

Laparoscopic Hysterectomy—Beyond Garry and Reich Classification

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Abstract

The advantages and disadvantages of laparoscopic hysterectomy (LH) and laparoscopic assisted vaginal hysterectomy (LAVH) have been reviewed. Studies show that both procedures are safe and the patients show similar postoperative reconstitution. A number of studies show that LAVH is faster to perform and therefore amenable to the stated objective of making these service available on a day care surgery basis. Other studies show that, with adequate skill laparoscopic hysterectomy is easier to perform and has less associated morbidity as well as reduced cost. The varied and divergent views with regard to the efficacy and acceptance of the procedures primarily depend on the practices in different regions and programs. Acceptance of laparoscopic or laparoscopic vaginal hysterectomy varies in different regions. There is necessity therefore to develop further this procedures which have high level of satisfaction among female patients. The uptake of this procedure is slow particularly in the Third World Countries there is need to promote policy and programs within the different regions so that endoscopic surgery becomes part and parcel of curricular in both undergraduate and postgraduate programs. Only then would the problems associated with the learning curve be minimized.

Keywords: Total laparoscopic hysterectomy, laparoscopic assisted hysterectomy, abdominal hysterectomy, vaginal hysterectomy, pelvic pathology.

Aims and objectives: The aim of this study was to review the safety and efficacy of total laparoscopic hysterectomy and the laparoscopic assisted vaginal hysterectomy in women. Garry and Reich classified modes of hysterectomy into nine types. This study will review relative efficiency and efficacy of type 3 and type 5 of this classification. The parameters used to evaluate literature both in the total laparoscopic hysterectomy and the laparoscopic assisted vaginal hysterectomy include; patient selection criteria, operative time and technique, intra-operative and postoperative complications, time until resumption of diet, postoperative morbidity, hospital stay, cost effectiveness and the quality of life.

Materials and methods: A literature review was performed using Highwire press, Google, and the Springer link search engine. The following terms were used: Laparoscopic assisted vaginal hysterectomy, total laparoscopic hysterectomy, total abdominal hysterectomy, vaginal hysterectomy. Over two hundred and fifty six citations were found. Selected papers were screened for further reference. Criteria for selection of the literature were the number of cases, method of analysis, operative procedure and the institution where the study was done.

INTRODUCTION

Total laparoscopic and assisted vaginal hysterectomy are relatively new procedures that are rapidly replacing abdominal hysterectomy because of perceived benefits including reduced morbidity, early mobilization and recovery and significantly better esthetics. Laparoscopic vaginal hysterectomy has enhanced the capacity of gynecological surgeons to deal with pelvic pathology that were previously a relative contraindication for vaginal hysterectomy. Since vaginal hysterectomy has been utilized to perform one third of all hysterectomies, this constituted an important development in gynecological health.

Many service providers advocate for laparoscopic assisted vaginal hysterectomy (LAVH) because of supposed benefit over and above those of total laparoscopic hysterectomy (TLH), including increased safety, and ease of operation.⁴ There is less risk to bladder, bowel and vascular injury. The hazard associated with resection of uterine arteries is avoided. However, a number of publications indicate resection of the uterine artery can be achieved safely during TLH using bipolar diathermy, ligature and clear set step by step procedures.

In many studies there is no significant difference between the benefits accrued in either of the two procedures. Some studies indicate that there is no risk of reduction in the length and prolapsed of the vaginal vault in TLH as compared with laparoscopic assisted vaginal hysterectomy.

Since the first LAVH by Reich in 1989 arguments regard cost benefit analysis of this procedures has continued to be generated. It is necessary therefore that a study that avoid confounding factors and many of the biases in the health system be carried out.

It is the considered opinion of this review, that there is need to expand on the Garry and Reich classification and consider the different laparoscopic approaches, as complimentary matrix of procedures, through which one can surf back and forth during minimal access hysterectomy depending on the challenges encountered intraoperatively.

