

# Laparoscopy in Patients With Bleeding Ectopic Pregnancy

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*Why would I want to do a laparoscopy? She was bleeding; she had almost a litre of blood in her abdomen.*

Since most gynaecologists are more familiar with laparotomy than with advanced laparoscopy, we shouldn't be surprised to hear such a statement in relation to management of a bleeding ectopic pregnancy. In fact, most senior gynaecologists would question the wisdom of performing laparoscopy for many conditions. Like them, we used to believe that women with a hemoperitoneum should not undergo a laparoscopy. Concerns about performing laparoscopy in bleeding patients relate to the creation of pneumoperitoneum and the possible delay in controlling the bleeding. Pneumoperitoneum distends the abdominal wall and exerts pressure against the diaphragm, stomach, and blood vessels, resulting in reduced venous return and decreased cardiac output.<sup>1</sup>

This was the position of one of us (TT), until he had operated on many women with bleeding ectopic pregnancy and a large amount of blood in the abdominal cavity; but it is no longer his position, and his colleagues, the "advanced laparoscopists," share his revised view. More recently, they have approached this kind of case by successfully performing laparoscopic surgery without converting to laparotomy. Contrary to the view of our colleagues, the "laparotomists," we now often question the need for a laparotomy at all in the management of ectopic pregnancy, ruptured or unruptured. The advantages of laparoscopy over laparotomy have been shown repeatedly in randomized clinical trials. Laparoscopy for the management of ectopic pregnancy is associated with less blood loss, shorter hospital stay, and lower cost than laparotomy.<sup>2</sup>

In the future, laparoscopy is likely to replace laparotomy, with laparotomy being performed only sparingly. For example, in 1989, Harry Reich conducted the first laparoscopic

hysterectomy.<sup>3</sup> Today, some gynaecologic laparoscopists even perform radical hysterectomy by laparoscopy.<sup>4</sup>

It will be unwise, however, for all gynaecologists to use the laparoscopic approach for all conditions. There are criteria that must be adhered to. The most important prerequisite is for the surgeon to be familiar with advanced laparoscopic techniques. Clinical judgement includes not only choosing the best management but also knowing your own limitations. In the case of a bleeding ectopic pregnancy, it is perfectly acceptable to perform a laparotomy instead of struggling with laparoscopy and delaying hemostasis. It is important to recognize that other surgeons could perform the surgery safely by laparoscopy. In fact, advanced laparoscopists can enter the peritoneal cavity and secure hemostasis by laparoscopy as quickly as by laparotomy, if not more quickly.<sup>1,5,6</sup>

Is laparoscopy ever appropriate with patients who are unstable? Indeed, with excessive bleeding in a relatively short time, orthostatic changes in blood pressure and heart rate, or shock, may occur. However, with gradual bleeding most patients remain hemodynamically stable despite a hemoperitoneum of 1000 to 1500 mL.<sup>7</sup> Regardless of the surgical approach, a patient who is hemodynamically unstable has to be stabilized first. One or two large-gauge intravenous lines for infusion of crystalloid solution or blood should be started without delay to replace the blood lost. Blood should be drawn for immediate measurement of hemoglobin and for blood group and coagulation profiles. The patient should be cross-matched for at least four units of blood. An indwelling urinary catheter must be placed for monitoring urinary output, and vital signs must be carefully observed. Invasive hemodynamic monitoring, including placement of an arterial catheter or central venous pressure catheter should be considered.

Once the patient is hemodynamically stable, a laparoscopic approach becomes a surgical option. We may be operating on a patient who is stable, but we need still to consider other factors.

A complete set of laparoscopic instruments, anaesthesia equipment, and cardiovascular monitors should be available, and the operating room should have the facility for rapid conversion to laparotomy. If the procedure is booked as “laparoscopy and possible laparotomy,” both surgical sets will then be prepared. We emphasize the need for bipolar cautery and a 10 mm suction-irrigator with different irrigator tips.<sup>2,6</sup>

Risk factors for needing to convert from laparoscopy to laparotomy should be evaluated.<sup>8</sup> Knowledge of these risk factors helps the surgeon and the patient make a correct decision. The risk factors include the possibility of the procedure being complicated, a history of multiple laparotomies, the presence of severe pelvic adhesions, and an inexperienced surgeon. In the presence of these risk factors, laparotomy is a better option.

