International Journal of Surgery Case Reports 5 (2014) 271–273

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Iatrogenic uterine perforation and bowel penetration using a Hohlmanipulator: A case report☆

Ali Akdemir*, Teksin Cirpan[1]

Ege University School of Medicine, Department of Obstetrics and Gynecology, Izmir, Turkey

ARTICLE INFO

Article history:
Received 5 July 2013
Received in revised form
17 September 2013
Accepted 8 October 2013
Available online 19 March 2014

Keywords:
Total laparoscopic hysterectomy
Hohl manipulator
Uterine perforation
Bowel penetration

ABSTRACT

INTRODUCTION: Adequate exposure is a vital factor in total laparoscopic hysterectomy, and uterine manipulators have been used in achieving that. The Hohl uterine manipulator has been considered to be one of the safer manipulators. Beside adequate exposure, it is associated with lower intraoperative complications. However, we report a case of iatrogenic uterine rupture with the Hohl manipulator which also caused bowel penetration.

PRESENTATION OF CASE: A 52-year-old woman with endometrial hyperplasia was scheduled for total laparoscopic hysterectomy. Prior to entering into the abdomen, the Hohl uterine manipulator was introduced into the uterine cavity without force. During the laparoscopic exploration, we noted that the tip of the Hohl manipulator had perforated the posterior uterine fundus and penetrated the bowel. Therefore, laparotomy was performed, and the bowel injury was repaired by a colorectal surgeon.

DISCUSSION: The Hohl uterine manipulator is safe and easy to use, and is associated with decreased intraoperative injuries. However, the complications observed due to the improper use of an uterine manipulator can overshadow any advantages of manipulator. In the present report, we describe a case of uterine perforation and bowel penetration caused by the Hohl uterine manipulator during total laparoscopic hysterectomy, which required conversion to laparotomy. The cause for this complication is associated with improper usage of the uterine manipulator.

CONCLUSION: Uterine manipulator may cause uterine perforation and bowel penetration at the beginning of the hysterectomy procedure. These types of complications can be prevented by proper application of the Hohl manipulator into the uterus under direct pelvic visualization.

1. Introduction

Total laparoscopic hysterectomy (TLH) has been performed to treat several benign and malignant gynecological disorders.[1–3] However, instrumentation, require advanced surgical skill, adaptation to two-dimensional view, and decreased tactile feedback have been considered as limitations of this technique.[4] Moreover, challenges with uterine manipulation and colpotomy during TLH remain important concerns for laparoscopic gynecologists.[5] Therefore, different techniques and equipments have been developed to improve the TLH procedure. The use of an uterine manipulator is an important milestone that has popularized the use of TLH.[6,7] Reports in the literature have indicated that the Hohl uterine manipulator (Storz AG, Tutlingen/Germany) is safe and easy to use.[6–8] Moreover, the use of the Hohl manipulator is reportedly effective in preventing complications, particularly lower urinary system injuries, related to TLH.[7,8] However, in the present report, we describe an unusual complication involving iatrogenic uterine rupture with the use of the Hohl manipulator, which also caused bowel penetration.

2. Presentation of case

A 52-year-old woman (gravida, 2; para, 2) with endometrial hyperplasia was scheduled to undergo total laparoscopic hysterectomy. The patient had no history of abdomino-pelvic surgery. The patient was administered endotracheal anesthesia and placed in the low lithotomy position with her arms tucked at her sides. A Foley catheter was inserted into the bladder, a tenaculum was

* Corresponding author at: Ege University School of Medicine, Department of Obstetrics and Gynecology, Bornova TR-35100, Izmir, Turkey.
Tel.: +90 505 674 89 04; fax: +90 232 343 07 11.
E-mail addresses: ali.akdemir@ege.edu.tr, md.aliakdemir@gmail.com (A. Akdemir), teksin.cirpan@ege.edu.tr (T. Cirpan).
[1] Tel.: +90 2323901700; fax: +90 2323430711.

2210-2612/$ – see front matter.
http://dx.doi.org/10.1016/j.ijscr.2013.10.005

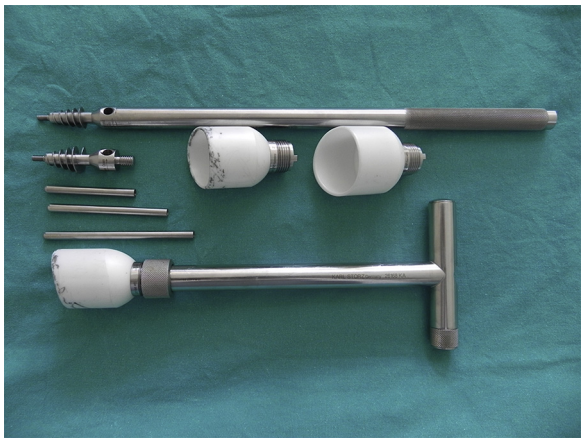

Fig. 1. The Hohl uterine manipulator.

