



OPEN ACCESS

EDITED AND REVIEWED BY
Simcha Yagel,
Hadassah Medical Center, Israel

*CORRESPONDENCE
Laurentiu Pirtea
✉ laurentiupirtea@gmail.com

RECEIVED 31 January 2024
ACCEPTED 06 February 2024
PUBLISHED 22 February 2024

CITATION
Pirtea L (2024) Editorial: Minimally invasive
surgery in benign gynecological pathology.
Front. Med. 11:1379505.
doi: 10.3389/fmed.2024.1379505

COPYRIGHT
© 2024 Pirtea. This is an open-access article
distributed under the terms of the [Creative
Commons Attribution License \(CC BY\)](#). The
use, distribution or reproduction in other
forums is permitted, provided the original
author(s) and the copyright owner(s) are
credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted
which does not comply with these terms.

Editorial: Minimally invasive surgery in benign gynecological pathology

Laurentiu Pirtea*

Department of Obstetrics and Gynaecology, Victor Babes University of Medicine and Pharmacy, Timisoara, Romania

KEYWORDS

laparoscopy, gynecology, robotic surgery, hysteroscopy, minimally invasive surgery

Editorial on the Research Topic

Minimally invasive surgery in benign gynecological pathology

In the ever-evolving landscape of medical science, one particularly remarkable advancement has changed the surgical approach of the abdominal wall—minimally invasive surgery.

This revolutionary approach has transformed the field of gynecology by offering safer, less painful and more effective alternatives to traditional open surgery. In this editorial, we will explore the significance of minimally invasive surgery in treating benign gynecological conditions and the positive impact it has on patients' quality of life after complex surgery.

Traditionally, benign gynecological pathologies such as uterine fibroids, ovarian cysts, endometriosis and pelvic adhesions often required open abdominal surgeries, which involved large incisions, extended hospital stay and prolonged recovery periods. These procedures also implied a higher risk of complications, increased pain and emotional distress for patients.

The philosophy of minimally invasive surgery is performing complex surgery for various pathologies through small incisions. This can be achieved by laparoscopy, robotic and vaginal surgery. In the spirit of reducing the surgical related trauma the use of natural orifices such as the vagina to approach the pelvis is very effective. [Xie et al.](#) showed that surgery for ovarian cyst can be performed by transvaginal natural orifice endoscopic surgery as a day-care procedure. [Mei et al.](#) performed the comparison of gases and traditional robot-assisted transvaginal natural orifice transluminal endoscopic surgery in hysterectomy showing that there is still room for reducing the trauma associated to minimal invasive surgery.

One of the most common benign gynecological conditions treated using minimally invasive surgery is uterine fibroids. This represents the most common benign disease of the uterus, affecting up to 68.6% women (1) generating symptoms like heavy menstrual bleeding, pelvic pain, and infertility. Minimal invasive surgery can be used to perform either hysterectomy or myomectomy (1–6). [Dumitrașcu et al.](#) performed a review showing the importance of surgical technique when performing laparoscopic myomectomy. This approach is suitable for complex cases also, and techniques to minimize blood loss during surgery can be applied (7–13) [Balulescu et al.](#) presented the results of a clinical trial that investigated the efficiency of temporary occlusion of the hypogastric artery during laparoscopic myomectomy (9). [Hertling et al.](#) demonstrated the benefit of uterine artery embolisation before laparoscopic myomenucleation of large fibroids.

Pelvic floor disorders that require complex surgery can also be approached by minimal invasive surgery. Ciortea et al. performed a systematic review and meta-analysis investigating the best approach for the treatment of vaginal vault prolapse and showing the benefits of minimal invasive surgery.

Hysteroscopy is another form a minimal invasive surgery (14–18) and the spectrum of indication for this type of surgery is developing continuously. Teng et al. published their results with hysteroscopic curettage in the treatment of type II cesarean scar pregnancy. Liu et al. investigated the use of hysteroscopy vs. dilation and curettage for the assessment of the endometrium.

The advantages of minimally invasive surgery extend beyond the operating room. Patients experience shorter hospital stays, reduced postoperative pain, faster recovery, and improved cosmetic outcomes due to smaller incisions. Furthermore, the risk of postoperative complications, such as infection and blood loss, is significantly lower compared to traditional open surgeries (19–23). King et al. demonstrated that enhanced recovery after surgery alleviates neutrophil to lymphocyte ratio, correlates with lower pain score and faster recovery.

Hence, minimally invasive surgery leads to better overall patient satisfaction. Women who undergo these procedures report improved quality of life, as they can return to their daily activities sooner and with less discomfort. This is particularly crucial for those who are balancing their careers, families, and personal lives.

While *Minimally invasive surgery in benign gynecological pathology* has transformed the field, it is essential to acknowledge that these techniques require specialized training and experience. Surgeons must be skilled in the use of laparoscopic and robotic-assisted equipment to ensure optimal outcomes for patients. Therefore, continued investment in surgical education and technology is paramount to further advancing the field.

In conclusion, *Minimally invasive surgery in benign gynecological pathology* has ushered in a new era of patient-centered care. It has replaced the traditional open surgeries with

less invasive, safer, and more effective options. Women facing conditions such as uterine fibroids, ovarian cysts, endometriosis, and pelvic adhesions can now benefit from quicker recoveries, shorter hospital stays, and improved overall wellbeing. As we continue to advance in the field of gynecology, the integration of minimally invasive techniques will undoubtedly play a pivotal role in empowering women to lead healthier, more fulfilling lives.

