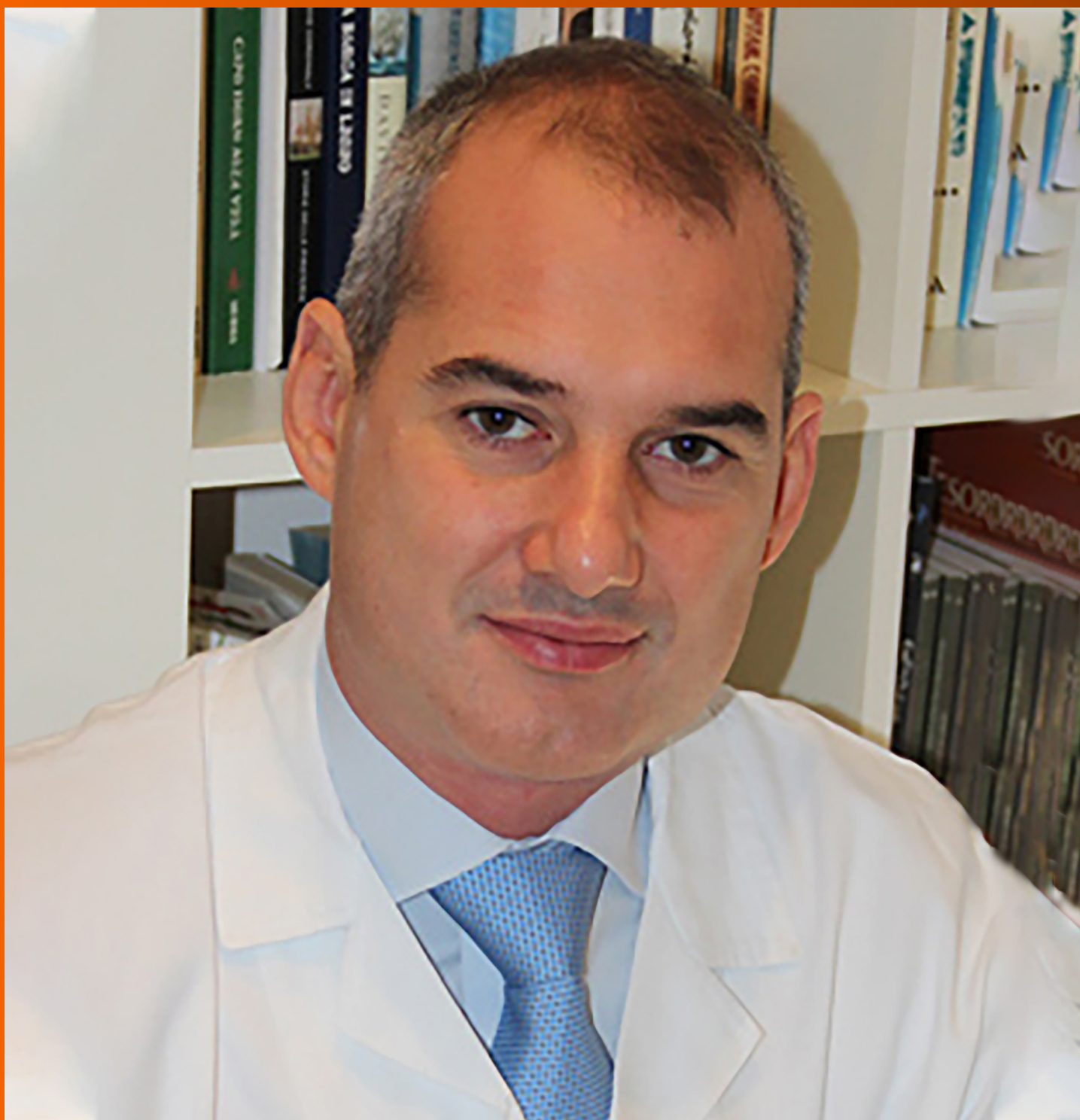


World Journal of *Clinical Cases*

World J Clin Cases 2021 August 16; 9(23): 6582-6963



OPINION REVIEW

- 6582 COVID-19 pandemic, as experienced in the surgical service of a district hospital in Spain