placed on the anterior tip of the cervix, and a Hegar 6 dilator was used to dilate the cervix. The length of the uterus was then measured through hysterometry. Thereafter, the Hohl manipulator was prepared for use in the present patient. The Hohl manipulator is a reusable uterine manipulator that is anatomically designed as an uterine device. It consists of a strong handle; manipulator rod; cervical cup platform in three different sizes for small, medium, and large cervices; spiral threads in two sizes for a tight and secure endocervical fixation; and Hegar-type rod extensions for small and large uteri (Fig. 1). In the present case, because the cervical canal was narrow, the small-size spiral thread was chosen and the appropriate Hegar-type rod extension was connected to the spiral thread. The spiral thread was then tightly screwed into the endocervix to move the uterus in all directions and apply strong tension to the tissue. The manipulator handpiece with an attached cup was gently introduced into the vagina with light rotating movements. We ensured that the extended side of the manipulator cup was located dorsally. After the manipulator handpiece was advanced cranially as far as possible, it was screwed to the manipulator probe.

A 10-mm port was placed in the umbilicus and three secondary 5-mm ports (two on the left side and one on the right side) were positioned laterally for the placement of the surgical instruments. During pelvic visualization, we noted that the recto-sigmoid colon was attached to the posterior fundal part of the uterus. While grasping the rectosigmoid colon to separate it from the uterus, we noted that the Hegar-type rode extension of the Hohl manipulator had perforated the uterus and had penetrated the sigmoid colon (Fig. 2). Therefore, a midline laparotomy was performed and the defect on the rectosigmoid colon was sutured by a colorectal surgeon. Thereafter, a hysterectomy was performed using an open surgical technique. The patient was discharged on the 10th postoperative day without any additional complications.

3. Discussion

The TLH procedure has been developed and improved, and is associated with low rates of complications, which are similar to those associated with vaginal abdominal hysterectomy.[1,2] The TLH technique was previously believed to be associated with a relatively higher rate of complications as compared to those of vaginal and abdominal hysterectomy.[9] However, due to the increased experience of surgeons with this technique and advanced instrumentation, it is currently considered to be a safe approach for hysterectomy and is associated with a high rate of patient satisfaction and faster recovery time after surgery.[2] Several instruments have been used to standardize and improve the TLH technique, and the use of an uterine manipulator is an essential factor for improving the TLH procedure.[4,7–9] An appropriate uterine manipulator should be able to accommodate a wide range of uterine motions, can be assembled easily, and can serve as a colpo-pneumooccluder.

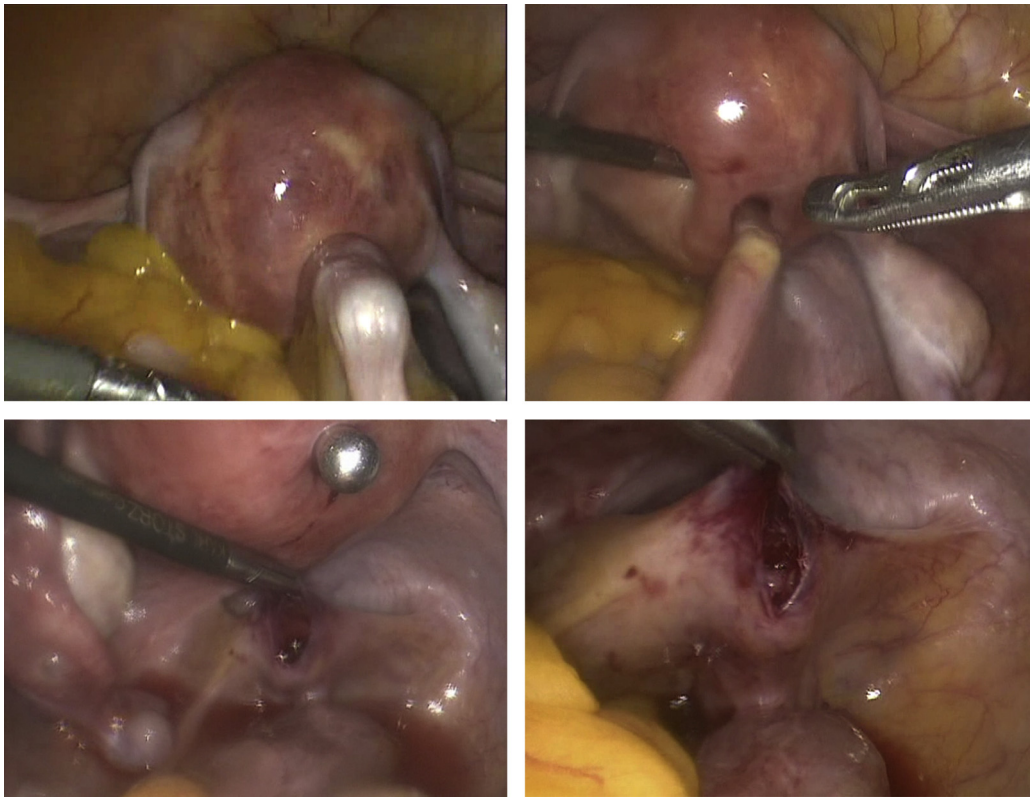

Fig. 2. The ruptured uterus and penetrated recto-sigmoid colon.

