

# Extraperitoneal Laparoscopy in Severe Intra-abdominal Adhesions: A Safe Alternative to Laparotomy

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## Abstract

Surgery in a frozen abdomen can be difficult and dangerous with a significant risk of visceral injuries. We report a case of a 26-year-old lady with chronic pelvic pain diagnosed to have large bilateral adnexal cysts on magnetic resonance imaging with normal tumor markers. She had previous two laparotomies for benign conditions. Laparoscopy was planned, but pneumoperitoneum could not be created due to dense intraperitoneal adhesions. Direct entry was done into the preperitoneal space followed by insufflation of gas in this space. Blunt and sharp dissection of this space was done without breaching the peritoneum to reach the adnexa. The adnexal cyst was found to be encysted collection due to adhesions from previous surgeries. Deroofing was done followed by the visualization of pelvic structures intraperitoneally. Extraperitoneal laparoscopy may be used as a safe alternative to laparotomy in patients with dense intra-abdominal adhesions with the advantage of faster postoperative recovery.

**Keywords:** Bowel injuries, extraperitoneal laparoscopy, intra-abdominal adhesions

## INTRODUCTION

Laparoscopy has become the preferred approach for benign gynecological surgeries by offering advantages over laparotomy such as smaller surgical scar, less postoperative pain, earlier return of bowel functions, faster recovery, and shorter hospital stay.<sup>[1,2]</sup>

Enhanced surgical expertise has resulted in laparoscopy being considered the safer approach as well. Chapron *et al.* conducted a meta-analysis involving 27 randomized controlled trials with 3611 women comparing laparoscopy and laparotomy for benign gynecological procedures. The risk of minor complications was 40% lower with laparoscopy than laparotomy, while the risk of major complications was similar.<sup>[3,4]</sup>

As per the royal college of obstetrics and gynecology, the rate of complications with laparoscopic procedures varies

between 1.0/1000 and 12.5/1000.<sup>[5]</sup> A Finnish study showed the incidence of major complications as 1.4/1000 procedures and included intestinal injuries (0.6/1000), urological injuries (0.3/1000), and vascular injuries (0.1/1000).<sup>[5,6]</sup>

Audebert and Gomel,<sup>[2]</sup> in their prospective study, found the incidence of periumbilical adhesions to be 0.68% in no previous surgery, 1.6% in previous laparoscopy, 19.8% in transverse suprapubic incision, and 51.7% in previous midline incision. Hence, previous laparotomy, particularly previous midline incision, predisposes to abdominal injuries especially bowel due intra-abdominal adhesions. In a review by Krishnakumar and Tambe,<sup>[4]</sup> nearly 30%–50% of bowel injuries and 13%–50% of vascular injuries were undiagnosed at the time of surgery, resulting in serious sequelae due to delayed diagnosis. Bowel injury is the third most common cause of death from a laparoscopic procedure, after major

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vascular injury and anaesthesia related complications, with a mortality rate of 2.5%–5%.<sup>[4]</sup> Therefore, avoiding bowel injury is of utmost concern when facing intra-abdominal adhesions. Through this case report, we aim to highlight the potential use and benefits of extraperitoneal laparoscopy in benign gynecological surgeries.

## CASE REPORT

A 26-year-old nulliparous lady presented with complaints of chronic pelvic pain for 1 year. It was more toward left lower abdomen, with no relation to her menses. She had a history of laparotomy done twice, appendicectomy in 2003 and right ovarian cystectomy in 2012. On examination, a large midline vertical scar extending from xiphisternum to symphysis pubis was noted. No other masses or tenderness was found on abdominal palpation. Vaginal examination revealed a 10 cm cystic mass occupying left and posterior fornices with significantly restricted mobility of the uterus.

Trans-abdominal ultrasound showed bilateral adnexal cysts and magnetic resonance imaging confirmed well-defined T2 hyperintense lesion with thin wall and thin septa, measuring 13.5 cm × 13.5 cm × 9.3 cm in size and involving both adnexae [Figure 1]. Bilateral ovaries were not seen separately. Uterus was normal. Tumor markers for ovarian malignancies were within the normal limits.

