Minimally Invasive Surgery for the Obese Patient Among the Spectrum of Gynaecologic Surgery—A Surgical Viewpoint

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ABSTRACT
The prevalence of obesity has increased, achieving an epidemic status. Obesity has surgical and medical implications on the health of a woman. A minimally invasive surgical approach has several advantages and is considered the preferred approach for various procedures in obese women. The spectrum of gynaecologic surgical care spans over three main domains: benign gynaecologic surgery, reconstructive pelvic surgery, and gynaecologic cancer surgery. In this viewpoint, we chose a signature procedure for each main domain to compare minimally invasive surgery (MIS) trends for obese patients across all domains. Discrepancy was found in minimally invasive surgical trends for obese patients across different gynaecologic surgical domains. Fellowship training or maintaining high surgical volume might help to bridge this gap in the domain of benign gynaecologic surgery and improve quality care offered to obese patients.
The World Health Organization defines obesity as a body mass index (BMI) of ≥ 30 Kg/m². The prevalence of obesity is high and is on the rise. According to the latest data from the Centers for Disease Control and Prevention, the prevalence of obesity is 39.8%. Obesity affects the overall health of women with adverse implications medically and surgically. Due to the rapidly accelerating rate of obesity reaching an epidemic status, it is expected that the number of obese women undergoing elective and emergency surgical procedures will rise. It is, therefore, essential to plan surgical strategies that alleviate risks associated with obesity with consistency among all gynaecologic subspecialties. The spectrum of gynaecologic surgical care spans over three main domains: benign gynaecologic surgery, reconstructive pelvic surgery, and gynaecologic cancer surgery. Our objective in this viewpoint is to summarize recent studies that looked at a minimally invasive surgical (MIS) approach for obese patients among these three domains.

### Surgical Implications of Obesity

Obese women undergoing surgery require particular attention before, during, and after surgery. Preoperative counselling and evaluation is critical in obese women scheduled for gynaecologic surgery with due consideration of comorbidities and anaesthesia planning. Surgical decision making regarding open or minimally invasive techniques for gynaecological surgeries in obese women is critical as it affects perioperative outcomes. Previous studies indicate an increased risk of bleeding and surgical-site infections with abdominal hysterectomy (TAH) as compared to laparoscopic (LH) or vaginal hysterectomy (VH). On the other hand, vaginal route for hysterectomy can pose technical challenges in obese patients. Postoperative care, like ambulation, respiratory hypoxemia, thromboembolism prophylaxis, analgesia, and wound care need additional attention in obese women.

### Minimally Invasive Surgery (MIS) in Obese Patients

The American Association of Gynaecologic Laparoscopists (AAGL) recommends a vaginal or laparoscopic route for hysterectomies performed for benign indications. Benefits of minimally invasive surgery for hysterectomy has been established regardless of the weight of the patient. Borahay et al., in their retrospective study that included 208 obese women, found that robotic and laparoscopic hysterectomy were associated with a lower estimated blood loss during surgery (p<0.01) and shorter hospital stay (p<0.001) compared with TAH. Similar results were observed for total abdominal hysterectomy (TAH) and laparoscopically-assisted vaginal hysterectomy (LAVH) compared to total vaginal hysterectomy (TVH) and total laparoscopic hysterectomy (TLH) respectively. These findings highlight the advantages of MIS in obese women.
reported by Shah et al. in their large sample of 55,409 women who underwent hysterectomy for benign diseases and found that, despite the longer operative time for LH compared to AH or VH, there were no increased odds of wound infection after LH in association with higher BMI (p=0.13). They also reported that women with a higher BMI had increased odds of readmission after TAH compared to LH or VH (p=0.009). A study comparing LH and TAH compared to LH or VH found that, despite the longer operative time for LH compared to AH or VH, there were no increased odds of wound infection after LH in association with fewer postoperative complications and a reduced hospital stay as compared to VH. A reduced length of hospital stay has a potential implication in cost saving. These consistent findings were reinstated by a systematic review that concluded that LH and VH are associated with fewer postoperative complications and a reduced hospital stay as compared to the abdominal approach in obese patients. Therefore, feasibility of LH or VH should be contemplated in obese patients. The current data regarding the conversion rate of a laparoscopic procedure to a laparotomy as a result of obesity is inconsistent, but conversion rates tend to decrease over time with surgical experience.

