

Editorial

Reducing the Rate of Abdominal Hysterectomies: Experience From a UK University Teaching Hospital

Hysterectomy is the most commonly performed major gynecologic procedure. Data from the United Kingdom suggest a hysterectomy rate of 42 per 100 000 population. This compares with higher rates in Canada (108/100 000), the United States (143/100 000), Australia (165/100 000), and Germany (236/100 000). The surgical approach to hysterectomy is categorized into 4 broad categories: abdominal (AH); vaginal (VH); laparoscopic (LH), in which part or all of the procedure is performed laparoscopically; and robot-assisted hysterectomy (RH). Harry Reich reported the first total laparoscopic hysterectomy in 1993, and RH was introduced in the United States in 2005 [1].

In 1995, approximately 67% of the hysterectomies performed in the United Kingdom for benign indications were performed via the abdominal route. Of the rest, 3% were laparoscopic, and 30% were vaginal. Recent data indicate that the AH rate in the United Kingdom in 2012 was still above 50%. The United States presents a similar picture, with AH rates at 65% in 1998 and 54.2% in 2010. Other countries including Taiwan and Denmark have reported similar figures, whereas Finland has achieved an impressive reduction in their AH rates from 58% to 24% between 1996 and 2012 [1,2].

Which Route Is the Best Route?

Several factors influence the selection of the route for hysterectomy. These include the surgeon's experience, the indication of the operation, the size of the uterus, and the anticipation of pelvic disease such as adhesions or endometriosis. The advantages for patients undergoing hysterectomies performed by minimally invasive gynecologic surgery (MIGS techniques [ie, VH and LH]) are well established. In the same Cochrane review, Aarts et al [2] reported that LH appears to have no advantage over VH. One of the largest randomized clinical trials included in this Cochrane report, the eVALuate trial, showed higher rates of complications with LH. However, the study's methodology has since been heavily criticized, and the eVALuate study is not useful for any global decision making about the "best type" of hysterectomy either clinically or economically [2]. Some authors advocate their preference of LH over VH for a number of reasons. The laparoscopic approach permits safe simultaneous adnexal surgery

and the diagnosis and treatment of other pelvic pathology such as adhesions and endometriosis. Laparoscopic hysterectomy may have lower intraoperative blood loss, less postoperative pain, and a slightly faster recovery [3]. Further controversy surrounds the comparison between LH and RH. A recent Cochrane review concluded that complication rates between total RH and total LH are similar; total RH procedures take longer but may be associated with a shorter stay in the hospital [4]. Cost analysis studies have produced slightly varied estimations. Most of them agree that AH is the most costly of all routes. This is followed by RH, LH, and VH in order of decreasing cost per patient [5].

Wirral University Teaching Hospital Experience

Wirral University Teaching Hospital (WUTH) is a tertiary referral center in North West United Kingdom for patients with deeply infiltrating endometriosis. The unit is equipped with a da Vinci robotic system (Intuitive Surgical, Inc., Sunnyvale, CA) and performs robotic, laparoscopic, and vaginal gynecologic surgery for women with benign conditions as well as patients with early-stage endometrial and cervical cancer. Advanced-stage and ovarian cancers are referred for appropriate treatment to the regional gynecologic cancer center as per UK national guidance. Total laparoscopic hysterectomy was introduced at WUTH in 2008, and robotic gynecologic surgery was introduced in 2013.

