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CHAPTER

Postoperative Recovery and Management

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INTRODUCTION

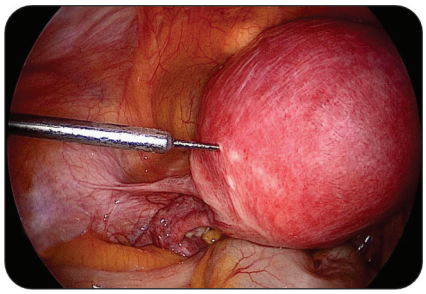

Fig. 1: Minimal access surgery provides faster and superior post operative patient recovery

Postoperative surgical management plays a pivotal role in the recovery and overall outcome of patients undergoing gynecologic surgery. With advancements in minimally invasive techniques, such as laparoscopic **(Fig. 1)** and now robotic surgery, women experience reduced pain, shorter hospital stay, and quicker resumption to routine activities. However, effective postoperative care remains crucial to address potential complications, manage pain, and support optimal recovery. This management phase encompasses a multidisciplinary approach, integrating assessments of vital signs, pain management strategies, fluid and nutritional support, and mobilization to enhance recovery. Additionally, education on wound care and awareness of signs of complications empowers patients to take an active role in their recovery. By prioritizing postoperative care, healthcare providers can significantly improve patient satisfaction and outcomes, ensuring a smoother transition back to health after surgery.

MAIN BODY

In order to streamline and format universal guidelines which are evidence based and easy to implement—enhanced recovery after surgery (ERAS) is now firmly established as a global surgical quality improvement initiative that results in both clinical improvements[1] and cost benefits[2] to the healthcare system. ERAS guidelines are based on the highest quality evidence available and as such require updating on a regular basis.[3]

- *Pre-admission information, education and counselling:* A seamless transition into the postoperative period, in fact begins preoperatively in the out patient clinic when the surgeon discusses the course of surgical plan including what one must expect postoperatively, up to complete recovery from surgery and resumption of routine life. Not only does preoperative education and psychological preparation reduce anxiety but also increases patient satisfaction,

which may improve fatigue and facilitate early discharge.[4-6] Preoperative education is also effective in reducing pain and nausea, and improving well-being when added to an existing ERAS protocol.[7,8]

- *Surgical approach:* A key tenet of enhanced recovery is the focus on decreasing the stress response and modifying the metabolic response to surgical insult.[1] Laparoscopic surgery has been associated with a decrease in both the inflammatory and immunomodulatory response to surgery compared with open procedures.[9,10] While some studies suggest that classic endocrine metabolic responses are less influenced by minimally invasive surgery, others have suggested that minimally invasive surgery decreases the cortisol stress response compared with moderate and highly invasive surgeries.[11]
- *Immediate postoperative monitoring:* Regularly monitoring vital signs such as pulse rate, temperature, blood pressure and oxygen saturation helps pick up early signs of any immediate surgical complication; ensuring timely intervention. The use of pain score charts by patients as well helps better assess and manage the immediate recovery period. Routine peritoneal drains are not recommended in patients under going bowel resections/lymphadenectomy.
- *Perioperative fluid management:* Intravenous fluid excess has been associated with a delayed return of bowel function, postoperative ileus, postoperative nausea and vomiting, and increased length of stay.[11-13] Conversely, hypovolemia, if undetected, may lead to postoperative complications, including acute kidney injury, surgical site infections, sepsis, and delirium, as well as prolonged hospital stay.[14-16] Perioperative goal-directed fluid therapy reduces length of stay and complications in high-risk patients undergoing abdominal surgery.[17]
- *Pain management—opioid sparing multimodal therapy:* Postoperative pain after gynecologic surgery plays a major role in patient recovery and it may also be associated with higher rates of complications, longer hospital stays, increased readmission rates, and higher cost.[18,19] When patients rely on opioids alone for postoperative analgesia, this may cause nausea, sedation, and fatigue, slowing down post operative recovery. Non-opioid alternatives include nonsteroidal anti-inflammatory drugs, acetaminophen, gabapentin, and dexamethasone. In general, oral administration of all postoperative medications in patients who can tolerate a diet is preferable to the intravenous route. Incisional infiltration with either bupivacaine or liposomal bupivacaine has no systemic side effects when used appropriately, and should be incorporated into all protocols as a component of multimodal analgesia. The use of transversus abdominis plane (TAP) block, an alternative to local analgesia, has been recently used in minimal access and open surgery. Transversus abdominis plane blocks are performed by injecting local anesthetic between the muscle layers of the trunk using ultrasound guidance, and has also been shown to reduce pain and opiate requirements after surgery.[20]
- *Prevention of nausea and vomiting:* Postoperative nausea and vomiting, defined as nausea and/or vomiting occurring within 24 hours after surgery, affects between 20% and 30% of patients.[21-24] Blanket use of PONV prophylaxis is not cost-effective and unnecessarily risks drug-related adverse effects. Most guidelines are in agreement that patients at low risk for PONV are unlikely to

benefit from prophylaxis and that it should be reserved for patients at moderate to high risk. These can de divided into three main groups:

1. *Patient-specific:* Female sex, non-smoker, history of PONV or motion sickness.
2. *Anesthetic:* Use of volatile anesthetics within 0 to 2 hours; use of nitrous oxide; use of intraoperative and postoperative opioids; high doses of neostigmine.
3. *Surgical:* Duration of surgery, with each 30-minute increase in duration increasing the risk of PONV by 60%.