Pérez Lara FJ, Jimenez Martinez MB, Pozo Muñoz F, Fontalba Navas A, Garcia Cisneros R, Garcia Larrosa MJ, Garcia Delgado I, Callejon Gil MDM

REVIEW

- 6591 Beta-carotene and its protective effect on gastric cancer

Chen QH, Wu BK, Pan D, Sang LX, Chang B

- 6608 Liver transplantation during global COVID-19 pandemic

Alfishawy M, Nso N, Nassar M, Ariyaratnam J, Bhuiyan S, Siddiqui RS, Li M, Chung H, Al Balakosy A, Alqassieh A, Fülöp T, Rizzo V, Daoud A, Soliman KM

- 6624 Nonalcoholic fatty pancreas disease: An emerging clinical challenge

Zhang CL, Wang JJ, Li JN, Yang Y

MINIREVIEWS

- 6639 Novel mechanism of hepatobiliary system damage and immunoglobulin G4 elevation caused by *Clonorchis sinensis* infection

Zhang XH, Huang D, Li YL, Chang B

- 6654 Intestinal microbiota participates in nonalcoholic fatty liver disease progression by affecting intestinal homeostasis

Zhang Y, Li JX, Zhang Y, Wang YL

- 6663 Theory and reality of antivirals against SARS-CoV-2

Zhao B, Yang TF, Zheng R

- 6674 Acute acalculous cholecystitis due to infectious causes

Markaki I, Konsoula A, Markaki L, Spornovasilis N, Papadakis M

ORIGINAL ARTICLE

Case Control Study

- 6686 Innate immunity – the hallmark of *Helicobacter pylori* infection in pediatric chronic gastritis

Meliş LE, Mărginean CO, Săsară MO, Mocan S, Ghiga DV, Bogliş A, Duicu C

Retrospective Study

- 6698 Effects on newborns of applying bupivacaine combined with different doses of fentanyl for cesarean section

Wang Y, Liu WX, Zhou XH, Yang M, Liu X, Zhang Y, Hai KR, Ye QS

- 6705** Awake fiberoptic intubation and use of bronchial blockers in ankylosing spondylitis patients
Yang SZ, Huang SS, Yi WB, Lv WW, Li L, Qi F
- 6717** Efficacy of different antibiotics in treatment of children with respiratory mycoplasma infection
Zhang MY, Zhao Y, Liu JF, Liu GP, Zhang RY, Wang LM
- 6725** Expression of caspase-3 and hypoxia inducible factor 1 α in hepatocellular carcinoma complicated by hemorrhage and necrosis
Liang H, Wu JG, Wang F, Chen BX, Zou ST, Wang C, Luo SW
- 6734** Increased morbidity and mortality of hepatocellular carcinoma patients in lower cost of living areas
Sempokuya T, Patel KP, Azawi M, Ma J, Wong LL

SYSTEMATIC REVIEWS

- 6747** Safety of pancreatic surgery with special reference to antithrombotic therapy: A systematic review of the literature
Fujikawa T, Naito S
- 6759** What paradigm shifts occurred in the management of acute diverticulitis during the COVID-19 pandemic? A scoping review
Gallo G, Ortenzi M, Grossi U, Di Tanna GL, Pata F, Guerrieri M, Sammarco G, Di Saverio S

CASE REPORT

- 6768** Pylephlebitis — a rare complication of a fish bone migration mimicking metastatic pancreatic cancer: A case report
Bezerra S, França NJ, Mineiro F, Capela G, Duarte C, Mendes AR
- 6775** Solitary seminal vesicle metastasis from ileal adenocarcinoma presenting with hematospermia: A case report
Cheng XB, Lu ZQ, Lam W, Yiu MK, Li JS
- 6781** Hepatic abscess caused by esophageal foreign body misdiagnosed as cystadenocarcinoma by magnetic resonance imaging: A case report
Pan W, Lin LJ, Meng ZW, Cai XR, Chen YL
- 6789** 2+0 CYP21A2 deletion carrier — a limitation of the genetic testing and counseling: A case report
Xi N, Song X, Wang XY, Qin SF, He GN, Sun LL, Chen XM
- 6798** Psoriasis treatment using minimally manipulated umbilical cord-derived mesenchymal stem cells: A case report
Ahn H, Lee SY, Jung WJ, Pi J, Lee KH
- 6804** Double intussusception in a teenage child with Peutz-Jeghers syndrome: A case report
Chiew J, Sambanthan ST, Mahendran HA