Many types of uterine manipulators have been described in the literature, such as Hohl's, Clemont-Ferrand's, and RUMI.[8–11] The Hohl uterine manipulator has been used for the TLH procedure in several cases. Numerous studies indicated that, in cases undergoing TLH, the Hohl uterine manipulator is safe and easy to use, and is associated with decreased intraoperative urinary system injuries.[6–9] However, the complications observed due to the improper use of uterine manipulators can overshadow any advantages offered by these devices. Uterine rupture caused by uterine manipulators has rarely been reported in the literature. Wu et al. reported a case of uterine perforation caused by overinflation of the intrauterine balloon of the RUMI manipulator during laparoscopic tubal surgery.[10] They reported that the individuals involved in the surgery probably confused the balloon port and the injection port, which may have led to the erroneous infusion of methylene blue into the balloon.

In the present report, we describe a case of uterine perforation and bowel penetration caused by the Hohl uterine manipulator during TLH, which required conversion to laparotomy. To our knowledge, this is the first report describing uterine rupture and bowel penetration caused by the Hohl manipulator during TLH. We believe that there are two reasons for the development of these complications. First, the assistant surgeon may have not correctly measured the length of the uterus, and therefore, a long Hegar-type rod extension was chosen. In such cases, the assembly of the Hohl manipulator with a long Hegar-type rod extension may cause uterine perforation and bowel penetration. Second, the assistant surgeon may have perforated the uterus during the measurement of uterine length, and the Hegar-type extension may have penetrated the uterus through the same perforation site, causing bowel penetration. Thus, the two causes for perforation mentioned above are associated with improper usage of the uterine manipulator. At present, in our institution, the uterine manipulator is applied into the uterus under direct laparoscopic pelvic visualization in order to prevent uterine perforation.

4. Conclusion

In cases undergoing TLH, the Hohl uterine manipulator is easy to use and safe. However, in rare cases, it may cause serious complications such as uterine perforation and bowel penetration at the beginning of the TLH procedure. These types of complications can be prevented by proper application of the Hohl manipulator into the uterus following laparoscopic access, under direct pelvic visualization.

Conflict of interest

Ali Akdemir and Teksin Cirpan declare that there is no conflict of interest.

Funding

No funding.

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Authors contribution

Data collection and writing were done by Ali Akdemir. Designing of the study was completed by Teksin Cirpan.

References

1. Donnez O, Jadoul P, Squifflet J, Donnez J. A series of 3190 laparoscopic hysterectomies for benign disease from 1990 to 2006: evaluation of complications compared with vaginal and abdominal procedures. *BJOG* 2009;**116**:492–500.
2. Nieboer TE, Johnson N, Lethaby A, Tavender E, Curr E, Garry R, et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev* 2009;**3**:CD003677.
3. Palomba S, Falbo A, Mocciaro R, Russo T, Zullo F. Laparoscopic treatment for endometrial cancer: a meta-analysis of randomized controlled trials (RCTs). *Gynecol Oncol* 2009;**112**:415–21.
4. Altgassen C, Michels W, Schneider A. Learning laparoscopic assisted hysterectomy. *Obstet Gynecol* 2004;**102**:308–13.
5. Elkington NM, Chou D. A review of total laparoscopic hysterectomy: role, techniques and complications. *Curr Opin Obstet Gynecol* 2006;**18**:380–4.
6. Mueller A, Oppelt P, Ackermann S, Binder H, Beckmann MW. The Hohl instrument for optimizing total laparoscopic hysterectomy procedures. *J Minim Invasive Gynecol* 2005;**12**:432–5.
7. Mueller A, Boosz A, Koch M, Jud S, Faschingbauer F, Schrauder M, et al. The Hohl instrument for optimizing total laparoscopic hysterectomy: results of more than 500 procedures in a university training center. *Arch Gynecol Obstet* 2012;**285**:123–7.
8. Hohl MK, Hauser N. Safe total intrafascial laparoscopic (TAIL) hysterectomy: a prospective cohort study. *Gynecol Surg* 2010;**7**:231–9.
9. Mueller A, Thiel F, Lermann J, Oppelt P, Beckmann MW, Renner SP. Feasibility and safety of total laparoscopic hysterectomy (TLH) using the Hohl instrument in nonobese and obese women. *J Obstet Gynaecol Res* 2010;**36**:159–64.
10. Wu HH, Yeh GP, Hsieh TC. Iatrogenic uterine rupture caused by overinflation of RUMI manipulator balloon. *J Minim Invasive Gynecol* 2005;**12**:174–6.
11. Tanprasertkul C, Kulvanitchaiyanunt A. A modified technique to simplify TLH with new developed uterine manipulator; Anurach uterine manipulator (AUM). *J Med Assoc Thai* 2010;**93**:154–9.