ejaypee.com, for detailed information on obstetrics & gynecology books, visit our website www.ejaypee.com, for detailed information on obstetrics & gynecology books











Manual on Gynec Endoscopy

Techniques, Tips & Training

Series Editors
Ashok Kumar
Madhavi M Gupta
K Aparna Sharma

Editors
Sejal Naik
Ritu Vaibhav Jain
Subash Mallya
Aastha Aggarwal
Jyoti Bali
Shivani Sabharwal



Contents

SECTION 1: Laparoscopy

1. **Cost-effective and Sustainable Operation Theater Setup 3**
   Kanika Jain, Shivani Bedi
2. **Energy Sources in Endoscopic Surgery 14**
   Atul Ganatra, Freni Shah
3. **Anesthesia: Partner in Success, Silent in Glory 24**
   Kanta M Rahul
4. **Optimizing Complex Bladder Dissection in Scarred Uterus 30**
   Sejal Naik, Ritu Jain, Aditi Modi
5. **Tackling the Uterine Artery in Gynecological Endoscopy: Why, When, How? 39**
   Sejal Naik, Ritu Jain
6. **Vaginal Vault Support during Total Laparoscopic Hysterectomy 45**
   Parul Kotadawala, Munjal Pandya
7. **Steps to Prevent Secondary Hemorrhage after Total Laparoscopic Hysterectomy 51**
   PG Paul
8. **Complications of Laparoscopy 55**
   Nikita Trehan, Subash Mallya, Divya TN, Ritu Jain
9. **Safe Abdominal Entry 66**
   Amit Tandon, Akriti Prajapati
10. **Laparoscopic Evaluation of Fertility 84**
    Abhinibesh Chatterjee
11. **Laparoscopic Tissue Retrieval Techniques 90**
    Dinesh Kansal, Supriya Mahipal, Yamini Kansal
12. **Techniques to Reduce Blood Loss in Laparoscopic Myomectomy 98**
    Mala Raj
13. **Endometriosis and Pain Management 102**
    Prakash Trivedi, Aditi Trivedi, Soumil Trivedi

14. Endometriosis and Fertility Optimization 107
Pandit Palaskar, Chintana Chandra

15. Laparoscopic Burch Colposuspension: A Comprehensive Guide 117
Sejal Naik, Ritu Jain

SECTION 2: Hysteroscopy

16. Hysteroscopic Evaluation of the Uterine Cavity 127
Vivek Marwah

17. Hysteroscopy and Polypectomy: See and Treat 131
Venus Bansal, Ankita Sharma

18. Tubal Cannulation 137
Ajay Aggarwal, Aarti Chitkara Wadhawan

19. Septum Resection 144
Soumil Trivedi, Kaustav Kar

20. Hysteroscopic Removal of Intrauterine Foreign Bodies: Principles and Practice 151
Kalpana Choudhury

21. Diagnosis of Female Genital Tuberculosis/Koch's by Hysteroscopy 155
Priya Bhave Chittawar, Mrinal Chatterjee

22. Office Hysteroscopy 165
Tanvir Singh, R Hepshiba

23. Rare Presentations and Innovations in Hysteroscopy 177
Sonia Naik

24. Complications of Hysteroscopy 180
Kalyan B Barmade, Vijay Nahata, Maithili Kumari, Ritu Jain, Aastha Aggarwal

CHAPTER 4

Optimizing Complex Bladder Dissection in Scarred Uterus

Sejal Naik, Ritu Jain, Aditi Modi

When the canvas is scarred, it is the surgical artist who makes all the difference!!

INTRODUCTION

In ObGyn, safe bladder dissection in a scarred uterus is a critical concern, especially in patients with history of prior caesarean sections or other pelvic surgeries. Scar tissue can distort normal anatomy, increase the risk of bladder and ureter injury, prolong operating time, increase the morbidity, and recovery at the same time, compromise results. Guidelines focus on meticulous preoperative assessment, strategic surgical techniques, and high intra- and postoperative vigilance.