- 6810** Nedaplatin-induced syndrome of inappropriate secretion of antidiuretic hormone: A case report and review of the literature
Tian L, He LY, Zhang HZ
- 6816** Nasal metastases from neuroblastoma-a rare entity: Two case reports
Zhang Y, Guan WB, Wang RF, Yu WW, Jiang RQ, Liu Y, Wang LF, Wang J
- 6824** Nocardiosis with diffuse involvement of the pleura: A case report
Wang P, Yi ML, Zhang CZ
- 6832** Prenatal diagnosis of triphalangeal thumb-polysyndactyly syndrome by ultrasonography combined with genetic testing: A case report
Zhang SJ, Lin HB, Jiang QX, He SZ, Lyu GR
- 6839** Blue LED as a new treatment to vaginal stenosis due pelvic radiotherapy: Two case reports
Barros D, Alvares C, Alencar T, Baqueiro P, Marianno A, Alves R, Lenzi J, Rezende LF, Lordelo P
- 6846** Diverse microbiota in palatal radicular groove analyzed by Illumina sequencing: Four case reports
Tan XL, Chen X, Fu YJ, Ye L, Zhang L, Huang DM
- 6858** Autism with dysphasia accompanied by mental retardation caused by *FOXP1* exon deletion: A case report
Lin SZ, Zhou XY, Wang WQ, Jiang K
- 6867** *FGFR2-TSC22D1*, a novel *FGFR2* fusion gene identified in a patient with colorectal cancer: A case report
Kao XM, Zhu X, Zhang JL, Chen SQ, Fan CG
- 6872** Trismus originating from rare fungal myositis in pterygoid muscles: A case report
Bi L, Wei D, Wang B, He JF, Zhu HY, Wang HM
- 6879** Retroperitoneal laparoscopic partial nephrectomy for unilateral synchronous multifocal renal carcinoma with different pathological types: A case report
Xiao YM, Yang SK, Wang Y, Mao D, Duan FL, Zhou SK
- 6886** Diffuse large B cell lymphoma originating from the maxillary sinus with skin metastases: A case report and review of literature
Usuda D, Izumida T, Terada N, Sangen R, Higashikawa T, Sekiguchi S, Tanaka R, Suzuki M, Hotchi Y, Shimozawa S, Tokunaga S, Osugi I, Katou R, Ito S, Asako S, Takagi Y, Mishima K, Kondo A, Mizuno K, Takami H, Komatsu T, Oba J, Nomura T, Sugita M, Kasamaki Y
- 6900** Manifestation of acute peritonitis and pneumonedema in scrub typhus without eschar: A case report
Zhou XL, Ye QL, Chen JQ, Li W, Dong HJ
- 6907** Uterine tumor resembling an ovarian sex cord tumor: A case report and review of literature
Zhou FF, He YT, Li Y, Zhang M, Chen FH
- 6916** Dopamine agonist responsive burning mouth syndrome: Report of eight cases
Du QC, Ge YY, Xiao WL, Wang WF

- 6922** Complete withdrawal of glucocorticoids after dupilumab therapy in allergic bronchopulmonary aspergillosis: A case report
Nishimura T, Okano T, Naito M, Tsuji C, Iwanaka S, Sakakura Y, Yasuma T, Fujimoto H, D'Alessandro-Gabazza CN, Oomoto Y, Kobayashi T, Gabazza EC, Ibata H
- 6929** Sirolimus treatment for neonate with blue rubber bleb nevus syndrome: A case report
Yang SS, Yang M, Yue XJ, Tou JF
- 6935** Combined thoracoscopic and laparoscopic approach to remove a large retroperitoneal compound paraganglioma: A case report
Liu C, Wen J, Li HZ, Ji ZG
- 6943** Menetrier's disease and differential diagnosis: A case report
Wang HH, Zhao CC, Wang XL, Cheng ZN, Xie ZY
- 6950** Post-salpingectomy interstitial heterotopic pregnancy after *in vitro* fertilization and embryo transfer: A case report
Wang Q, Pan XL, Qi XR
- 6956** Ulnar nerve injury associated with displaced distal radius fracture: Two case reports
Yang JJ, Qu W, Wu YX, Jiang HJ