Physicians should be aware of the risk factors associated with PONV, and the baseline risks should be reduced whenever possible. When the choice is available, patients should be advised that the risk of PONV decreases when regional rather than general anesthesia is administered. The perioperative use of opioids should be minimized. Prophylactic antiemetics should be administered to patients with moderate or high risk of developing PONV. In patients with a high risk of developing PONV, combination antiemetic therapy should be considered.

- *Mobility:* Early ambulation and mobilization is encouraged in benign gynecological surgery; as soon as 12 hours post-surgery. This reduced the need for mechanical compression stockings/medical prophylaxis for venous thromboembolism. Patients at increased risk of VTE should receive dual prophylaxis with mechanical compression and chemoprophylaxis, initiated preoperatively. Extended chemoprophylaxis should be prescribed to patients who meet high-risk criteria or undergo laparotomy for gynecologic malignancy. Extended prophylaxis with LMWH or DOAC are equally effective and safe. Extended prophylaxis is of limited value in MIS patients.[25-27]
- *Bowel functions and prevention of postoperative ileus:* With the advent better anesthetic agents now being used, benign gynecological surgery is being done as a day care procedure at many centres worldwide. It is important to initiate consumption of oral fluids at soon as 4 hours postprocedure, followed by soft diet 6 hours post reversal of anesthesia. This facilitates quicker postoperative recovery and reduces dependency on intravenous fluids in the postoperative period. IV fluids should be stopped <24 hours post-surgery; balanced crystalloid solutions are preferred over 0.9% normal saline. Simple interventions of early feeding, coffee consumption, and gum chewing have been shown to be effective in decreasing the time to bowel function return.[28-34] Blocking or reducing the effect of opioids on the gastrointestinal tract has also been shown to reduce the time to bowel recovery and reduce the rate of post-operative ileus.

Conclusion

Universal guidelines are made by international bodies based on large control studies and literature search. However adhering and implementing the same in various institutions, including private practice of gynecologists remains a challenge. The ERAS guidelines are easy to follow and succinct, the motivation and intent to revise our ways in order to smoothen patient care and recovery in a safe manner must be prioritized.

References

1. Ljungqvist O, Scott M, Fearon KC. Enhanced recovery after surgery: a review. JAMA Surg. 2017;152(3):292-8.
2. Ljungqvist O, Thanh NX, Nelson G. ERAS-Value based surgery. J Surg Oncol. 2017;116(5):608-12.
3. Gustafsson UO, Scott MJ, Hubner M, et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS®) society recommendations: 2018. World J Surg. 2019;43(3):659-95.
4. Waller A, Forshaw K, Bryant J, et al. Preparatory education for cancer patients undergoing surgery: a systematic review of volumeand quality of research output over time. Patient Educ Couns. 2015:S0738-3991(15)00229-3.
5. Powell R, Scott NW, Manyande A, et al. Psychological preparation and postoperative outcomes for adults undergoing surgery under general anaesthesia. Cochrane Database Syst Rev. 2016;2016(5):CD008646.
6. Wang F, Li C-B, Li S, et al. Integrated interventions for improving negative emotions and stress reactions of young women receiving total hysterectomy. Int J Clin Exp Med. 2014;7(1):331-6.
7. de Aguilar-Nascimento JE, Leal FS, Dantas DCS, et al. Preoperative education in cholecystectomy in the context of a multimodal protocol of perioperative care: a randomized, controlled trial. World J Surg. 2014;38(2):357-62.
8. Cavallaro PM, Milch H, Savitt L, et al. Addition of a scripted pre-operative patient education module to an existing ERAS pathway further reduces length of stay. Am J Surg. 2018;216(4):652-7.
9. Kehlet H, Nielsen HJ. Impact of laparoscopic surgery on stress responses, immunofunction, and risk of infectious complications. New Horiz. 1998;6(2 Suppl):S80-8.
10. Holub Z. Impact of laparoscopic surgery on immune function. Clin Exp Obstet Gynecol. 2002;29(2):77-81.
11. Miller TE, Thacker JK, White WD, et al. Reduced length of hospital stay in colorectal surgery after implementation of an enhanced recovery protocol. Anesth Analg. 2014;118(5):1052-61.
12. Brandstrup B, Tønnesen H, Beier-Holgersen R, et al. Effects of intravenous fluid restriction on postoperative complications: comparison of two perioperative fluid regimens: a randomized assessor-blinded multicenter trial. Ann Surg. 2003;238(5):641-8.
13. Adesanya A, Rosero E, Timaran C, et al. Intraoperative fluid restriction predicts improved outcomes in major vascular surgery. Vasc Endovascular Surg. 2008;42(6):531-6.
14. Thom O, Taylor DM, Wolfe RE, et al. Pilot study of the prevalence, outcomes and detection of occult hypoperfusion in trauma patients. Emerg Med J. 2010;27(6):470-2.
15. Davies SJ, Wilson RJT. Preoperative optimization of the high-risk surgical patient. Br J Anaesth. 2004;93(1):121-8.
16. Bennett-Guerrero E, Welsby I, Dunn TJ, et al. The use of a postoperative morbidity survey to evaluate patients with prolonged hospitalization after routine, moderate-risk, elective surgery. Anesth Analg. 1999;89(2):514-9.
17. Nelson G, Bakkum-Gamez J, Kalogera E, et al. Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations—2019. Int J Gynecol Cancer. 2019;29(4).
18. Wells N, Pasero C, McCaffery M. Improving the quality of care through pain assessment and management. In: Hughes RG, (Ed). Patient safety and quality: an evidence-based