PREOPERATIVE ASSESSMENT AND PLANNING

- *Detailed History and Risk Assessment:* Review patient's full surgical history, inclusive of number and type of previous caesarean sections or other pelvic surgeries. A history of one or more cesarean deliveries is a significant risk factor for dense bladder adhesions.
- *Imaging studies:* In cases of previous cesarean sections and pelvic surgeries, preoperative ultrasound **(Fig. 1)** can help identify bladder's upper limit,

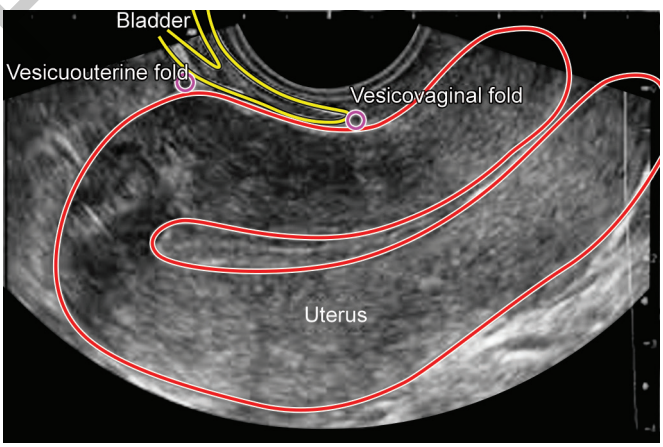


Fig. 1: Bladder limit delineation on preoperative USG.
Courtesy: https://doi.org/10.1002/uog.29128

JAYPEE BROTHERS

particularly if it sits high on the uterus due to previous surgery. This helps surgeons modify abdominal entry point, to enter peritoneum higher to avoid injury. "Sliding sign" in ultrasound is useful for diagnosing intra-abdominal adhesion. In absence of adhesion, during deep breathing the uterus will slide below parietal fascia whereas in severe adhesion, this sliding is absent.

- *Informed consent:* In high-risk cases, during informed consent process, discussion of potential for difficult dissection and increased risk of urological tract injuries with patients is important.
- *Anticipatory Operative Preparedness:* Being prepared for intraoperative injuries is helpful. A multidisciplinary team with stand-by extra surgical hands and required OT instruments and disposables is advisable. Given the complexity of such cases with extensive scarring, such procedures should be performed by experienced surgeons with specific training in advanced surgical techniques.

STRATEGIC SURGICAL TECHNIQUES

- *Urinary catheterization:* While routinely performed, it does not fully prevent injury. The use of a catheter allows for bladder decompression.
- *Controlled Bladder filling:* In few TLH cases, intraoperative filling-up of bladder with normal saline prior to adhesion dissection would reduce chances of injury by helping to delineate its margins.
- *Sharp Vs Blunt Dissection:* When dense adhesions are present, sharp dissection with controlled and careful movements is often preferred over blunt dissection, which can lead to inadvertent bladder damage. Keeping the dissecting instrument's tip close to uterine serosa helps maintain planes.
- *Traction and Counter-Traction:* Safety lies in the hands of the surgeon. Judicious use of traction and counter-traction mechanisms helps maintain tension on tissues, which clarifies surgical planes. One can use the cervical cup to demarcate the lower limit of the bladder dissection.
- *Judicious Usage of Energy Sources:* Adhere to principle of using energy sources judiciously and for short bursts, to avoid thermal injury. Consider using ultrasonic energy, which reduces thermal spread. Avoid excessive electrocautery near the bladder to prevent thermal necrosis **(Fig. 2)** and delayed complications like vesicovaginal fistula
- *Manage bleeding:* Ligation of ascending uterine blood supply prior to addressing difficult bladder flap is useful. Control bleeding early in dissection to prevent blood from staining the tissues, which can obscure anatomical planes and increase difficulty of dissection. Uterine vessels can be ligated with sutures instead of cauterization when bladder is adherent.