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Luigi Valentino Berra, MD, Assistant Professor, Neurosurgeon, Department of Neurosurgery, Policlinico Umberto I - Sapienza Università di Roma, Roma 00161, Italy. luigivbe@tin.it

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2021 Edition of Journal Citation Reports® cites the 2020 impact factor (IF) for WJCC as 1.337; IF without journal self cites: 1.301; 5-year IF: 1.742; Journal Citation Indicator: 0.33; Ranking: 119 among 169 journals in medicine, general and internal; and Quartile category: Q3. The WJCC's CiteScore for 2020 is 0.8 and Scopus CiteScore rank 2020: General Medicine is 493/793.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Jia-Hui Li; Production Department Director: Xiang Li; Editorial Office Director: Jin-Lei Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

EDITORIAL BOARD MEMBERS

<https://www.wjnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

August 16, 2021

COPYRIGHT

© 2021 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Post-salpingectomy interstitial heterotopic pregnancy after *in vitro* fertilization and embryo transfer: A case report

Qiao Wang, Xiao-Ling Pan, Xiao-Rong Qi

ORCID number: Qiao Wang 0000-0002-1534-4004; Xiao-Ling Pan 0000-0002-4726-5095; Xiao-Rong Qi 0000-0002-1256-4926.

Author contributions: Wang Q and Pan XL performed the research; Wang Q wrote the manuscript; Qi XR performed the surgery and revised the manuscript; all authors have read and approve the final manuscript.

Informed consent statement: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Conflict-of-interest statement: All authors declare no conflict of interest.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and

Qiao Wang, Xiao-Ling Pan, Xiao-Rong Qi, Department of Gynecology and Obstetrics, West China Second Hospital, Sichuan University, Chengdu 610041, Sichuan Province, China

Corresponding author: Xiao-Rong Qi, MD, Assistant Professor, Department of Gynecology and Obstetrics, West China Second Hospital, Sichuan University, No. 20 Renmin Road, Chengdu 610041, Sichuan Province, China. 66518456@qq.com

Abstract

BACKGROUND

Heterotopic pregnancy (HP) refers to the coexistence of ectopic pregnancy and intrauterine pregnancy. Salpingectomy is proposed as a pretreatment before *in vitro* fertilization and embryo transfer (IVF-ET) to reduce the risk of HP. HP after IVF-ET occurs in women who had already underwent bilateral salpingectomy, even though it is extremely rare.

CASE SUMMARY

A case of a 29-year-old woman with recurrent interstitial HP after IVF-ET following salpingectomy is presented. The main symptom was a sudden and worsening pelvic pain. Physical examinations revealed signs of peritoneal bleeding and irritation with stable vital signs. Transvaginal ultrasound showed a live intrauterine pregnancy and another live embryo with cardiac activity in the left cornu extending beyond the lateral edge of the uterus. Her hemoglobin concentration was 8.0 g/dL, and serum human chorionic gonadotropin value was 171116.9 mIU/mL. With the diagnosis of ruptured HP with internal bleeding, an emergency laparoscopic resection of left cornu was performed. The interstitial pregnancy was removed with caution to protect the intrauterine pregnancy. After the surgical treatment, the intrauterine pregnancy continued with no complications. A healthy baby was delivered by caesarean section at 39 wk. Outcomes of another three cases are further summarized.

CONCLUSION

Post-salpingectomy HP is a rare but challenging condition. Surgical treatment is preferred in the case with a viable intrauterine pregnancy.

Key Words: Heterotopic pregnancy; *In vitro* fertilization and embryo transfer; Salpingectomy; Surgery; Case report

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.

fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Specialty type: Obstetrics and gynecology

Country/Territory of origin: China

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): 0
Grade D (Fair): 0
Grade E (Poor): 0

Received: May 9, 2021

Peer-review started: May 9, 2021

First decision: June 5, 2021

Revised: June 6, 2021

Accepted: June 22, 2021

Article in press: June 22, 2021

Published online: August 16, 2021

P-Reviewer: Velikova TV

S-Editor: Wu YXJ

L-Editor: Filipodia

P-Editor: Wang LYT



Core Tip: Our paper presented a rare case of a 29-year-old woman with recurrent interstitial heterotopic pregnancy (HP) after *in vitro* fertilization-embryo transfer following bilateral salpingectomy. We also summarized the outcomes of another three similar cases successfully treated in our department. Furthermore, we reviewed characteristics and outcomes of other reported post-salpingectomy HP cases. Interstitial HP after bilateral salpingectomy is extremely rare and has a high risk of rupture and hemorrhage.