Obesity is a relative contraindication. Laparoscopic surgery in obese women can be challenging because the thick abdominal wall may cause difficulty in achieving pneumoperitoneum. Also, excessive omental and retroperitoneal fat limits the manoeuvrability of instruments. In addition, increased airway pressure makes pulmonary ventilation difficult, especially in the Trendelenburg position. Obese patients are four times more likely to undergo conversion to laparotomy than patients of normal build. However, experience shows that laparoscopic treatment of ectopic pregnancy does not appear to increase surgical morbidity in obese patients.<sup>9</sup>

It is crucial that the anaesthesiologist agrees with your decision to perform laparoscopic surgery. Our experience with different anaesthesiologists indicates that they have no objection to providing anaesthesia even if the patient is bleeding, because bleeding from an ectopic pregnancy is slow (unlike bleeding from a ruptured aneurysm) and the patient can be stabilized before surgery.

The following tips might help surgeons to conduct laparoscopic surgery in the presence of hemoperitoneum. First, an intrauterine manipulator should be used; it will facilitate exposure, allowing identification of the bleeding site, but it is vital that the presence of simultaneous intrauterine and extrauterine pregnancies is first ruled out. This is especially relevant in pregnancy following assisted reproductive technology, which is associated with a considerable risk of heterotopic pregnancy. Of course, a uterine manipulator should not be used in this situation.

Second, pneumoperitoneum is created in a standard fashion. The increased intra-abdominal pressure due to pneumoperitoneum will provide tamponade to the bleeding vessels, decreasing the rate of bleeding.<sup>5</sup> Third, following

trocar insertion, the laparoscope is inserted gradually. Without touching the blood in the peritoneal cavity, the tip of the scope will remain clean, allowing instant visualization of the pelvic organs. Otherwise, it has to be cleaned repeatedly and this will delay achieving hemostasis.

The pelvic organs may be completely covered by blood. If so, the uterus should be manipulated upward, lifting it away from the pool of blood in the pelvis. The bleeding site can be identified and immediately secured. In general, a salpingectomy is required and this can be immediately performed with bipolar coagulation. Once the bleeding is controlled, removal of the blood can be completed.<sup>2</sup>

If the source of the bleeding cannot be seen, the blood in the peritoneal cavity must be aspirated, and for this we use a 10 mm suction-irrigator. If blockage of the suction occurs, changing the suction tip to a different type may be required. Not uncommonly, bleeding has stopped by the time laparoscopy is performed and salpingectomy can be avoided. Tubal abortion may also be encountered, in which case no further treatment is required.<sup>1</sup>

Considering all these factors, laparoscopy is as safe as laparotomy. In any event, the choice of performing laparoscopy or laparotomy should be based on the surgeon's preference, the perception of his or her own laparoscopic skill, and the clinical situation.

## REFERENCES

1. Akhan SE, Baysal B. Laparotomy or laparoscopic surgery? Factors affecting the surgeons' choice for the treatment of ectopic pregnancy. *Arch Gynecol Obstet* 2002;266:79–82.
2. Tulandi T. Surgical treatment of ectopic pregnancy and prognosis for subsequent fertility. UpToDate, Clinical Reference Library. Available from: [www.uptodate.com](http://www.uptodate.com). Accessed March 16, 2006.
3. Reich H, DeCaprio J, McGlynn F. Laparoscopic hysterectomy. *J Gynecol Surg* 1989;5:213.
4. Abu-Rustum NR, Gemignani ML, Moore K, Sonoda Y, Venkatraman E, Brown C, et al. Total laparoscopic radical hysterectomy with pelvic lymphadenectomy using the argon-beam coagulator: pilot data and comparison to laparotomy. *Gynecol Oncol* 2003;91:402–9.
5. Sagiv R, Debby A, Sadan O, Malinger G, Glezerman M, Golan A. Laparoscopic surgery for intrauterine pregnancy in hemodynamically unstable patients. *J Am Assoc Gynecol Laparosc* 2001;8:529–32.
6. Sokol AI, Chuang K, Milad MP. Risk factors for conversion to laparotomy during gynecologic laparoscopy. *J Am Assoc Gynecol Laparosc* 2003;10:469–73.
7. Mohamed H, Maiti S, Phillips G. Laparoscopic management of ectopic pregnancy: a 5-year experience. *J Obstet Gynaecol* 2002;22:411–14.
8. Takacs P, Latchaw G, Gaitan L, Chakhtoura N, De Santis T. Risk factors for conversion to laparotomy during laparoscopic management of an ectopic pregnancy. *Arch Gynecol Obstet* 2005;273:32–4.
9. Hsu S, Mitwally MF, Aly A, Al-Saleh M, Batt RE, Yeh J. Laparoscopic management of tubal ectopic pregnancy in obese women. *Fertil Steril* 2004;81:198–202.