DISCUSSION

Hysterectomy is one of the most commonly performed major operations. Approximately 600,000 hysterectomies are performed in the United States each year and 20% of women in the UK undergo hysterectomy before the age of sixty.^{2,3} Historically the uterus has been removed by either the abdominal or vaginal route. The vaginal operation is preferable when there are no contraindications because of lower morbidity and quicker recovery. Laparoscopic hysterectomy has gained a lot of attention internationally in the recent past. The role of minimally invasive surgery in the management pelvic abnormalities continues to expand. However the role of laparoscopic assisted vaginal hysterectomy viz a vis that of laparoscopic total hysterectomy remains of great interest and opportunity to expand on the options available to the laparoscopic surgeon to deal pelvic pathology. The most common indications for hysterectomy include fibroids (30%), abnormal uterine bleeding (20%), endometriosis (20%) and genital prolapsed (15%).^{6,7,10}

Despite all the advantages of vaginal and laparoscopic surgery over laparotomy, the majority of hysterectomies indicated for benign pathologies are carried out by laparotomy. The VALUE study suggested that 67% of surgeons still used the abdominal approach as the main mode of hysterectomy. Other multicenter studies which provide a good representation of the means by which hysterectomies are earned out, show that only 30% of the operations use the vaginal route, including laparoscopic assisted vaginal hysterectomy.⁷

For hysterectomies carried out on nonprolapsed uterus the results reported demonstrate that on average only 27% are carried out by the vaginal route. These results alone justify the statement that there is a place for laparoscopic surgery for hysterectomy in order to reduce the number of laparotomies.

Nulliparous patients are very representative of the population of patients for whom vaginal surgery rarely presents under the best conditions for surgeons with average training minimal access surgery. Almost 40% of hysterectomies in nulliparous patients used laparoscopic surgery.

Many studies show that laparoscopic hysterectomy increasingly replacing open hysterectomy are in line with this evolution.^{1,3,30} One reason for this is the laparoscopic surgery technique used for hysterectomy. Whereas certain centers perform simple LAVH, others used total laparoscopic hysterectomy for all the patients. For certain patients, simple LAVH may be enough to avoid laparotomy, but in others with very poor vaginal accessibility the only alternative to laparotomy is to carry out total hysterectomy exclusively via the laparoscopic route. The important role played by vaginal accessibility when establishing the indication for total laparoscopic hysterectomy has already been underlined in certain series in which nearly half the patients who underwent laparoscopic hysterectomy were nulliparous.

Poor vaginal accessibility in majority of patients is also the reason why, despite the use of laparoscopy, some centers use uterine volume reduction procedures.

When the use of reduction techniques was essential, several procedures including morcellation, bivalving, coring, were combined. For these patients, laparoscopic surgery should not be considered 'a waste of time' but rather as the only solution to enable them to avoid laparotomy.

The indications for abdominal hysterectomy are those that constitute the contraindication for vaginal hysterectomy. Laparoscopic vaginal hysterectomy modifies the contraindication since tissue dissection and mobilization is initiated intra-abdominal as elucidated by Garry and Reich.¹⁰ There is also diversity in the quality of literature on the subject. The main variables with regard to the subject matter include the number of patients in the trial, withdrawal of cases, exclusion of cases, blinding if the study, local medical care practice, the use of prophylactic antibiotic treatment and follow-up failure within the study period become important factors.

A retrospective observational comparing LAVH, TAH and VH was carried out. Many of the laparoscopic vaginal hysterectomies were converted to abdominal hysterectomy. The evaluate study concluded that although it could be considered that such conversions represented prudent surgery it was felt that on the balance they represented a failure of planned procedure and should be considered as major complications.⁷ Laparoscopic hysterectomies particularly TLH are fast trying to fulfill the goals of every pelvis surgeon of providing safe easily performed procedure which provides significant satisfaction to the patient. A great proportion of hysterectomy are performed totally laparoscopically and are much less traumatic than vaginal, LAVH or open abdominal hysterectomies according to some studies. The benefits include reduced blood loss, reduced risk of surgical injuries, less pain and early mobilization. Studies indicate the potential of TLH to become the method of choice over the currently popular laparoscopically assisted vaginal hysterectomy.^{3,8}

In total laparoscopic abdominal surgery; different levels of injury have been reported, including bladder, ureter, bowel and vascular injuries.⁵ These results underline the fact that, this is a difficult operation requiring considerable skill in laparoscopic surgery.