Author contributions

LP: Writing—original draft, Writing—review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

- Giuliani E, As-Sanie S, Marsh EE. Epidemiology and management of uterine fibroids. *Int J Gynecol Obstetr.* (2020) 149:3–9. doi: 10.1002/ijgo.13102
- Thubert T, Foulot H, Vinchant M, Santulli P, Marzouk P, Borghese B, et al. Surgical treatment: Myomectomy and hysterectomy; Endoscopy: A major advancement. *Best Pract Res Clin Obstet Gynaecol.* (2016) 34:104–21. doi: 10.1016/j.bpobgyn.2015.11.021
- Bhave Chittawar P, Franik S, Pouwer AW, Farquhar C. Minimally invasive surgical techniques versus open myomectomy for uterine fibroids. *Cochrane Database Syst Rev.* (2014) CD004638. doi: 10.1002/14651858.CD004638.pub3
- Agdi M, Tulandi T. Minimally invasive approach for myomectomy. *Semin Reprod Med.* (2010) 28:228–34. doi: 10.1055/s-0030-1251479
- Neis KJ, Zubke W, Fehr M, Römer T, Tamussino K, Nothacker M. S3-leitlinie: Hysterektomie bei benignen Erkrankungen der Gebärmutter. *Dtsch Arztebl Int.* (2016) 113:242–9.
- Marin-Buck A, Karaman E, Amer-Cuenca JJ, Lisón JE, Török P, Karaaslan O, et al. Minimally invasive myomectomy: an overview on the surgical approaches and a comparison with mini-laparotomy. *J Investig Surg.* (2021) 34:443–50. doi: 10.1080/08941939.2019.1642422
- Kuo HH, Lin WL, Pai AHY, Yen CF. Laparoscopic triple-tourniquet constriction: a convenient way for minimizing blood loss during myomectomy. *J Minim Invasive Gynecol.* (2022) 29:1219–20. doi: 10.1016/j.jmig.2022.08.009
- Serednicki WA, Holówko W, Major P, Malczak P, Pędziwiatr M. Minimizing blood loss and transfusion rate in laparoscopic liver surgery: a review. *Wideochir Inne Tech Maloinwazyjne.* (2023) 18:213–23. doi: 10.5114/wiitm.2022.124088
- Balulescu L, Brasoveanu S, Pirtea M, Balint O, Ilian A, Grigoras D, et al. The efficiency of a uterine isthmus tourniquet in minimizing blood loss during a myometomy—A prospective study. *Medicina.* (2023) 59:1979. doi: 10.3390/medicina59111979
- Yuan P, Bai C, Yu F, Ge Z, Wang M, Tan H. Reducing blood loss during laparoscopic myomectomy using a tourniquet loop around the lower uterine segment. *Fertil Steril.* (2023) 119:333–5. doi: 10.1016/j.fertnstert.2022.10.028
- Kongnyuy EJ, Wiysonge CS. Interventions to reduce haemorrhage during myomectomy for fibroids. *Cochr Database Syst Rev.* (2014) 2014:CD005355. doi: 10.1002/14651858.CD005355.pub5
- Shah A, Palmer AJR, Klein AA. Strategies to minimize intraoperative blood loss during major surgery. *Br J Surg.* (2020) 107:e26–38. doi: 10.1002/bjs.11393
- Barbosa PA, Villaescusa M, Andres MP, Fernandes LFC, Abrão MS. How to minimize bleeding in laparoscopic myomectomy. *Curr Opin Obstet Gynecol.* (2021) 33:255–61. doi: 10.1097/GCO.0000000000000725

14. Hadisaputra W, Hani CAS, Putri NA. Patient safety in hysteroscopic procedure. *Gynecol Minim Invasive Ther.* (2022) 11:145–9. doi: 10.4103/gmit.gmit_144_21
15. Vilos GA, Abu-Rafea B. New developments in ambulatory hysteroscopic surgery. *Best Pract Res Clin Obstet Gynaecol.* (2005) 19:727–42. doi: 10.1016/j.bpobgyn.2005.06.012
16. Bosteels J, van Wessel S, Weyers S, Broekmans FJ, D'Hooghe TM, Bongers MY, et al. Hysteroscopy for treating subfertility associated with suspected major uterine cavity abnormalities. *Cochr Database Syst Rev.* (2018) 12:CD009461. doi: 10.1002/14651858.CD009461.pub4
17. Aghahosseini M, Ebrahimi N, Mahdavi A, Aleyasin A, Safdarian L, Sina S. Hysteroscopy prior to assisted reproductive technique in women with recurrent implantation failure improves pregnancy likelihood. *Fertil Steril.* (2012) 98:S4. doi: 10.1016/j.fertnstert.2012.07.015
18. Defieux X, Gauthier T, Menager N, Legendre G, Agostini A, Pierre F. Hysteroscopy: Guidelines for clinical practice from the French College of Gynaecologists and Obstetricians. *Eur J Obstet Gynecol Reprod Biol.* (2014) 178:114–22. doi: 10.1016/j.ejogrb.2014.04.026
19. Adamyant L V. Minimally invasive surgery in gynecologic practice. *Int J Gynecol Obstetr.* (2003) 82:347–55. doi: 10.1016/S0020-7292(03)00216-9
20. Truong M, Kim JH, Scheib S, Patzkowsky K. Advantages of robotics in benign gynecologic surgery. *Curr Opin Obstet Gynecol.* (2016) 28:304–10. doi: 10.1097/GCO.0000000000000293
21. Ingraham C, Makai G. Perioperative visits in minimally invasive gynecologic surgery. *Curr Opin Obstet Gynecol.* (2023) 35:316–20. doi: 10.1097/GCO.0000000000000883
22. Fuchs KH. Minimally invasive surgery. *Endoscopy.* (2002) 34:154–9. doi: 10.1055/s-2002-19857
23. Jaffray B. Minimally invasive surgery. *Arch Dis Child.* (2005) 90:537. doi: 10.1136/adc.2004.062760