



Contents lists available at ScienceDirect

Gynecology and Minimally Invasive Therapy

journal homepage: www.e-gmit.com

Case report

Laparoscopic management of bladder ectopic pregnancy



Shahul Hameed Mohamed Siraj*, Bernard Su Min Chern

Department of Minimally Invasive Surgery, KK Women's and Children's Hospital, Singapore, Republic of Singapore

ARTICLE INFO

Article history:

Received 1 October 2015

Received in revised form

5 November 2015

Accepted 3 December 2015

Available online 2 February 2016

Keywords:

abdominal bladder pregnancy

ectopic pregnancy

laparoscopic management

methotrexate

ABSTRACT

Ectopic pregnancy is a potentially life-threatening condition and still the major cause of maternal mortality in the first trimester of pregnancy. It accounts for approximately 10% of maternal deaths. The involvement of the urinary tract is rare, usually occurring after the rupture of an abdominal implanted ectopic embryonic sac. We herein present a case of an ectopic pregnancy implanted in the bladder and successful laparoscopic management. To the best of our knowledge, this is the first description of abdominal pregnancy on the bladder wall in a natural cycle and successful laparoscopic management.

Copyright © 2016, The Asia-Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Ectopic pregnancy is a potentially life-threatening condition and still the major cause of maternal mortality in the first trimester of pregnancy. It accounts for approximately 10% of maternal deaths.¹ In most developed countries, the incidence of ectopic pregnancy has increased considerably over the last 20 years and now accounts for 1–2% of all pregnancies.^{2–5} Despite major advances in imaging technologies, early diagnosis of ectopic pregnancy is still a challenge for clinicians.^{6,7} Over the last 20 years, the use of the sensitive beta-human chorionic gonadotropin (β hCG) test, high-resolution transvaginal ultrasound, and advances in laparoscopy have enabled the detection of ectopic pregnancy without rupture, with a majority of these pregnancies being located in the fallopian tube.^{8,9} However, pregnancies also occur in the cervix, ovary, previous cesarean scar, and abdomen.¹⁰ The involvement of the urinary tract is rare, usually occurring after the rupture of an abdominal implanted ectopic embryonic sac, resulting in fistula to the bladder. Embryonic implantation and development on the bladder wall is extremely rare with only two cases previously reported.^{11,12} We herein present a case of an ectopic pregnancy implanted in the bladder and successful laparoscopic management. To the best of our knowledge,

this is the first description of abdominal pregnancy on the bladder wall in a natural cycle and successful laparoscopic management.

Case Report

A 28-year-old previously healthy Malay lady presented to our early pregnancy assessment unit with lower abdominal pain of 12 hours' duration at 7 weeks of gestation. Her abdomen was tender with guarding and rigidity. Her pulse was 80 bpm and her blood pressure was 119/70 mmHg. Vaginal examination revealed left adnexal tenderness. A transvaginal scan was performed, which revealed a $3.2 \times 2.9 \times 2.1$ cm cystic left adnexal cyst anterior to the left ovary but separate from the left ovary with a 17-mm fetal pole of 7 weeks with a fetal heart rate of 172 bpm (Figures 1 and 2).

There was a large amount of echogenic fluid in the pouch of Douglas. No intrauterine gestational sac was seen and the appearance was suggestive of a left viable ectopic pregnancy. Her β hCG level was 20,392.2 IU/L and hemoglobin level was 11.3 g/dL. She was counseled for laparoscopic salpingectomy. Intraoperatively, hemoperitoneum (about 300 mL) and an ectopic bladder with active bleeding were noted below the uterovesical fold at the bladder wall. Both fallopian tubes were normal and there was a corpus luteum in the right ovary (Figure 3).

The ectopic gestation was dissected from the bladder wall and the bladder wall was sutured using 2-0 vicryl. Bladder integrity was tested by filling with methylene blue as well as with cystoscopy (Figure 4). Subsequently, her β hCG was monitored after the operation (7 weeks of gestation (Day of surgery) – 20,392.2 IU/L Post

Conflicts of interest: All authors have no conflict of interest relevant to this article.

* Corresponding author. Department of Minimally Invasive Surgery, KK Women's and Children's Hospital, 100 Bukit Timah Road, Singapore 229899, Republic of Singapore.

E-mail address: drshmsiraj@yahoo.com (S.H.M. Siraj).