JAYPEE BROTHERS



Fig. 2: Thermal bladder injury on cystoscopy.
Courtesy: https://doi.org/10.33696/Gynaecology.6.079

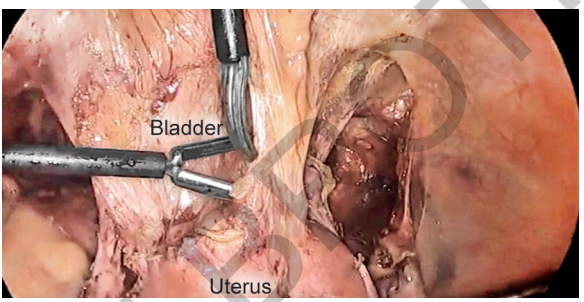


Fig. 3: Lateral approach for bladder dissection (SpringerLink).

PROCEDURE-SPECIFIC SURGICAL TECHNIQUES

LAVH/ TLH/ Robotic Hysterectomy/ vNOTES:

- *Transvaginal lateral intervention in LAVH:* Lateral window of vesicocervical space are created; an index finger is swept medially to define margin of midline vesicocervical adhesions. Under direct vision and finger guidance, the dense adhesions dissected safely. Subsequently, the bladder is pushed gently aside to prevent its tearing or injury.
- Low And Lateral Approach to identify clean plane for dissection described by Seth S et al., for hysterectomy in patients with Previous CS. In laparoscopy, once the uterine vascular bundle is identified, dissection proceeds just above these vessels to lateral cervical margins. The midline adhesions are separated later, under better visualization **(Fig. 3)**.
- Rao and Kade also introduced a six-step laparoscopic technique for dissecting a central uterine band in a ventrofixed uterus, aiming to minimize injury to adjacent structures during repeat cesarean sections and hysterectomy **(Fig. 4)**:
  Step 1: Dissect the left round ligament; this dissection should be parallel and above this ligament.

JAYPEE BROTHERS

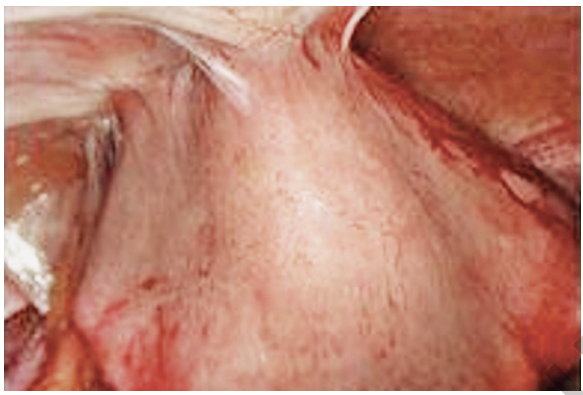


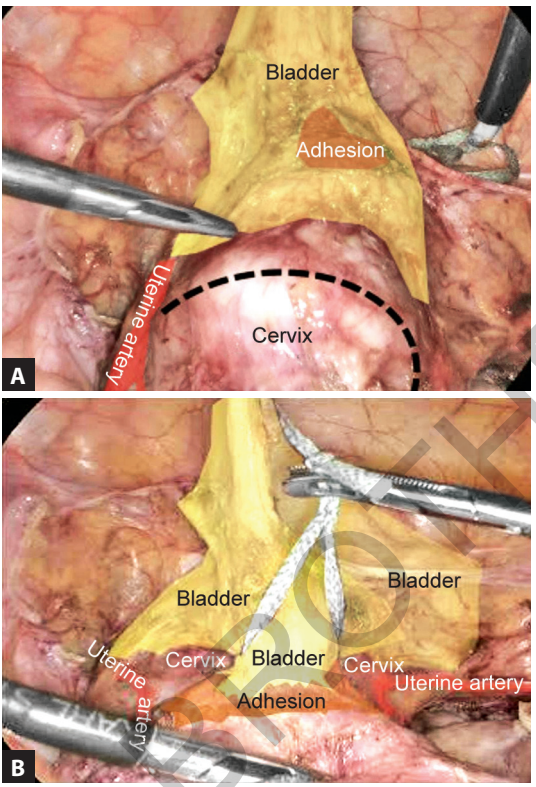
Fig. 4: Ventrofixed uterus.