Recently the evaluate study concluded that LAVH was associated with a significantly higher rate of major complications than abdominal total hysterectomy (TAH). LAVH took longer to perform but was associated with less pain, quicker recovery and better short-term quality of life measures. In contrast to this the study by Lumsden et al did not show any difference in postsurgery recovery, satisfaction with the outcome of the operation or quality of life four weeks postoperatively between TAH and LAVH. The study concluded that although it could be considered that such conversions represented prudent

surgery it was felt that on the balance they represented a failure of planned procedure and should be considered as major complications.³

Analysis of studies, show that complications usually arise during the learning curve of the new procedure. A publication from Finland analyzing prospectively 10110 hysterectomies performed nationwide revealed that with increasing experience of surgeries performed by the surgeon, the number of complications was significantly decreased.¹¹ This can be attributed to the performance of the same standardized steps every time in the surgeries makes the surgeon well-versed with the technique and decreases the rate of complications.

The average intraoperative blood loss for laparoscopic assisted vaginal hysterectomy is about 200 ml. The mean operative time is two hours. The postoperative complication rate has been quoted to be about 5.9%.⁹ Through the use of standardized procedural steps TLH and assisted vaginal hysterectomy can become an easy procedure which can be mastered by many. The salient features of the steps include use of a combination of regional and general anesthesia, ergonomic port, patient and surgeon positioning, proper retraction of the uterus, appropriate sharp dissection and the prudent of energized equipment, including bipolar forceps and harmonic.⁷

There is compelling need for continuous refining of the technique of hysterectomy to avoid traumatic, hemorrhagic and infective morbidity, speedy recovery with minimal hospitalization, early return to work and therefore providing quality health care.

The average total LAVH cost is \$7,500 to the patients, in the West, if use of disposable instruments is limited and the use of bipolar cautery is encouraged instead of sutures or Endo GIA that are more expensive.¹⁶

Minimal access hysterectomy is a recently introduced technique and even though the complications associated with this operation have already been addressed, larger studies, both with respect to the number of patients and the length of follow-up, are necessary so that the real risk of complications can be properly assessed.

In spite of the dramatic increase of LAVH procedure since its first description in 1989, its value remained controversial. Advocates encourage LAVH as a procedure for conversion of abdominal hysterectomy into a vaginal one. Indeed vaginal hysterectomy entails fewer complications, shortened hospital stay, more rapid recovery and return to normal activity. This is in addition to the better cosmetic appearance of the laparoscopic scar if compared to the laparotomy in many studies. However, critics point out that LAVH requires longer operative time and is more expensive.

Studies show that LAVH could be done in a wide variety of indicated cases of hysterectomy. Other diagnoses that are difficult to be made clinically such as adenomyosis, endometriosis, endometrial hyperplasia, cervical intraepithelial

neoplasm, chronic cervicitis, and the nature of the ovarian neoplasm are easily confirmed during TLH/LAVH.

Years after the first case of TLH and laparoscopic assisted hysterectomy was published; this operative procedures are performed in relatively few centers worldwide. The reasons for this restriction can be unavailability of a formal curriculum, lack of standardization of procedures and training as well as the cost of infrastructure. Therefore, a proper training program with a standardized procedure is necessary for the education of the resident and fellow doctors to qualify them for coping with the possible difficulties encountered during this surgery. The cost of equipment and disposables needs to come down as well.

It is important for a gynecological surgeon to add TLH to his surgical armamentarium on condition that he is well-familiar with the performance of LAVH.¹³ In turn, for a surgeon to be proficient in LAVH he ought to be a good vaginal surgeon capable of performing vaginal hysterectomy for non-descend uterus. So much so, at any stage if difficulty are encountered, the surgeon must be able to convert TLH to laparoscopic hysterectomy (LH) or LAVH, and seldom a surgeon may be called upon to complete hysterectomy by the abdominal route (the default operation).^{14,17}

In summary, laparoscopic hysterectomy and laparoscopic assisted vaginal hysterectomy are a safe route provided the surgeons are well-trained, because then the rate of complications is not higher than that observed with laparotomy or by the vaginal. It is important to indicate that conversion to any mode of hysterectomy from another, should be considered as a dictate of safety and efficacy rather than a surgical complication.

The American college of obstetricians and gynecologists guidelines state that the route of hysterectomy should depend on the patient's anatomy and surgeon's experience.¹²

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