Citation: Wang Q, Pan XL, Qi XR. Post-salpingectomy interstitial heterotopic pregnancy after *in vitro* fertilization and embryo transfer: A case report. *World J Clin Cases* 2021; 9(23): 6950-6955

URL: <https://www.wjgnet.com/2307-8960/full/v9/i23/6950.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v9.i23.6950>

INTRODUCTION

Heterotopic pregnancy (HP) refers to the coexistence of ectopic pregnancy (EP) and intrauterine pregnancy and has a very low incidence, occurring 1 in 30000 spontaneous pregnancies[1]. Due to the widespread use of assisted reproductive techniques, HP after *in vitro* fertilization and embryo transfer (IVF-ET) has been frequently reported[2]. Salpingectomy has been proposed as a pretreatment before IVF-ET to reduce the risk of HP. Theoretically, the whole visible part of the fallopian tube is removed by salpingectomy, which could prevent EP after IVF-ET. However, HP after IVF-ET even occurs in women who had already undergone bilateral salpingectomy.

Post-salpingectomy HP is an extremely rare but challenging condition, since the ectopic pregnancy must be removed whilst preserving the normal intrauterine pregnancy. Since the interstitial portion is rich in blood supply, it makes the post-salpingectomy interstitial HP an extremely dangerous complication with risks of sudden rupture and severe hemorrhage. Thus, for patients after tubal sterilization, the possibility of HP should not be neglected even with the presence of live intrauterine pregnancies. Previously reported post-salpingectomy HP cases have been reviewed[1-9]. Four of these cases were diagnosed as interstitial HPs (with three ruptured cases), only one of which reported a live birth of the intrauterine pregnancy after treatment. The other three cases experienced abortions.

Here, we report a case of recurrent and ruptured interstitial HP after IVF-ET following bilateral salpingectomy. We further summarize the outcomes and delivery modes of another three similar cases who were treated successfully in our department in the past 5 years.

CASE PRESENTATION

Chief complaints

A 29-year-old woman presented to our department complaining of worsening pain in the lower left abdominal quadrant. Her last menstrual cycle was 7 wk and 1 d previous.

History of present illness

The pain had started a day before her admission and had been worsened in the last 4 h. An IVF cycle was performed with two frozen embryos transferred 5 wk ago. There were no additional symptoms.

History of past illness

The patient had an obstetric history of gravida 4, para 0-0-3-0. Two years after her first spontaneous abortion, she twice underwent diagnostic hysteroscopy combined with laparoscopy for secondary infertility. Then, she had a history of HP with failing intrauterine pregnancy after ovulation induction treatment. Laparoscopic bilateral salpingectomy and dilation and curettage were performed. After sterilization, she

experienced two unsuccessful IVF cycles.

Personal and family history

There is no personal and family history.

Physical examination

The patient's temperature was 36.5 °C, heart rate was 95 bpm, respiratory rate was 20 breaths per min, blood pressure was 102/67 mmHg, and oxygen saturation was 98%. The general appearance was acute distress. The gynecologic examination revealed bulky uterus and tenderness in the left adnexal area, which showed signs of peritoneal bleeding and irritation but with stable vital signs.

Laboratory examinations

Blood analysis revealed an erythropenia ($2.58 \times 10^{12}/L$) and a hemoglobin concentration of 8.0 g/dL with normal leukocyte count and platelet count. Prothrombin and partial thromboplastin times were normal. Serum human chorionic gonadotropin value was 171116.9 mIU/mL. The blood biochemistries and urine analysis were normal.

Imaging examinations

Transvaginal ultrasound showed a live intrauterine pregnancy and another live embryo with cardiac activity in the left cornu extending beyond the lateral edge of the uterus. In addition, free fluid was noted in the cul-de-sac as well as in the abdomen.