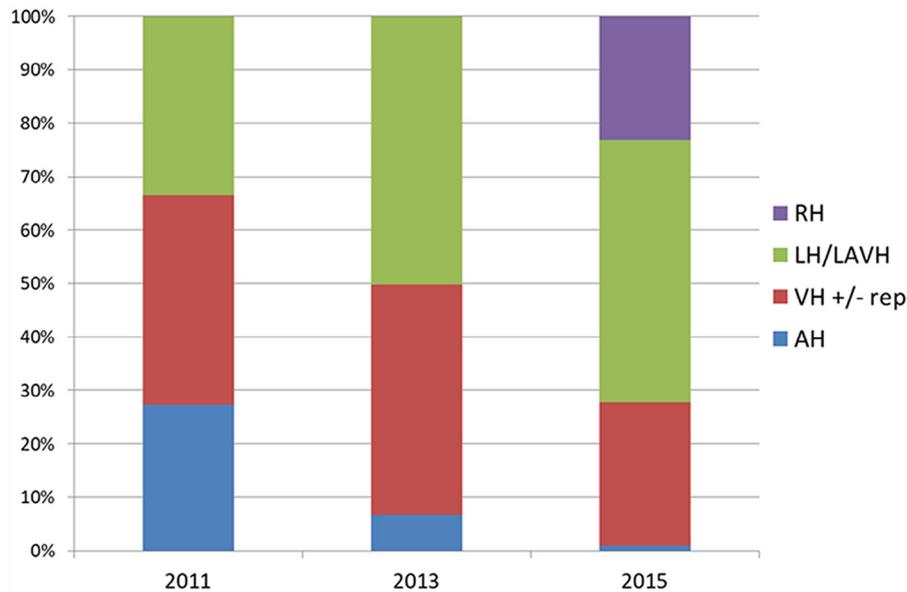
For the purposes of the present study, we examined the hospital's medical records and recorded the route by which elective hysterectomies were performed between 2011 and 2015. **Figure** and **Table** summarize our findings. We observed a drop in AH from 27.3% in 2011 to 6.6% in 2013. The implementation of robotics in 2013 and increasing experience in laparoscopic surgery contributed to further reducing AH rates to 0.9% in 2015.

How Can We Reduce the Rates of AH?

The clinical, financial, and social burden of high rates of non-MIGS hysterectomies is now recognized worldwide. In Finland, the FINHYST study reported rates of AH, VH, and LH at 58%, 18%, and 24%, respectively, in 1996.

Fig

The types of hysterectomies performed at WUTH in calendar years 2011, 2013, and 2015. LH/LAVH = laparoscopic hysterectomy/laparoscopically assisted vaginal hysterectomy; VH ± rep = vaginal hysterectomy ± prolapse repair.



Identifying the need to reduce the rate of AH, the Finnish gynecologic surgeons collaborated in clinical practice and training on a national level. A unified system of data collection for research and quality control was put together. Vaginal and laparoscopic surgery was promoted through national meetings, and an enhanced training programme was provided. As a consequence of this nationwide sharing of knowledge and expertise, the LH and VH rates increased to 36% and 44%, respectively, and AH dropped from 58% to 24% in 2006 [6]. Within a decade, the previous dominance of AH was surpassed by MIGS techniques. This outcome was similar in all types of public hospitals, including university, central, and local units [7]. Therefore, the FINHYST study represents one of the most impressive national learning curve studies in gynecologic surgery.

In the United States, a significant reduction of AH was observed over a period of 20 years. This followed the progressive introduction of laparoscopic and robotic techniques and the development of formal and structured subspecialty training in advanced MIGS promoted by the American Association of Gynecologic Laparoscopists (AAGL). Following a similar model, in 2009 the Royal College of Obstetricians and Gynaecologists, working closely with the British Society of Gynaecological Endoscopy, introduced a structured training program in advanced laparoscopic surgery (<https://www.rcog.org.uk/en/careers-training/specialty-training-curriculum/atms/atms-advanced-laparoscopic-surgery-for-the-excision-of-benign-disease/>).

On a regional level, in Southern California, Andryjowicz and Wray [6] reported a reduction in AH rates from 62% to 22% between 2005 and 2010. This was achieved by implementing a structured educational intervention across 12 different hospitals. The program involved didactic, hands-on simulation training; the use of social media (YouTube); and expert mentoring. Simultaneously, the authors observed significant cost savings.