Laparoscopy was planned after counseling and consenting the patient. In view of anticipated adhesions along the previous midline scar, entry through Palmer's point was attempted using Verres needle. Despite two attempts, pneumoperitoneum could not be created, likely due to intra-abdominal adhesions. A direct entry was made in the preperitoneal space using 5mm port at the Palmer's point, and under vision gas was insufflated in this space keeping the pressure at 12 mmHg. Initially blunt dissection was done in this space with 5 mm lens avoiding vessels. Secondary 5 mm port was inserted under vision in the extraperitoneal space once adequate exposure of the intended site of insertion was achieved [Figure 2]. Blunt and

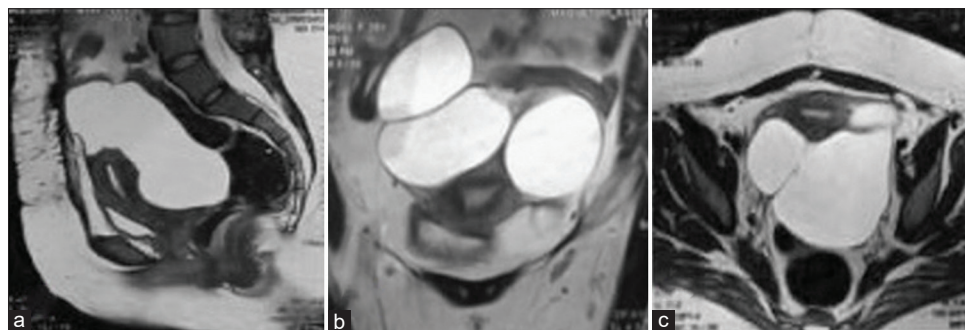
sharp dissection was continued taking care not to breach the peritoneum, with the intent that the peritoneal layer will act as safeguard against injury of bowel underneath. On reaching the adnexa, it was noted that the cyst was a large encysted collection due to adhesions from previous surgeries. An area free of the bowel was chosen to open the peritoneum over the encysted collection for deroofting and visualization of pelvic structures intraperitoneally. The fluid was sent for cytology and to rule out tuberculosis. The uterus was densely adherent to the anterior abdominal wall. Right ovarian fossa was empty, possibly owing to previous surgery. Left ovary was also densely adherent posteriorly and to the lateral pelvic wall. It showed a 3-cm simple cyst which was drained. Pneumoperitoneum was released and skin closed [Video 1 (This video is also available at <http://www.apagemit.com/page/video/show.aspx?num=270&page=1>)]. The patient had good recovery and was discharged in stable condition on the second postoperative day. The cytology report showed no abnormality and no evidence of tuberculosis, confirming a diagnosis of encysted collection.

## DISCUSSION

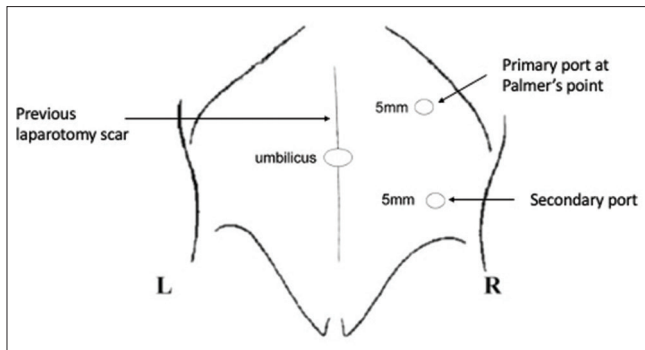
Extraperitoneal laparoscopy is the creation of working space in the preperitoneal space between the abdominal wall muscles and the peritoneum, by insufflating gas in this space. In total extraperitoneal (TEP) approach, the peritoneum is not breached at all and intraperitoneal structures are untouched.

