10.5005/jp-journals-10007-1097 WJOLS
REVIEW ARTICLE

The Role of Laparoscopy in the Management of Gynecologic Surgical Emergencies: A Review of Literature

Andrew Kilonzo

Consultant, Department of Gynecology and Laparoscopy Surgery, Mwanza Womens' Clinic, Mwanza, Tanzania

Abstract

Minimal access surgery is increasingly becoming the preferred approach to surgical treatment. Experience in the last 15 to 20 years has established the efficacy and indeed safety of laparoscopic surgery in general surgical and gynecologic practice.

Laparoscopic treatment in acute gynecologic emergencies raises questions of safety and feasibility when compared to open laparotomy.

The objective of this study was to review the literature on the use of laparoscopy in the treatment of gynecologic emergencies so as to determine its role in current and future practice.

The findings of this study indicate that laparoscopic surgery for gynecologic emergencies is feasible and safe. Further studies are needed to establish the safety of laparoscopic surgery for nonobstetric emergencies in late pregnancy.

Keywords: Laparoscopy in gynecological emergency, Abdominal injury, Abdominal trauma.

INTRODUCTION

Traditionally, the use of laparoscopy in gynecology had been restricted to the diagnosis of chronic pelvic pain, infertility and sterilization procedures. Later, its use in the diagnosis and treatment of ectopic pregnancy became firmly established. More recently, in the last 15 years or so, with the infectious popularity of minimal access surgery, laparoscopy is becoming the preferred method of surgery for an even wider range of gynecologic conditions, from tubal reconstructive surgery to radical hysterectomy for cervical cancer. There is almost no gynecologic surgery that has not been attempted laparoscopically. The main advantages of laparoscopic surgery are smaller, cosmetically acceptable wounds, less pain, less morbidity, and shorter hospitalization.

Laparoscopy is increasingly being used in the diagnosis and treatment of gynecologic surgical emergencies, including those involving trauma and critically ill patients when diagnosis is not obvious.

Minimal access in managing an acute abdomen, invariably raises questions about its feasibility, safety and efficacy. These must be judged against standard open surgery.

The challenges posed by minimal access surgery in acute surgical emergencies include the hemodynamic status of the patient, potential for complications related to abdominal entry techniques and anesthetic considerations in these situations. Severe abdominal distension and the presence of previous multiple abdominal surgical scars make the laparoscopic approach extremely risky while hemodynamic instability may present enormous challenges for anesthesia.

This paper aims at reviewing the current status of laparoscopic surgery in the management of gynecologic surgical emergencies, its efficacy, indications, challenges involved, and future trends in its use.

OBJECTIVES

The objectives of this study were to review the medical literature on the use of laparoscopic surgery for the treatment of gynecologic surgical emergencies.

Specifically, this paper will review work that has been done on the feasibility, efficacy and complications of the laparoscopic approach, so as to define its role in the current management of gynecologic emergencies.

METHODS

Review of the literature using the springerLink and PubMed searches.

FINDINGS/RESULTS

There are many reported studies and case reports looking at the management of a wide range of acute gynecological surgical emergencies in laparoscopic approach. While case

reports have highlighted ground-breaking surgeries, the larger studies have looked at many areas related to applicability of laparoscopic approach in the general gynecologic practice. These areas include feasibility of the laparoscopic surgery in these clinical settings, its accuracy and efficacy, and the complications and challenges involved.

FEASIBILITY OF EMERGENCY LAPAROSCOPY

Several studies have demonstrated the feasibility and safety of laparoscopic surgery for the acute abdomen in the setting of general surgical practice[1-3] as well as in gynecology.[4-7]

In an extensive evidence-based review of the literature on the role of laparoscopy for acute surgical abdominal conditions, Dimitrios Stefanidi and his colleagues concluded that laparoscopy could be performed safely in the majority of cases and that it was associated with a low morbidity and mortality.[8]

Majority of these studies agree that patients for laparoscopic management need to be hemodynamically stable. However, there are recent case reports of patients presenting with life-threatening massive hemoperitoneum, where laparoscopy was life saving.[12,13]

INDICATIONS FOR EMERGENCY LAPAROSCOPY

The commonest indication for the laparoscopic approach has been acute nonspecific lower abdominal pain where laparoscopy is undertaken in favor of clinical observation. This reflects the established role of diagnostic laparoscopy in providing accurate diagnosis, and hence expediting definitive treatment.[2,8]

Equally there are other studies in which laparoscopy has been undertaken as the primary route of surgical management for clinically established surgical emergency. These include adnexal torsion, tubo-ovarian abscess, peritonitis and ectopic pregnancy.[4,9,10]

There are studies suggesting that subsequent fertility is significantly higher in laparoscopically treated women presenting with gynecologic emergencies, making need for future fertility an emerging indication for laparoscopic treatment.[9,11]

The use of laparoscopy in management of nonobstetric complications in pregnancy is another recent addition to the increasing use of minimal access surgery. Laparoscopy has been done as late as third trimester of pregnancy.[12,13,19,20] These early indications do not suggest untoward effects to the mother or baby.