Step 2: Identify the left uterine artery.
Step 3: Dissect the right round ligament.
Step 4: Identify the right uterine artery.
Step 5: Dissect the avascular space between the bladder and central uterine band bilaterally.
Step 6: Separate the central uterine adhesion band from the anterior abdominal wall (parietal peritoneum).

- HUBB (Hung Up the Bladder Bypass) technique: A laparoscopic method for dissecting a highly adherent bladder in hysterectomies. Steps of HUBB technique:
  - Identify and locate uterine artery and its position.
  - Create a retrovesical lower uterine segment bypass (**Fig. 5A**)
  - Create a "Hung Up the Bladder Bypass": A second bypass, which allows for complete bladder dissection **(Fig. 5B)**
  - Perform Adhesiolysis and Leak Test: Separate any adhesions and perform a leak test to ensure Urinary tract integrity.

  Benefits HUBB technique:
  - voids Complications: It minimizes risk of bladder injury,
  - Improves Dissection: Provides clearer and more defined dissection space
  - Facilitates Repair: It helps with patient orientation for a potential repair if any damage does occur.
- Comprehensive Canopy Concept, "The 3 Step Technique": To address the challenges beyond conventional lateral approach for bladder dissection, Nutan et al. introduced a comprehensive canopy concept which unfolds in three distinct steps **(Figs. 6A to F)**
  - The initial step involves posterior approach to uterine artery dissection, coagulation, and section.
  - Subsequently, creation of bladder canopy, strategically addressing varying levels of adherence.

JAYPEE BROTHERS

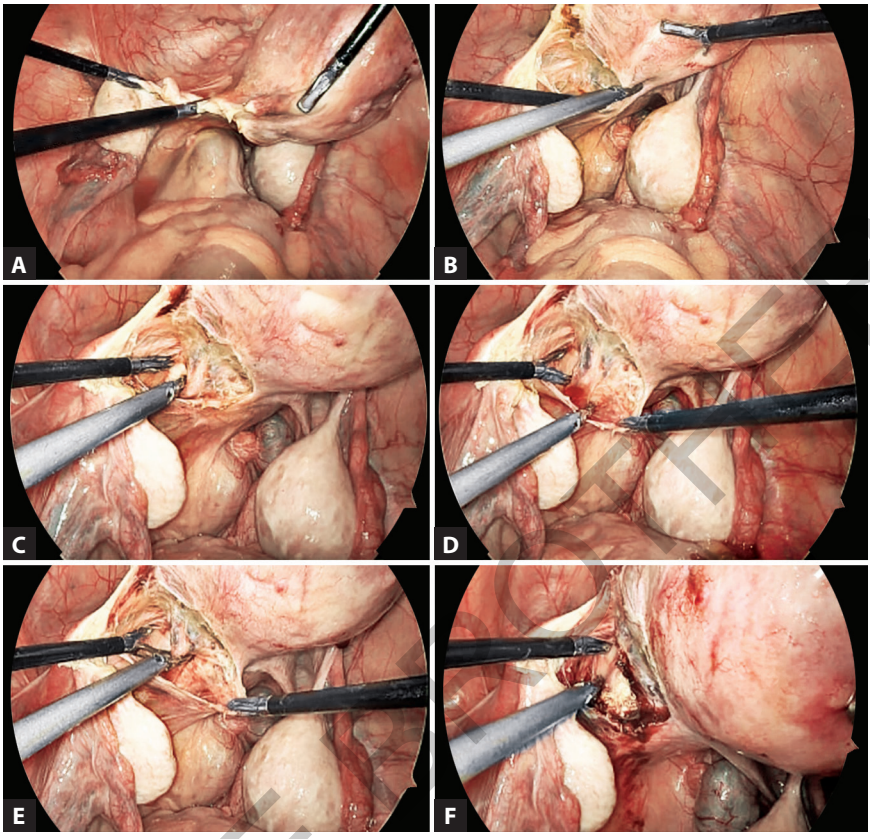


Figs. 5A and B: (A) Locating uterine vessels and start creating retrovesical LUS Bypass; and (B) Creating hung up blabber bypass.