McKernon and Laws first described TEP approach for inguinal hernia repair in 1993.<sup>[7]</sup> Since then this technique has been widely and successfully used by surgeons for hernia repair. Avoiding entry into the peritoneum reduces the risk of bowel and vascular injury and postoperative adhesions.<sup>[8]</sup> It also offers the advantages of lower recurrence and complication rates with an overall better outcome.<sup>[8]</sup>

In 1997, Raboy *et al.*<sup>[9]</sup> described the extraperitoneal laparoscopic radical prostatectomy, extending the use of this technique to urological surgeries.



**Figure 1:** T2 magnetic resonance imaging of the pelvis in sagittal (a), coronal (b) and axial (c) views showing well-defined hyperintense lesion with thin wall and thin septa, measuring 13.5 cm × 13.5 cm × 9.3 cm in size and involving both adnexae. Bilateral ovaries not seen separately. Uterus normal in size



**Figure 2:** Illustration of the ports' layout with previous midline vertical scar. Primary port (5 mm) at Palmer's point and secondary port (5 mm) inserted under vision as depicted

Gynecologic oncologists have found extraperitoneal laparoscopy to be very useful for para-aortic and pelvic lymph node dissection. Adequate nodal counts can be achieved, and this technique is safe and feasible in the management of gynecologic malignancies.<sup>[10]</sup>

Despite its widespread use by surgeons and gynecologic oncologists, there is scant literature pertaining to the use of extraperitoneal laparoscopy for benign gynecological surgeries. As noted in this case, the bowel was densely adherent to the previous laparotomy scar in the midline. This made conversion to laparotomy equally perilous with a high chance of bowel injury. Arguably, extraperitoneal laparoscopy provided a safer alternative to both conventional laparoscopy and laparotomy in this case, with the advantage of early postoperative recovery.

Extraperitoneal approach for accessing pelvic structures for benign gynecological surgeries is an underutilized technique. This approach helped avoid laparotomy and its related complications in this case with dense intra-abdominal adhesions, emphasizing on the need for gynecologists to train themselves in extraperitoneal laparoscopy.

### Ethical approval

The institute's ethics committee approval was obtained (Ref. No. IECPG-659/19.12.2019, RT-08/30.01.2020).

### Declaration of patient consent

Written informed consent was obtained from the patient for publishing the case report and accompanying images and video. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

### REFERENCES

1. Ulker K, Anuk T, Bozkurt M, Karasu Y. Large bowel injuries during gynecological laparoscopy. *World J Clin Cases* 2014;2:846-51.
2. Audebert AJ, Gomel V. Role of microlaparoscopy in the diagnosis of peritoneal and visceral adhesions and in the prevention of bowel injury associated with blind trocar insertion. *Fertil Steril* 2000;73:631-5.
3. Chapron C, Fauconnier A, Goffinet F, Bréart G, Dubuisson JB. Laparoscopic surgery is not inherently dangerous for patients presenting with benign gynaecologic pathology. Results of a meta-analysis. *Hum Reprod* 2002;17:1334-42.
4. Krishnakumar S, Tambe P. Entry complications in laparoscopic surgery. *J Gynecol Endosc Surg* 2009;1:4-11.
5. Laparoscopic Injuries (Green-top Guideline No. 49). Royal College of Obstetricians & Gynaecologists. Available from: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg49/>. [Last accessed on 2019 Oct 20].
6. Härkki-Sirén P, Kurki T. A nationwide analysis of laparoscopic complications. *Obstet Gynecol* 1997;89:108-12.
7. Laparoscopic Inguinal Hernia Repair-A SAGES Wiki Article. SAGES. Available from: <https://www.sages.org/wiki/laparoscopic-inguinal-hernia-repair/>. [Last accessed on 2019 Oct 20].
8. Lomanto D, Sta. Clara EL. Total extraperitoneal approach in inguinal hernia repair: An update. *Ann Laparosc Endosc Surg* 2017;2.
9. Raboy A, Ferzli G, Albert P. Initial experience with extraperitoneal endoscopic radical retropubic prostatectomy. *Urology* 1997;50:849-53.
10. Schlaerth AC, Abu-Rustum NR. Role of minimally invasive surgery in gynecologic cancers. *Oncologist* 2006;11:895-901.