In this viewpoint, we chose a signature procedure for each main domain—benign hysterectomy (benign gynaecologic surgery), sacrocolpexy (reconstructive pelvic surgery), and hysterectomy for uterine cancer (gynaecologic cancer surgery)—to compare MIS trends for obese patients across all domains.

We chose sacrocolpexy as a signature procedure for reconstructive pelvic surgery based on a recent recommendation by the American Urogynecologic Society that requires surgeons performing sacrocolpexy to complete a female pelvic medicine and reconstructive surgery (FPMSRS) fellowship, and those without the fellowship need additional documentations to ascertain knowledge, skills, and experience. Surgeons are also required to possess privileges for open sacrocolpexy before requesting to practice a minimally invasive approach.

On the other hand, we chose hysterectomy for uterine cancer as the signature procedure for gynaecologic cancer surgery as Wright et al. observed that gynaecologic oncologists performed 90.9% (95% confidence interval [CI]; 90.1–91.7) of the hysterectomies for endometrial cancer.

Regarding the benign gynaecologic surgery domain, a study that included 4894 women who underwent sacrocolpexy between 2005–2013 showed that the rate of laparoscopic sacrocolpexy was similar in patients with an ideal body weight (72.9%), overweight (72.7%), and moderately obese (71.1%), with a slightly more pronounced trend in the minimally invasive approach in morbidly obese patients (76%) (Fig. 3).

Similarly, in the reconstructive pelvic surgery domain, obesity does not appear to affect the incorporation of the minimally invasive approach in the surgical practice. A study that included 17,285 patients as compared to normal weight patients, while the rate of LH remained constant between 47% and 50% in all age groups (Fig. 1).

On the contrary, in regard to the gynaecologic cancer surgery domain, a recent study that queried the NSQIP data from 2005–2013 evaluating 7199 hysterectomies for uterine cancer stated that the most common route of hysterectomy was TLH with an increase from 15% in 2008 to 64% in 2013. TLH was the most common procedure performed irrespective of BMI (Fig. 2).

Surgical volume is directly related to outcomes. In a study by Wallenstein et al., it was found that women who were
operated on by high-volume surgeons (>14.10 procedures per year) were 25% less likely to experience a complication. While women undergoing a surgical procedure at a high-volume centre (>105 laparoscopic hysterectomies per year) were 18% less likely to experience a complication.20 Similar results were observed by Ruiz et al., with overall complication rates for patients treated by very low-volume surgeons (1 procedure per year) at 32.0% compared to 9.9% for those treated by other surgeons (p<0.001) (adjusted relative risk 1.97, 95% CI; 1.86–2.09).20

A survey study that was published in 2016 found that surgical volume for fellowship in minimally invasive gynecologic surgery (FMIGS)-trained gynaecologists is significantly higher than those of non-fellowship-trained gynaecologists.21 Also, gynaecologic surgeons who have a high surgical volume are more likely to feel comfortable offering a minimally invasive hysterectomy to their patients.22

By critically comparing these national trends, it seems that benign gynaecologic surgery is lagging behind other gynaecologic surgical domains. There are reasons to believe that maintaining a high surgical volume can increase the proportion of the MIS surgical approach for obese women. Advanced fellowship training or maintaining specific volume requirements for hospital privileges could be the next steps in this line of research.

CONCLUSION

The overall benefits of minimally invasive surgery in obese patients is well documented. Critical review of the published data showed a positive trend toward the MIS approach for obese patients in the fields of gynaecologic oncology and female pelvic medicine and reconstructive surgery, while benign gynaecologic surgery might be lagging behind. Fellowship training or maintaining high surgical volume might improve the quality of care offered to obese patients in the domain of benign gynaecologic surgery.21

REFERENCES


The authors have no conflicts of interest to disclose.