

# Minimally invasive surgery in gynecology. Reconciling the past with a view to the future

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In recent years, in the surgical techniques of gynecology, the improvement of care has taken place after the active introduction of innovative research methods (magnetic resonance imaging, spiral computed tomography). More specifically, the term “minimally invasive” in surgery means, first, minimal trauma accessing a pathological process requiring elimination or correction; second, minimal intervention within the intraperitoneal environment; and finally, maintaining or restoring the correct anatomical and topographical relationships of the pelvic structures [1].

Hysterectomy is the world’s second-most common gynecological surgical procedure. There are three main surgical approaches: total abdominal hysterectomy (TAH), vaginal hysterectomy (VH), and total laparoscopic hysterectomy (TLH). With technological progress, these procedures are more frequently performed using a minimally invasive technique, laparoscopy, and thanks to the use of diathermy bipolar vascular closure systems, the oldest of the surgical techniques, transvaginal removal of the uterus, is experiencing a renaissance. Since 2016, numerous activities have been initiated with the participation of the Polish Society of Gynecology and Obstetrics to increase the role of minimally invasive techniques in gynecology and gynecological oncology. Training programs were created (such as the LAP-GYN certified training path), which after a few years brought success in popularizing minimally invasive methods in gynecology. Referring to the data of the National Health Fund on the number and methods of uterine excision, initial progress was obtained in the number of uteri removed transvaginally and laparoscopically. In 2016, 31,118 uterus removals were performed, of which 27,099 (90%) were transabdominal, only 2019 (6.5%) laparoscopically, and 1,113 (3.5%) transvaginally. The National Health Fund data show a significant increase in the number of minimally invasive procedures

performed two years after the dissemination of these methods began. In 2018, approximately 32,000 hysterectomies were performed, of which 3,783 (12%) were transvaginal [2].

According to the most recent ACOG recommendations, minimally invasive methods should always be used first. Vaginal hysterectomy is the method of choice whenever possible. Laparoscopic hysterectomy is the preferred alternative to open abdominal hysterectomy for patients in whom vaginal hysterectomy is not indicated or not possible.

In the case of each patient, the individual clinical situation should be considered, and it should be determined which hysterectomy route will most safely facilitate the removal of the uterus and optimize the patient’s treatment outcomes [3]. The choice of hysterectomy route for non-oncological reasons may depend on the size and shape of the vagina and uterus. The other point is surgical access to the uterus (*e.g.*, pelvic adhesions); the extent of ectopic disease; the need for parallel procedures; and the surgeon’s training and experience are important. It is required hospital technology, facilities, and support; determining whether the operation is urgent or scheduled; and determining the patient’s preferences for the procedure [3, 4]. Undoubtedly, with the growing experience in vaginal hysterectomy, a volume greater than 300 cm<sup>3</sup> is no longer a contraindication to transvaginal hysterectomy. In the case of significant uterine hypertrophy, it is necessary to use one or more techniques to reduce the size of the uterus [5]: hemisection, trachelectomy, wedging, coring, and myomectomy.

The use of minimally invasive laparoscopic procedures in gynecological surgery is becoming more popular due to faster convalescence, shorter hospital stays, and a lower risk of peri- and postoperative complications. Despite the significantly longer method implementation path compared to TVH, the ability to complete the operation laparoscopi-

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cally increases with experience. There are some clinics that have argued that this plateau occurs in the 20<sup>th</sup>, 25<sup>th</sup>, or 75<sup>th</sup> patients [6]. Despite the increasing number of procedures, including laparoscopic hysterectomy (LH), there is still a risk of complications associated with the technique used. One of the most intriguing is ureteral injury, with a worldwide incidence of less than 1% for laparoscopic hysterectomy and still higher than for the vaginal technique (< 0.9%) [7].

We have made huge milestones through the increased availability of surgical devices and instruments, a significant increase in the awareness of gynecologists, and the possibility of participating in training in minimally invasive surgical techniques in gynecology. Thanks to the use of laparoscopic procedures in gynecology and gynecological oncology, many patients do not have to deal with the problems of trans-abdominal operations. The use of minimally invasive methods is associated with plenty of benefits for the patient: shorter procedure times, less postoperative pain, and often less suture material left in the patient's body. It also has smaller scars or, in the case of TVH, no scars. For the healthcare system, this means lower hospitalization costs and lower system costs. And unquestionable patient satisfaction is the pinnacle of minimally invasive surgery treatment [8].

Recently, for three days, from 3.11–5.11.2022, we had the pleasure of participating in the 1<sup>st</sup> International Congress of Operative Gynecology, which took place in Katowice [9]. A virtual operating room was created where operations were shown live, and practical experience was shared. A group of outstanding foreign and domestic experts showed how to operate cheaply, effectively, and, above all, safely.

In conclusion of the considerations on minimally invasive surgical techniques in gynecology, we would like to encourage gynecologists to actively participate in numerous programs, courses, and educational paths. Although

laparoscopy remains the most popular minimally invasive surgical technique, technological progress allows the use of other methods as well. More and more boldly, the world looks towards surgical robots or surgical procedures using minimally invasive techniques through natural body orifices.

### Conflict of interest

All authors declare no conflict of interest.

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