<http://dx.doi.org/10.1016/j.jgmit.2015.12.001>

2213–3070/Copyright © 2016, The Asia-Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

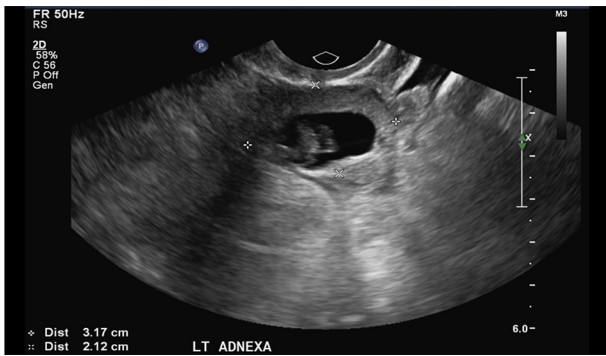


Figure 1. Left adnexal mass.

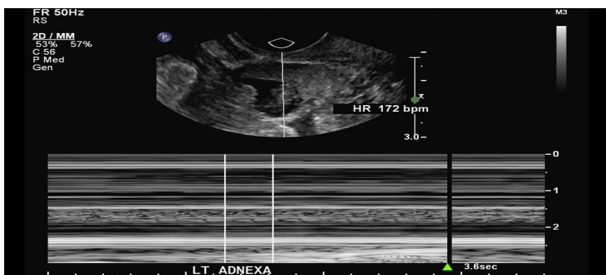


Figure 2. Left ectopic pregnancy with cardiac activity.

Operative Day 1 – 7140.8 IU/L Post Operative Day 4 – 3734.9 IU/L Post Operative Day 11 – 142.9 IU/L Post Operative Day 18 – 10.5 IU/L). The patient recovered completely and conceived spontaneously. Currently, she is in her 16th week of gestation.

Discussion

Medical management of unruptured ectopic pregnancy using single-dose methotrexate (MTX) with the aim of conserving the fallopian tubes was first described by Stovall et al.¹³ Studies have been conducted in the past to show MTX being comparable in

efficacy to laparoscopic salpingostomy.^{14,15} However, careful selection of cases for medical management is important. Although there are some cases that resolve with single-dose MTX, some require an additional dose. There are some cases in which tubal rupture occurs after MTX treatment, with the risk of this condition being reported as ranging from 7% to 14%.^{16–22} Then there are cases that fail to respond to either a single or repeated dose of MTX and need surgical intervention. Medical treatment is indicated for ectopic pregnancy when patients are hemodynamically stable, the mass diameter is smaller than 3.5 cm, and there is a desire for future pregnancy. MTX is the drug of choice in these situations, but medical treatment has a failure rate of up to 25%.²³ Although medical therapy can be successful at serum hCG concentrations considerably higher than 3000 IU/L, quality-of-life data suggest that MTX is only an attractive option for women with an hCG below 3000 IU/L.^{24,25} The presence of cardiac activity in an ectopic pregnancy is associated with a reduced chance of success following medical therapy and should be considered a contraindication to medical therapy.^{26,27} In our case, the ectopic pregnancy was more than 3 cm with the serum β hCG level of 20,392.2 IU/L; additionally, it also demonstrated cardiac activity. Thus, laparoscopic management of ectopic pregnancy was offered.

Ectopic pregnancy in the bladder wall is an extremely rare condition. Some factors such as tubal surgery, previous ectopic pregnancy, altered tubal motility, or prior pelvic inflammatory disease prevent or retard passage of the fertilized ovum into the uterine cavity. Our patient denied any previous sexually transmitted diseases or having any tubal pregnancy prior to this event. Abdominal pregnancies tend to occur secondary to an early rupture or abortion of a tubal pregnancy into the peritoneal cavity. Rare cases of primary peritoneal implantation of fertilized ovum have been published. In the present case, at surgery, we found that both fallopian tubes were intact, suggesting primary implantation of the fertilized ovum in the bladder peritoneum, although a secondary implantation cannot be ruled out. Once there, the zygote probably invaded and eroded the subjacent bladder muscle wall. Presently, the pregnancy was in a site easily accessible to laparoscopic intervention. Minimal bleeding was observed and the integrity of bladder was preserved. Logically, use of the laparoscope would be dictated by the anatomical location of the pregnancy and comfort or skill of the surgeon.¹² Laparoscopic management may also offer