Table

The Types of Hysterectomies Performed at Wirral University Teaching Hospital in Calendar Years 2011, 2013, and 2015

	2011, % (n) (n = 209)	2013, % (n) (n = 199)	2015, % (n) (n = 234)
RH	—	—	23.1 (54)
LH/LAVH	33.4 (70)	50.2 (100)	49.2 (115)
VH ± rep	39.3 (82)	43.2 (86)	26.8 (63)
AH	27.3 (57)	6.6 (13)	0.9 (2)

AH = abdominal hysterectomy; LH/LAVH = laparoscopic hysterectomy/laparoscopically assisted vaginal hysterectomy; RH = robotic hysterectomy; VH ± rep = vaginal hysterectomy ± prolapse repair.

WUTH Recommendations

On a local level, we believe that a number of factors contributed to achieving a less than 1% AH rate at WUTH. Based on our observations, we propose the following recommendations:

1. Employing/naming clinical leaders in MIGS. Each leader promotes training in his or her field, be that robotic,

- laparoscopic, or vaginal, and champions an ethos of MIGS within the department.
2. Employing/naming groups of gynecologic surgeons, each specialized in his or her own MIGS field within the department. Each group, via planned joint operating, supports its own members (when operating complex cases for example) but also other colleagues who lack the expertise to provide advanced MIGS techniques.
 3. Appropriate patient selection and allocation of cases to the appropriate specialist group of MIG surgeons (pooling of cases). For example, at WUTH, the majority of patients who require a hysterectomy together with prolapse repair receive a VH. The majority of super obese (body mass index >50) patients who require hysterectomy for early-stage endometrial or cervical cancer receive RH because of the superior ergonomics provided by the robot.
 4. Maintaining a healthy number of trainees and fellows in gynecologic surgery who function both as primary surgeons under direct or indirect supervision as well as experienced assistants in complex cases.
 5. Employing/training specialist gynecologic surgery nurse assistants who function as very experienced surgical assistants.
 6. Using modern specimen extraction techniques, such as in-bag morcellation and extracorporeal knife morcellation with the use of plastic ring abdominal wall retractors/protectors.
 7. Maintaining a robust outpatient MIGS service. The service provides alternatives to hysterectomy treatments, including second-generation ablative techniques, hysteroscopic morcellation techniques, and counseling and administration of contraception including the levonorgestrel-releasing intrauterine system.
 8. Appropriate counseling of patients on the benefits of MIGS and setting realistic expectations for complex cases.

Conclusion

Over the last decade, there has been strong educational emphasis from the industry supporting RH and LH with a multitude of workshops, courses, and seminars, whereas vaginal hysterectomy perhaps has not received the credit it deserves. Given the development of laparoscopic surgery, several randomized clinical trials that have been published in the past, including the eVALuate trial, are now outdated. In our view, efforts on a global basis should not concentrate on proving whether RH, LH, or VH are better than the other. In safe, well-trained hands, these are all safe techniques, and all offer the patient the well-known benefits of MIGS. In our view, the goal should be to train an adequate number of gynecologists who will be able, in a collaborative manner, to use all MIGS techniques, including the robot where available, and thus drive down the rates of AH globally.

We agree with Professor Jon Einarsson, president of the AAGL, who recently wrote that a 90% MIGS hysterectomy

rate is a realistic goal for the near future [8]. We achieved a less than 1% AH rate at WUTH. AH is not obsolete yet; appropriate patient selection, counseling, and individualization of care are of paramount importance. Professional bodies such as the AAGL, British Society of Gynaecological Endoscopy, European Society of Gynaecological Endoscopy, and others must continue to drive the implementation of policies and training programs and the nationwide sharing of expertise. The development of national hysterectomy registry databases similar to that existing in Finland may also contribute to reducing hysterectomy-associated morbidity worldwide.

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Vasileios Minas, PhD, MRCOG*

Department of Obstetrics & Gynaecology, Countess of Chester Hospital, Chester, United Kingdom

*Corresponding author: Vasileios Minas, PhD, MRCOG, Department of Obstetrics & Gynaecology, Countess of Chester Hospital, Chester CH2 1UL, United Kingdom.

E-mail: billminas@gmail.com

Nahid Gul, FRCOG, Thomas Aust, MD, MRCOG

David Rowlands, FRCOG

Department of Obstetrics & Gynaecology, Wirral University Hospital, Wirral, United Kingdom

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