EFFICACY AND ACCURACY

Most studies agree that laparoscopy has a very high diagnostic accuracy, even when compared to open laparotomy. Laparoscopy also provides a better view of the abdominal cavity and when used in the nonspecific acute abdomen, it reduces delay to treatment and morbidity.

Studies looking at laparoscopic treatment of general surgical acute abdomen including gynecologic conditions reports diagnostic accuracy ranging from 88 to 99%.[1,3,8]

Majority of underlying causes of the acute abdomen in gynecologic and general surgery are amenable to laparoscopic treatment. Conversion rates to open laparotomy in most studies ranged from as low as 4 to 33%.[1-3,14]

The main predictor for conversion appear to be surgeons' inexperience, obesity, and a large free peritoneal fluid on ultrasound scanning.[10]

In younger women, wishing fertility conservation, laparoscopy was shown to be superior to open laparotomy in ovarian conservation, especially in the treatment of ovarian torsion.[10]

MORBIDITY AND COMPLICATIONS

Treatment using the laparoscopic approach appears to be associated with reduced morbidity, early recovery and a shorter hospitalization.[1,3,5,15] Interestingly, conversion to open laparotomy does not appear to increase morbidity.

Complications reported are mainly related to access of technique and devices. Those reported include visceral and vascular injuries, and those related to the incision area like acute herniation.[8,16,17]

Other infrequent complications include prolonged ileus, intra-abdominal abscess, pneumonia and pulmonary embolism.

One case is reported of aortic puncture with a portclosure device following laparoscopically assisted vaginal hysterectomy.[18]

DISCUSSION

Minimal access surgery has evolved enormously in the last 20 years and is now frequently being used in the treatment of gynecologic emergencies, diagnostic and therapeutic procedures. Studies reviewed here demonstrate that laparoscopic surgery for almost all gynecological surgical emergencies is not only feasible but safe and effective. Its widespread use is still being restricted by the necessity of special expertise in minimal access surgery, issues related to its cost-effectiveness and the necessary infrastructural

facility adjustments to the apparent high-tech equipments and operating room setup.

Expertise requires training, and one study has demonstrated that it is feasible to integrate well-structured laparoscopic surgery training into a residency program.[21]

Unfortunately, the apparent benefits of laparoscopic surgery, in terms of reduced morbidity and quicker recovery, have not been associated with lower cost. The two studies cited here show that there are added costs to treatment compared to open surgery.[2,8] This must be related to the cost of equipment, supplies and professional fees associated with the treatment.

Technically, the major advantages of laparoscopic surgery are that it provides adequate visualization of the entire abdominal cavity and localization of pathology, and allows more precise irrigation of peritoneal cavity under pressure. It also averts delays in instituting appropriate surgical management and avoids extensive preoperative studies. These, with reduced morbidity, smaller, cosmetically acceptable wounds and early recovery will continue to be a major driving force to its widespread use and demand.

The laparoscopic approach appears to be the most appropriate for women in childbearing age because of their high frequency of negative appendicitis and improved fertility preservation.[9,15]

Complications associated with minimal access surgery need specific strategies, which should include training of surgeons, modification of techniques and newer entry devices in the setting of the acute abdomen.[16] The use of target incision is helpful in difficult cases and when necessary, surgeons should not resist converting to open surgery.

An emerging role for laparoscopic surgery is in the management of life threatening acute abdominal conditions with inconclusive preoperative studies. In the two case reports cited here, laparoscopic treatment was successful even though both patients were hemodynamically unstable.[12,13]

Equally impressive is the use of laparoscopy for gynecologic emergencies during pregnancy. This is an area that needs further studies.

CONCLUSION

In conclusion, there is undeniable evidence that laparoscopic surgery for the management of gynecological emergencies is a feasible, safe and effective challenging alternative to open surgery. Its added value in reduced morbidity, shorter hospital stay and cosmesis has helped to establish its place in contemporary and future gynecologic practice.

The use of laparoscopy in pregnancy needs further studies to establish safety for both the baby and pregnant woman.

ACKNOWLEDGMENTS

I would like to acknowledge the assistance and encouragement I received from Professor RK Mishra, who, as Director of the training in Diploma in Minimal Access Surgery, guided and supervised this work.