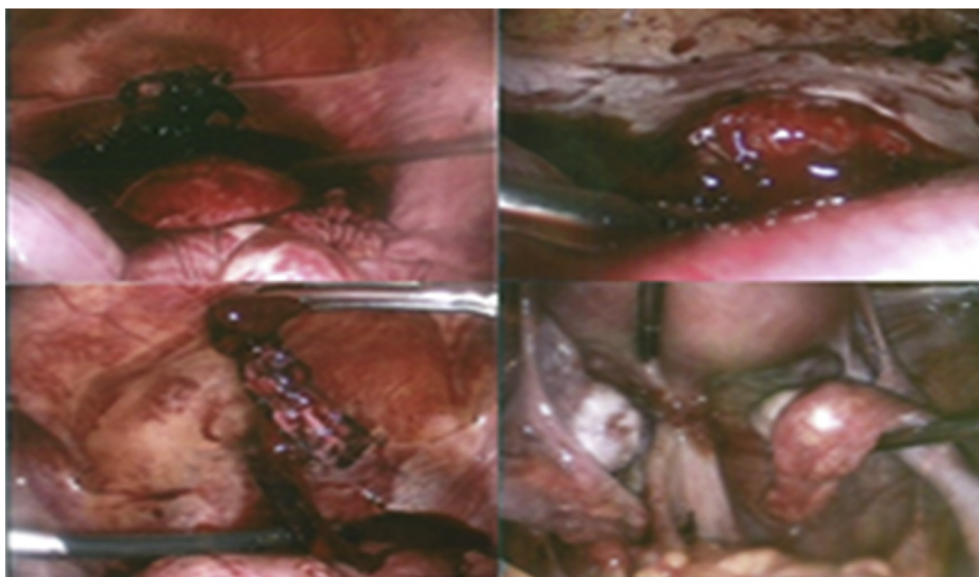


Figure 3. Intraoperative finding of ectopic bladder and normal appearance of the fallopian tubes.

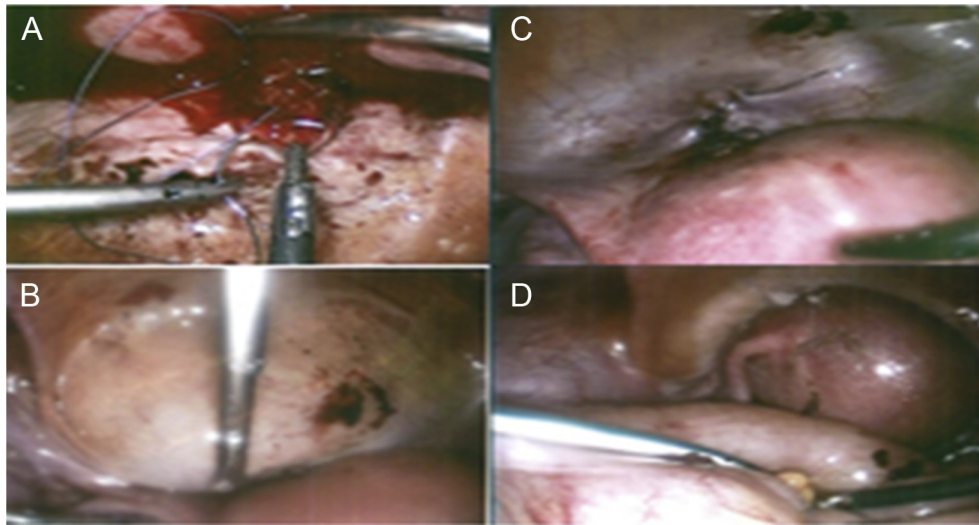


Figure 4. Excision of ectopic bladder and suturing. (A and C) Suturing of the ectopic bladder excision (B and D) Bladder integrity was tested with methylene blue.

excellent exposure and accessibility for management of unexpected abdominal pregnancy in select patients.