- Introduced recently, an anterior approach to uterine artery dissection and coagulation. This includes reaching the contralateral uterine artery by side of the manipulator cup rim in one single sweep.

- *Head-on and Reverse Dissection:* Studies have indicated that while lateral approach was adequate in most cases of vNOTES, it did not allow access to peritoneal cavity when there were significant adhesions at vesicouterine peritoneum. In these circumstances, direct dissection of adhesions was necessary. For Laparoscopic or Robotic Hysterectomies, "head-on" approach involves superior-to-inferior dissection. A "reverse vesicouterine fold dissection" starts dissection from an inferior, less-adherent plane and proceeds superiorly **(Figs. 7 and 8)**. Both techniques are used to find correct anatomical plane and safely mobilize bladder. Working from lateral to medial, utilizing uterine manipulator with cervical delineation and backfilling bladder, also helps in RH and TLH.
- Sunkara et al. described Four Steps of Difficult bladder dissection:
  - Backfilling bladder to delineate bladder boundaries and avoid inadvertent injury.

JAYPEE BROTHERS



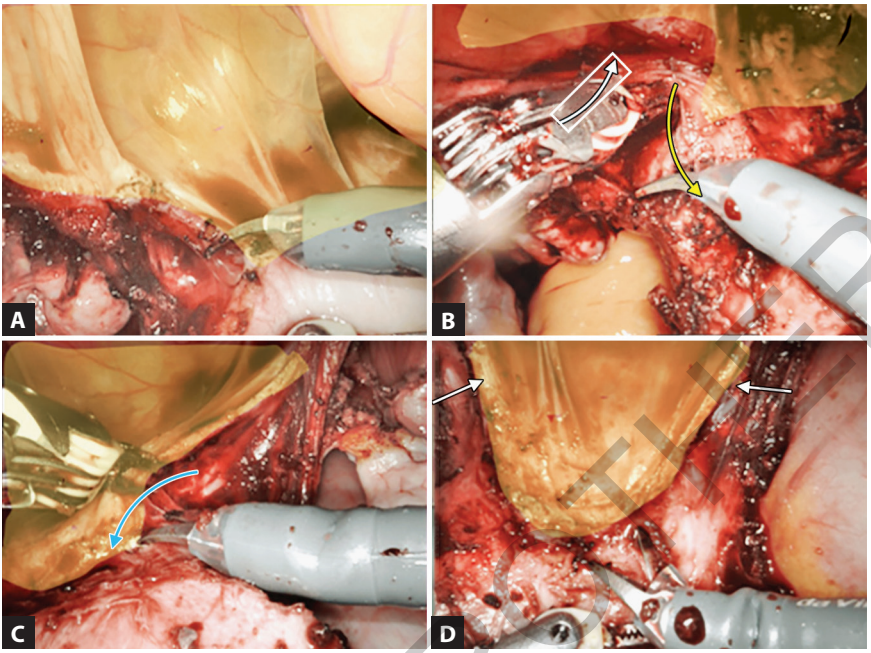
Figs. 6A to F: Comprehensive Canopy Concept, "The 3 Step Technique".

- Lateral approach, for Adhesiolysis, followed by cephalad dissection towards bladder dome.
- Lateralization of uterine arteries prior to bladder dissection.
- Create posterior colpotomy and carry incision anteriorly to help delineate normal anatomical markers.

INTRA- AND POSTOPERATIVE TOOLS AND VIGILANCE

- *Intraoperative identification:* Constantly be aware of key landmarks. The uterine sound, catheter bulb, cervical cup, or uterine manipulator can help identify uterine and bladder limits to minimize risk of bladder injury, enhance visualization and precision during dissection. Additionally.
- *Retrograde Cystoinflation:* In RCT's, these techniques have shown significant reduction in bladder injury rates in high-risk patients, during dissection. Intraoperative bladder distension with Saline (Cystoinflation), Methylene Blue Dye or ICG dye using near-infrared technology can help delineate boundaries and extent, improving visualization.