This review, and indeed the whole training would not have been possible without him and the fabulous team at the World Laparoscopy Hospital.

REFERENCES

1. Kirshtein B, A Roy Shapira, A Lantsberg, Mandel S, Avinoach E, Mizrahi S. The use of laparoscopy in abdominal emergencies. Surg Endosc July 2003;17(7).
2. Chung RS, Diaz JJ, Chari V. Efficacy of routine laparoscopy for the acute abdomen. Surg Endosc March 1999;12(3).
3. Majewski W. Diagnostic Laparoscopy for the acute abdomen Surg Endosc Oct. 2000;14(10).
4. Gaitan H, Angel E, Sanchez J, Gomez I, Sanchez L, Aqudelo C. Laparoscopic diagnosis of acute lower abdominal pain in women of reproductive age. Int J Obstet Gynecol Feb. 2002;76(2).
5. Promecene PD. Laparoscopy in gynecologic emergencies. Semin Laprosc Surg March 2002;9(1):64-75.
6. Agresta F, Mazzarolo G, Gardo L F, Bedin N. The laparoscopic approach in abdominal emergencies, has the attitude changed: A single centre review of a 15-year experience. Surg Endosc May 2006;22(5):1255-62.
7. Ou CS, Rowbotham R. Laparoscopic diagnosis and treatment of acute abdominal pain in women. J Laparoendosc Adv Surg Tech A Feb 2000;10(1):41-45.
8. Dimitrios Stefanidis, William S Richardson, Lily Chang, David B Earle, Robert D. Faneli. The Role of Diagnostic Laparoscopy for Acute abdominal conditions. Surg Endosc 2009;23:16-23.
9. Atef M. Darwish, Mahmoud Zhakera, A Alaa. Youssef. Fertility after Laparoscopic management of gynecologic emergencies: The experiences of a developing country. Gynecol Surg June 2007;4(2).
10. Peter Takacs, Greg Latchaw, Lucia Gaitan, Nahida Chakhtoura, Timothy De Santis. Risk Factors for conversion to Laparotomy during laparoscopic management of an ectopic pregnancy. Archives of Gynecology and Obstetrics Nov 2005;273(1).
11. Parul J Shukla, Ravi Maharaj, Abe Fingerhut. Ergonomics and Technical Aspects of Minimal Access Surgery in Acute Surgery. European Journal of Trauma and Emergency Surgery Feb 2010;36(1).
12. Pezzuto A, Pomini P, Steinkasserer M, Nardeilli GB, Minlli L. Successful Laparoscopic management of spontaneous hemoperitoneum at 15 weeks pregnancy: Case report and review of literature. J Minim Invasive Gynecol Nov-Dec 2009; 16(6):792-94.
13. Takeda A, Sakai K, Mitsui T, Nakamura H. Management of ruptured corpus luteum cyst of pregnancy occurring in a 15 years old girl by laparoscopic surgery with autologous blood transfusion. J Pediatr Adolesc Gynecol April 2007;20(2):97-100.

14. Aulestia SN, Cantele H, Leyba JL, Navarrete M, Liapia SN. Laparoscopic Diagnosis and treatment in gynecological emergencies. JSLS July-Sept 2003;7(3):239-42.
15. Lim Lo , Chang SD, Homg SG. Laparoscopy versus laparotomy for surgical intervention for ovarian torsion. J Obstet Gynecol Res Dec 2008;34(6):1020-25.
16. Munro MG. Laparoscopic Access: Complications, Technologies and Technique Curr Opin Obstet Gynecol Aug 2002;14(4): 365-74.
17. Gayer G, Apter S, Garniek A, Portnoy O, E Schiff. Complications after Laparoscopic gynecologic. Procedures Abdominal Imaging March 2000;25(4).
18. Lee G, Nguyen A, Kivnick S, Marshall JP. Aortic Puncture with a laparoscopic port closure device. Obstet Gynecol Aug. 2007;110(2pt2):533-35.
19. Gurbuz AT, Peetz ME. The acute abdomen in the pregnant abdomen: Is there a role for laparoscopy? Surg Endosc Feb 1997;11(2):98-102.
20. Upadhyay A, Stanten S, Horoupian R, Kazantsev G. Laparoscopic management of a non-obstetric emergency in the third trimester of pregnancy. Surg Endosc Aug 2007;21(8):1344-48.
21. Minig L, Velasco A, Lamm M, et al. Evaluation of laparoscopic management of gynecologic emergencies by residents. In press, Int J Obstet Gynecol, On line publication 28.06.2010.