References

- Schmidt T, Rein DT, Foth D, et al. Prognostic value of repeated serum CA 125 measurements in first trimester pregnancy. *Eur J Obstet Gynecol Reprod Biol.* 2001;97:168–173.
- Mäkinen JI. Ectopic pregnancy in Finland 1967–83: a massive increase. *Br Med J (Clin Res Ed).* 1987;294:740–741.
- Coste J, Job-Spira N, Aublet-Cuvelier B, et al. Incidence of ectopic pregnancy. First results of a population-based register in France. *Hum Reprod.* 1994;9:742–745.
- Department of Health. *Report on Confidential Enquiries into Maternal Deaths in the United Kingdom 1994–1996.* London, UK: HMSO; 1998.
- Centers for Disease Control and Prevention (CDC). Ectopic pregnancy—United States, 1990–1992. *MMWR Morb Mortal Wkly Rep.* 1995;44:46–48.
- Predanic M. Differentiating tubal abortion from viable ectopic pregnancy with serum CA-125 and beta-human chorionic gonadotropin determinations. *Fertil Steril.* 2000;73:522–525.
- Kuscu E, Vicdan K, Turhan NO, Oguz S, Zorlu G, Gokmen O. The hormonal profile in ectopic pregnancies. *J Pak Med Assoc.* 1994;44:45–47.
- Speroff L, Fritz M. *Clinical Gynecologic Endocrinology and Infertility.* 7th ed. New York, NY: Lippincott Williams & Wilkins; 2004.
- Lau S, Tulandi T. Conservative medical and surgical management of interstitial ectopic pregnancy. *Fertil Steril.* 1999;72:207–215.
- Bouyer J, Coste J, Fernandez H, Pouly JL, Job-Spira N. Sites of ectopic pregnancy: a 10 year population-based study of 1800 cases. *Hum Reprod.* 2002;17:3224–3230.
- Clegg DR. Extra-uterine pregnancy communicating with the bladder. A case report. *S Afr Med J.* 1983;63:168.
- del Rosario R, el-Roeiy A. Abdominal pregnancy on the bladder wall following embryo transfer with cryopreserved-thawed embryos: a case report. *Fertil Steril.* 1996;66:839–841.
- Stovall TG, Ling FW, Gray LA. Single-dose methotrexate for treatment of ectopic pregnancy. *Obstet Gynecol.* 1991;77:754–757.
- Hajenius PJ, Engelsbel S, Mol BW, et al. Randomised trial of systemic methotrexate versus laparoscopic salpingostomy in tubal pregnancy. *Lancet.* 1997;350:774–779.
- Dias Pereira G, Hajenius PJ, Mol BW, et al. Fertility outcome after systemic methotrexate and laparoscopic salpingostomy for tubal pregnancy. *Lancet.* 1999;353:724–725.
- Glock JL, Johnson JV, Brumsted JR. Efficacy and safety of single-dose systemic methotrexate in the treatment of ectopic pregnancy. *Fertil Steril.* 1994;62:716–721.
- Stovall TG, Ling FW. Single-dose methotrexate: an expanded clinical trial. *Am J Obstet Gynecol.* 1993;168:1759–1762.
- Gross Z, Rodriguez JJ, Stalnak BL. Ectopic pregnancy. Nonsurgical, outpatient evaluation and single-dose methotrexate treatment. *J Reprod Med.* 1995;40:371–374.
- Corsan GH, Karacan M, Qasim S, Bohrer MK, Ransom MX, Kemmann E. Identification of hormonal parameters for successful systemic single-dose methotrexate therapy in ectopic pregnancy. *Hum Reprod.* 1995;10:2719–2722.
- Ransom MX, Garcia AJ, Bohrer M, Corsan GH, Kemmann E. Serum progesterone as a predictor of methotrexate success in the treatment of ectopic pregnancy. *Obstet Gynecol.* 1994;83:1033–1037.
- Hidlebaugh D, O'Mara P. Clinical and financial analyses of ectopic pregnancy management at a large health plan. *J Am Assoc Gynecol Laparosc.* 1997;4:207–213.
- Thoen LD, Creinin MD. Medical treatment of ectopic pregnancy with methotrexate. *Fertil Steril.* 1997;68:727–730.
- Elito Jr J, Reichmann AP, Uchiyama MN, Camano L. Predictive score for the systemic treatment of unruptured ectopic pregnancy with a single dose of methotrexate. *Int J Gynaecol Obstet.* 1999;67:75–79.
- Sowter M, Farquhar C, Gudex G. An economic evaluation of single dose systemic methotrexate and laparoscopic surgery for the treatment of unruptured ectopic pregnancy. *BJOG.* 2001;108:204–212.
- Mol BW, Hajenius P, Engelsbel S, et al. Treatment of tubal pregnancy in the Netherlands: an economic comparison of systemic methotrexate administration and laparoscopic salpingostomy. *Am J Obstet Gynecol.* 1999;181:945–951.
- Yao M, Tulandi T. Current status of surgical and nonsurgical management of ectopic pregnancy. *Fertil Steril.* 1997;67:421–433.
- Sowter M, Frappell J. The role of laparoscopy in the management of ectopic pregnancy. *Rev Gynaecol Practice.* 2002;2:73–82.