JAYPEE BROTHERS



Figs. 7A to D: Reverse bladder dissection with Head-on Approach. (A) Adherent Bladder at LUS; (B) Space beneath adherent bladder in LUS on left; (C) Space beneath adherent bladder in LUS on right; and (D) Head-on Approach of central adhesion, following bilateral reverse dissection.

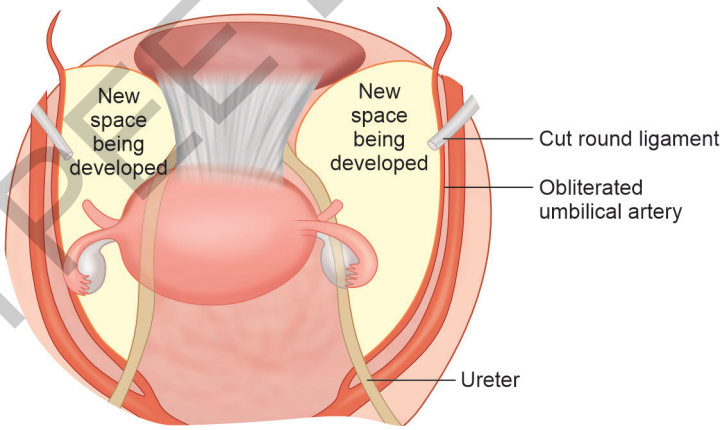


Fig. 8: Neo Space Creation by Reverse Vesicouterine Fold Dissection Technique. Creation of New Space in Vesicovaginal area, using blunt sweeping motion from inferior-to-superior direction, facilitates hysterectomy in patients with severe anterior cul-de-sac adhesions from prior caesarean deliveries or other surgeries.

- *Integrity Confirmation:* At conclusion of dissection, or if an injury is suspected, fill the bladder with sterile fluid or methylene blue dye to check for any leaks. Cystoscopy may also be performed.

JAYPEE BROTHERS

- *Postoperative care:* In cases of bladder repair, extended catheterization for 10–14 days is typically recommended.
- *Postoperative Urine Retention:* Difficult bladder dissection and manipulation can lead to postoperative urine retention. Vigilant watch is required.

CONCLUSION

Safe bladder dissection in a scarred uterus requires a multifaceted approach that combines meticulous preoperative assessment, strategic surgical techniques, and high intraoperative vigilance. By understanding the patient's surgical history, utilizing imaging studies, and employing techniques such as sharp dissection, traction and counter-traction, controlled bladder filling, and judicious energy use, surgeons can minimize the risk of bladder injury. Surgical skills and technique are more important than instruments. Do not leave in doubt, Intraoperative tools like retrograde cystoinflation and cystoscopy can aid in identifying and repairing injuries. By adopting these strategies, surgeons can improve patient outcomes, reduce morbidity, and ensure a successful surgical experience. Ultimately, a well-planned and executed approach to bladder dissection in a scarred uterus is crucial for optimizing patient care and minimizing complications.

KEY POINTS

- Safe bladder dissection in a scarred uterus requires a multifaceted approach that combines meticulous preoperative assessment, strategic surgical techniques, and high intraoperative vigilance along with postoperative follow up.
- Understanding the patient's surgical history, utilizing imaging studies, and employing techniques such as sharp dissection, traction and counter-traction, controlled bladder filling, and judicious energy use, minimizes the risk of bladder injury.
- Surgical skills and technique are more important than instruments.
- Do not leave in doubt, Intraoperative tools like retrograde cystoinflation and cystoscopy can aid in identifying and repairing injuries.

SUGGESTED READING

1. Arcieri M, Cuman M, Restaino S, Tius V, Cianci S, Ronsini C, et al. Exploring Urinary Tract Injuries in Gynaecological Surgery: Current Insights and Future Directions. Healthcare. 2025;13(15):1780.
2. Baron J, Tirosh D, Mastrolia SA, Ben-Haroush Y, Schwartz S, Kerner Y, et al. Sliding sign in third-trimester sonographic evaluation of intra-abdominal adhesions in women undergoing repeat Cesarean section: A novel technique. Ultrasound Obstet Gynecol. 2018;52:662-5.
3. Caplan M, Misal M. Key techniques for difficult bladder dissection during robotic assisted total laparoscopic hysterectomy. Am J Obstet Gynaecol. 2024;230(4):S1297.

