patients can avoid painful abdominal incisions with a subsequent decrease in the length of hospital stay and recovery time and an extremely low rate of infection and ileus. LH should be considered a substitute for AH, and not for VH[35].

VH has its advantages over LH, being scarless surgery, less invasive, and the most cost-effective route of performing a hysterectomy[8].

The laparoscopic approach, compared to abdominal or vaginal routes offers the best inspection capability due to the clear, unrestricted, and magnified view[36]. It is also recommended for easier removal of ovaries and when inspection of the abdominal or pelvic cavity is recommended. Moreover, laparotomy in obese patients has an increased association with comorbidities compared to the laparoscopic route, hence, the LH is preferred when VH is not feasible[8].

Some surgeons find it better to perform LH in cases of large uteri. However, some studies reported that if the surgeon is experienced in VH, equivocal outcomes are found[23].

The decreasing VH rates and dependence on LH may be attributed to the impact of industry-promoting laparoscopic equipment. Lack of training in VH and the consequent lack of appreciation of its benefits are also important factors for gynecologists performing LH in patients who may have otherwise undergone an uncomplicated VH[25].

Promoting changes in the areas of surgical training, maintenance of skills, and increasing awareness can result in better use of VH as the primary approach to hysterectomy[13].

Efforts should be directed to conduct VH whenever feasible for benign gynecological disorders[27]. Sheth et al. described a 'trial of vaginal hysterectomy' in 1993, which meant that VH need to be attempted initially in most cases, with the option of laparoscopic assistance or abdominal route if the procedure was not possible to be completed vaginally[37].

VH may be the preferred approach for some experienced surgeons, as it is less time-consuming, with a small amount of blood loss, and is a scarless surgery[38]. The disadvantages of LH are longer operating time, higher cost due to maintenance of sophisticated instruments, and training of surgeons[39,40].

CONCLUSION

In patients with abnormal uterine bleeding due to benign lesions, VH is considered the approach of choice to be offered to patients relying on the lower cost, shorter duration, and absence of scares. LH should be offered to patients for whom VH is not applicable. LH offers better pelvic visualization and easier dealing with adnexal pathologies. LH are longer operations with higher costs however, it helps in avoiding AH in cases where VH couldn't be offered.

CONFLICT OF INTERESTS

There are no conflicts of interest.

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