FINAL DIAGNOSIS

The final diagnosis of the presented case is ruptured HP with internal bleeding after IVF-ET.

TREATMENT

An emergency laparoscopy was performed after discussion with the patient. After suction of blood clots and hemoperitoneum (about 700 mL), a ruptured interstitial pregnancy within the left salpingectomy site (lateral to the insertion of the left round ligament and not connected with uterine cavity) was confirmed (**Figure 1**). We performed a left cornual resection to remove the interstitial pregnancy, with caution to protect the intrauterine pregnancy.

OUTCOME AND FOLLOW-UP

The pathological report confirmed the presence of trophoblastic tissue in interstitial and intramural portion. The patient's post-operative course was uneventful. The synchronous intrauterine pregnancy continued with no complications and with appropriate growth of the fetus. A healthy baby was delivered by caesarean section at 39 wk, weighing 3110 g.

We further retrospectively studied cases of post-IVF interstitial HP following bilateral salpingectomy in our department over the past 5 years. The characteristics and outcomes of these 4 cases are listed in **Table 1**. All of them were treated by laparoscopic excision of the intramural and cornual segment and had very good outcomes for the intrauterine pregnancies.

DISCUSSION

As described above, salpingectomy or tube ligation is used to eliminate the risk of HP and improve outcomes of IVF-ET. The mechanism of HP following bilateral salpingectomy is unclear. The remaining interstitial portion of fallopian tube and the formation of a cornual sinus after laparoscopic salpingectomy might be the causative risk factors. Thus, it is important to perform an appropriate laparoscopic sterilization by minimizing tubal residue. Some studies further suggested cornual suture at the

Table 1 Characteristics of post-sterilization interstitial heterotopic pregnancy after *in vitro* fertilization and embryo transfer in our department

No.	Age, yr	Year	Gravida/Para	EP	History of sterilization	GA	Transferred embryos	Main symptom	Ultrasound manifestation	Ectopic site	Bleeding volume	Outcome of intrauterine pregnancy
1	29	2019	G4/P0030	1	Bilateral salpingectomy for HP in 2018	50 d	2 frozen embryos	Abdominal pain	IVE + ECM + PF	Left IP (ruptured)	700 mL	Full-term CS (selective)
2	32	2019	G4/P0030	2	Left salpingectomy for EP in 2013 and right salpingectomy for EP in 2015	66 d	2 fresh embryos	Abdominal pain	IVE + EVE	Left IP	300 mL	Premature CS at 34 wk (fetal distress)
3	36	2018	G4/P1021	1	Right salpingectomy and left tubal ligation for EP in 2015	38 d	2 frozen embryos	Abdominal pain	IVE + ECM + PF	Right IP (ruptured)	1000 mL	Full-term CS (breech position)
4	30	2016	G5/P0040	3	Left salpingectomy for EP in 2007 and right salpingectomy for EP in 2014	49 d	2 fresh embryos	None	IVE + EVE	Left IP	50 mL	Full-term CS (selective)

CS: Caesarean section; ECM: Extrauterine complex mass; EP: Ectopic pregnancy; EVE: Extrauterine viable embryo; GA: Gestational age; IP: Interstitial pregnancy; IVE: Intrauterine viable embryo; PF: Pelvic fluid.

time of salpingectomy to help reduce these risks[10].

HP can be treated by expectancy, medical or surgical treatment. If the intrauterine pregnancy is viable, surgical excision of the ectopic pregnancy is a better option. The intrauterine gestations in HP were more likely to end in spontaneous or induced abortion compared with the outcomes of normal intrauterine pregnancies. The rate of live birth after treatment was even lower. Thus, patients could be treated immediately and appropriately to increase the survival rate of the intrauterine pregnancy. In the case of a non-viable intrauterine pregnancy, conservative treatment should be considered if the patient is in stable condition without rupture. The treatment should be personalized.

Previously reported post-salpingectomy interstitial HP cases revealed a high rate of abortion. In the past 5 years, 4 cases of post-sterilization interstitial HP after IVF-ET were successfully treated by laparoscopic resection of the ectopic tissue and ipsilateral cornu in our department. Each of them had an ongoing healthy gestation culminating in a caesarean section with a live birth.