Handbook for nurses. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008.
19. Massicotte L, Chalaoui KD, Beaulieu D, et al. Comparison of spinal anesthesia with general anesthesia on morphine requirement after abdominal hysterectomy. Acta Anaesthesiol Scand. 2009;53(5):641-7.
20. Champaneria R, Shah L, Geoghegan J, et al. Analgesic effectiveness of transversus abdominis plane blocks after hysterectomy: a meta-analysis. Eur J Obstet Gynecol Reprod Biol. 2013;166(1):1-9.
21. Kovac AL. Prevention and treatment of postoperative nausea and vomiting. Drugs. 2000;59(2);213-43.
22. Watcha MF, White PF. Postoperative nausea and vomiting: its aetiology, treatment and prevention. Anesthesiology. 1992;77(1):162-84.
23. Leman J. Surgical and patient factors involved in postoperative nausea and vomiting. Br J Anaesth. 1992;69(Suppl 1):S24-32.
24. Cohen MM, Duncan PG, DeBoer DP, et al. The postoperative interview; assessing risk factors for nausea and vomiting. Anesth Analg. 1994;78(1):7-16.
25. Kumar S, Al-Wahab Z, Sarangi S, et al. Risk of postoperative venous thromboembolism after minimally invasive surgery for endometrial and cervical cancer is low: a multi-institutional study. Gynecol Oncol. 2013;130(1):207-12.
26. Nick AM, Schmeler KM, Frumovitz MM, et al. Risk of thromboembolic disease in patients undergoing laparoscopic gynecologic surgery. Obstet Gynecol. 2010;116(4):956-61.
27. Swift BE, Maeda A, Bouchard-Fortier G. Low incidence of venous thromboembolism after gynecologic oncology surgery: Who is at greatest risk? Gynecol Oncol. 2022;164(2): 311-7.
28. Kalogera E, Bakkum-Gamez JN, Weaver AL, et al. Abdominal incision injection of liposomal bupivacaine and opioid use after laparotomy for gynecologic malignancies. Obstet Gynecol. 2016;128(5):1009-17.
29. Gungorduk K, Ozdemir IA, Gungorduk O, et al. Effects of coffee consumption on gut recovery after surgery of gynecological cancer patients: a randomized controlled trial. Am J Obstset Gynecol. 2017;216(2):145.e1-e7.
30. Müller SA, Rahbari NN, Schneider F , et al. Randomized clinical trial on the effect of coffee on postoperative ileus following elective colectomy. Br J Surg. 2012;99(11): 1530-8.
31. Bisch SP , Wells T, Gramlich L, et al. Enhanced recovery after surgery (ERAS) in gynecologic oncology: system-wide implementation and audit leads to improved value and patient outcomes. Gynecol Oncol. 2018;151(1):117-23.
32. Boitano TKL, Smith HJ, Rushton T, et al. Impact of enhanced recovery after surgery (ERAS) protocol on gastrointestinal functionin gynecologic oncology patients undergoing laparotomy. Gynecol Oncol. 2018;151(2):282-6.
33. Jernigan AM, Chen CCG, Sewell C. A randomized trial of chewing gum to prevent postoperative ileus after laparotomy for benign gynecologic surgery. Int J Gynaecol Obstet. 2014;127(3):279-82.
34. Vergara-Fernandez O, Gonzalez-Vargas AP, Castellanos-Juarez JC, et al. Usefulness of gum chewing to decrease postoperativeileus in colorectal surgery with primary anastomosis: a randomized controlled trial. Rev Invest Clin. 2016;68(6):314-8.