JAYPEE BROTHERS

4. Chang WC, Hsu WC, Sheu BC, Huang SC, Torng PL, Chang DY. Minimizing bladder injury in laparoscopically assisted vaginal hysterectomy among women with previous caesarean sections. Surg Endosc. 2008;22:171-6.
5. Dwivedi A, Dave A, Thora A, Pandit M, Lakhra A. A prospective cohort study to determine effectiveness of cystoinflation to prevent bladder injury in women with previous caesarean section. Int J Reprod Contracept Obstetr Gynaecol. 2025;14(8):2579-84.
6. Fangmann LC, Henrich W, Hinkson L. Assessment of the urinary bladder prior to caesarean delivery in women with multiple abdominal scars through operation table ultrasonography: a case report. AJOG Glob Rep. 2023;3(1):100138.
7. Hafeez R, khan U. (2008) A Review Study of Bladder Injury in Laparoscopy Assisted Vaginal Hysterectomy. [online] Available from https://www.semanticscholar.org/paper/A-Review-Study-of-Bladder-Injury-in-Laparoscopy/a08ed0712491fe8410801be91b181ef73bbf5b35. [Last accessed January, 2026].
8. Jain N. 12216 The 3-Step: Comprehensive Canopy Concept Versus Lateral Approach of Bladder Dissection in TLH With Previous Caesarean Sections. J Minim Invasive Gynaecol. 31(11):S139.
9. Nezhat C, Vu M, Vang N, Tombash E, Nezhat A. Hysterectomy in patients with history of prior caesarean delivery: A reverse dissection technique for vesicouterine adhesions. OBG Manag. 2019;31(11):38-42.
10. Rao T, Kade S. Ventrofixed uterus: unfreezing the uterus in 6 standardized steps. J Gynecol Surg. 2023;39:220-1.
11. Saaqib S, Iqbal A, Naheed M, Saeed T, Khalid M. A randomized controlled trial of cystoinflation to prevent bladder injury in the adhesive disease of multiple caesarean sections. Sci Rep. 2020;10(1):15297.
12. Shikha S, Arun N. Preventing Bladder Injury at Hysterectomy in Post-Caesareans. J Gynecol Women's Health. 2017;3(2):555610.
13. Sinha R, Rupa B, Peddappolla S. Redefining Bladder Dissection in Robotic Hysterectomy with Previous Caesarean Section: A "Head-On Approach". Cureus. 2025;17(8):e90280.
14. Sunkara S, Koythong T, Nijjar JB, Chohan L. Approach to Difficult Bladder Dissection during Laparoscopic Hysterectomy. J Minim Invasive Gynaecol. 2020;27(7):S103.
15. Tamate M, Matsuura M, Wada N, Adachi T, Yorozu K, Arimoto C, et al. Laparoscopic retro vesical lower uterine segment bypass for hysterectomy with previous caesarean section: Hung Up the Bladder Bypass (HUBB) technique. J Gynecol Obstet Hum Reprod. 2023;52(8):102629.
16. Tantitamit T, Temtanakitpaisan T, Lee CL. Bladder safety during natural orifice transluminal endoscopic surgery hysterectomy in patients with extensive vesicouterine adhesion. Gynecol Minim Invasive Ther. 2019;8:129-31.
17. Zelivianskaia AS, Bradley SE, Morozov VV. Best practices for repair of iatrogenic bladder injury. AJOG Glob Rep. 2022;2(3):100062.

JAYPEE BROTHERS

for detailed information on obstetrics & gynecology books, visit our website www.ejaypee.com, for detailed information on obstetrics & gynecology books, visit our webs

Manual on

Gynec Endoscopy: *Techniques, Tips & Training*

Shelving Recommendation
OBSTETRICS & GYNECOLOGY

ISBN 978-93-7545-862-3

9 789375 458623

Buy from ejaypee

JAYPEE BROTHERS