CONCLUSION

Post-salpingectomy interstitial HP should be considered as a separate diagnosis after IVF-ET. Timely diagnosis and immediate treatment are essential to achieve better clinical outcomes. In our experience, laparoscopy is the minimally invasive way to remove the ectopic tissue and preserve the viable intrauterine pregnancy with a very high success rate. Caesarean section is the preferred method of delivery considering the risk of metrorrhaxis.

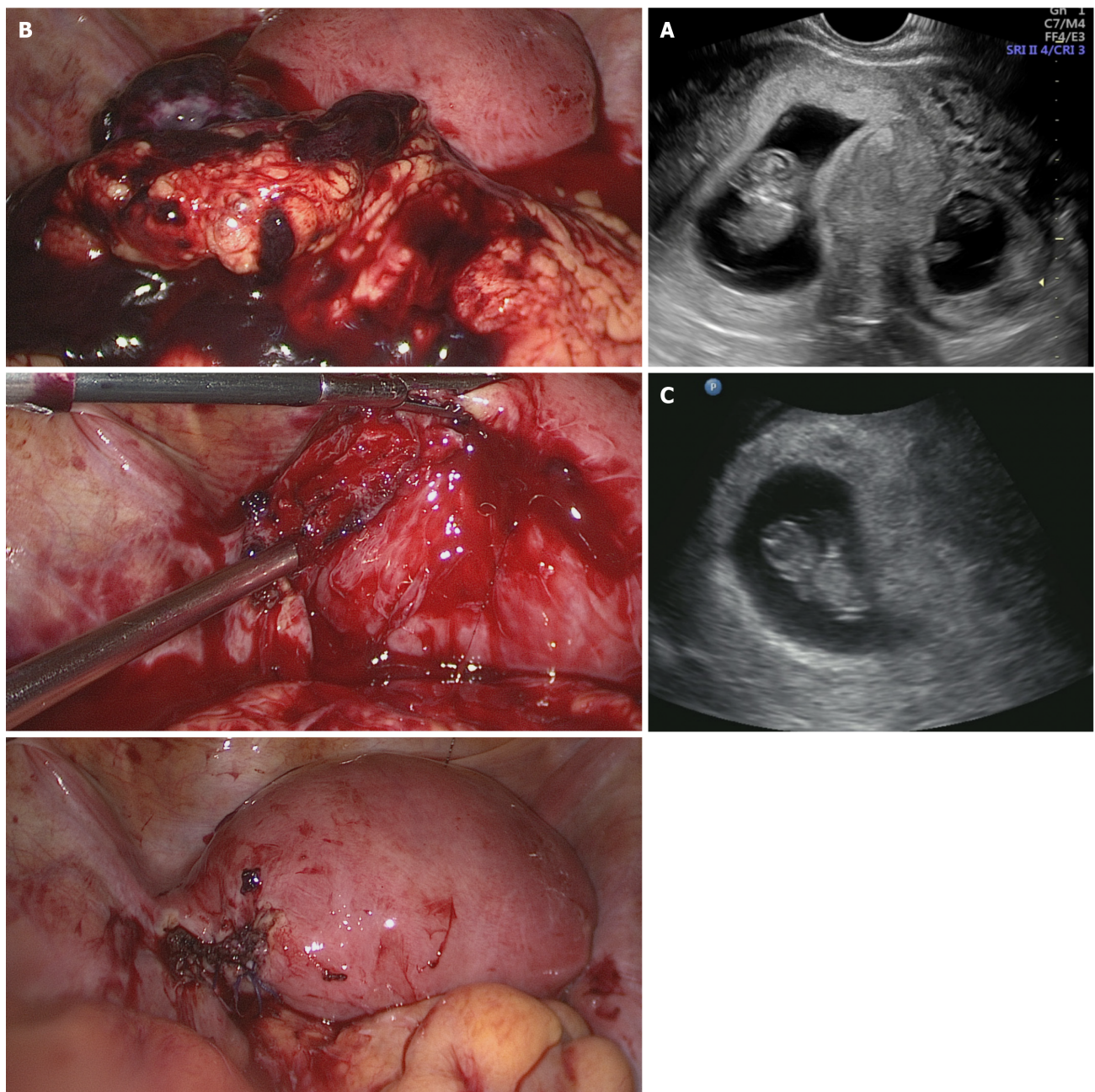


Figure 1 Transvaginal ultrasound images and laparoscopic excision of the intramural and cornual segment. A: Transvaginal ultrasound showed a live intrauterine pregnancy and another live embryo with cardiac activity in the left cornu and interstitial part; B: The patient was treated by laparoscopic excision of the intramural and cornual segment; C: Transvaginal ultrasound showed a healthy intrauterine fetus after surgery.

ACKNOWLEDGEMENTS

The authors would like to thank Institutional Review Board of Ethics Committee of West China Second Hospital for approving this case report for publication.

REFERENCES

- 1 **Kasum M**, Grizelj V, Simunic V. Combined interstitial and intrauterine pregnancies after in-vitro fertilization and embryo transfer. *Hum Reprod* 1998; **13**: 1547-1549 [PMID: [9688389](#) DOI: [10.1093/humrep/13.6.1547](#)]
- 2 **Dumesic DA**, Damario MA, Session DR. Interstitial heterotopic pregnancy in a woman conceiving by *in vitro* fertilization after bilateral salpingectomy. *Mayo Clin Proc* 2001; **76**: 90-92 [PMID: [11155422](#) DOI: [10.4065/76.1.90](#)]
- 3 **Cormio G**, Santamato S, Putignano G, Bettocchi S, Pascazio F. Concomitant abdominal and intrauterine pregnancy after *in vitro* fertilization in a woman with bilateral salpingectomy. A case

- report. *J Reprod Med* 2003; **48**: 747-749 [PMID: [14562645](#)]
- 4 **Chang Y**, Lee JN, Yang CH, Hsu SC, Tsai EM. An unexpected quadruplet heterotopic pregnancy after bilateral salpingectomy and replacement of three embryos. *Fertil Steril* 2003; **80**: 218-220 [PMID: [12849829](#) DOI: [10.1016/s0015-0282\(03\)00547-8](#)]
 - 5 **Ben-Ami I**, Panski M, Ushakov F, Vaknin Z, Herman A, Raziel A. Recurrent heterotopic pregnancy after bilateral salpingectomy in an IVF patient: case report. *J Assist Reprod Genet* 2006; **23**: 333-335 [PMID: [16823628](#) DOI: [10.1007/s10815-006-9052-2](#)]
 - 6 **Zhaoxia L**, Honglang Q, Danqing C. Ruptured heterotopic pregnancy after assisted reproduction in a patient who underwent bilateral salpingectomy. *J Obstet Gynaecol* 2013; **33**: 209-210 [PMID: [23445156](#) DOI: [10.3109/01443615.2012.727045](#)]
 - 7 **Shavit T**, Paz-Shalom E, Lachman E, Fainaru O, Ellenbogen A. Unusual case of recurrent heterotopic pregnancy after bilateral salpingectomy and literature review. *Reprod Biomed Online* 2013; **26**: 59-61 [PMID: [23177413](#) DOI: [10.1016/j.rbmo.2012.10.006](#)]
 - 8 **Oral S**, Akpak YK, Karaca N, Babacan A, Savan K. Cornual heterotopic pregnancy after bilateral salpingectomy and uterine septum resection resulting in term delivery of a healthy infant. *Case Rep Obstet Gynecol* 2014; **2014**: 157030 [PMID: [25431713](#) DOI: [10.1155/2014/157030](#)]
 - 9 **Seshadri S**, Shirley P, Jaiganesh T, Uchil D, Jolaoso A. In vitro fertilisation and embryo transfer for bilateral salpingectomies results in a ruptured ovarian ectopic pregnancy due to a tubal stump fistula: a case report and review of the literature. *BMJ Case Rep* 2010; **2010** [PMID: [22736389](#) DOI: [10.1136/bcr.09.2009.2291](#)]
 - 10 **Chen J**, Huang D, Shi L, Zhang L, Sun D, Lin X, Zhang S. Cornual Suture at the Time of Laparoscopic Salpingectomy Reduces the Incidence of Interstitial Pregnancy after In Vitro Fertilization. *J Minim Invasive Gynecol* 2018; **25**: 1080-1087 [PMID: [29481875](#) DOI: [10.1016/j.jmig.2018.02.009](#)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

