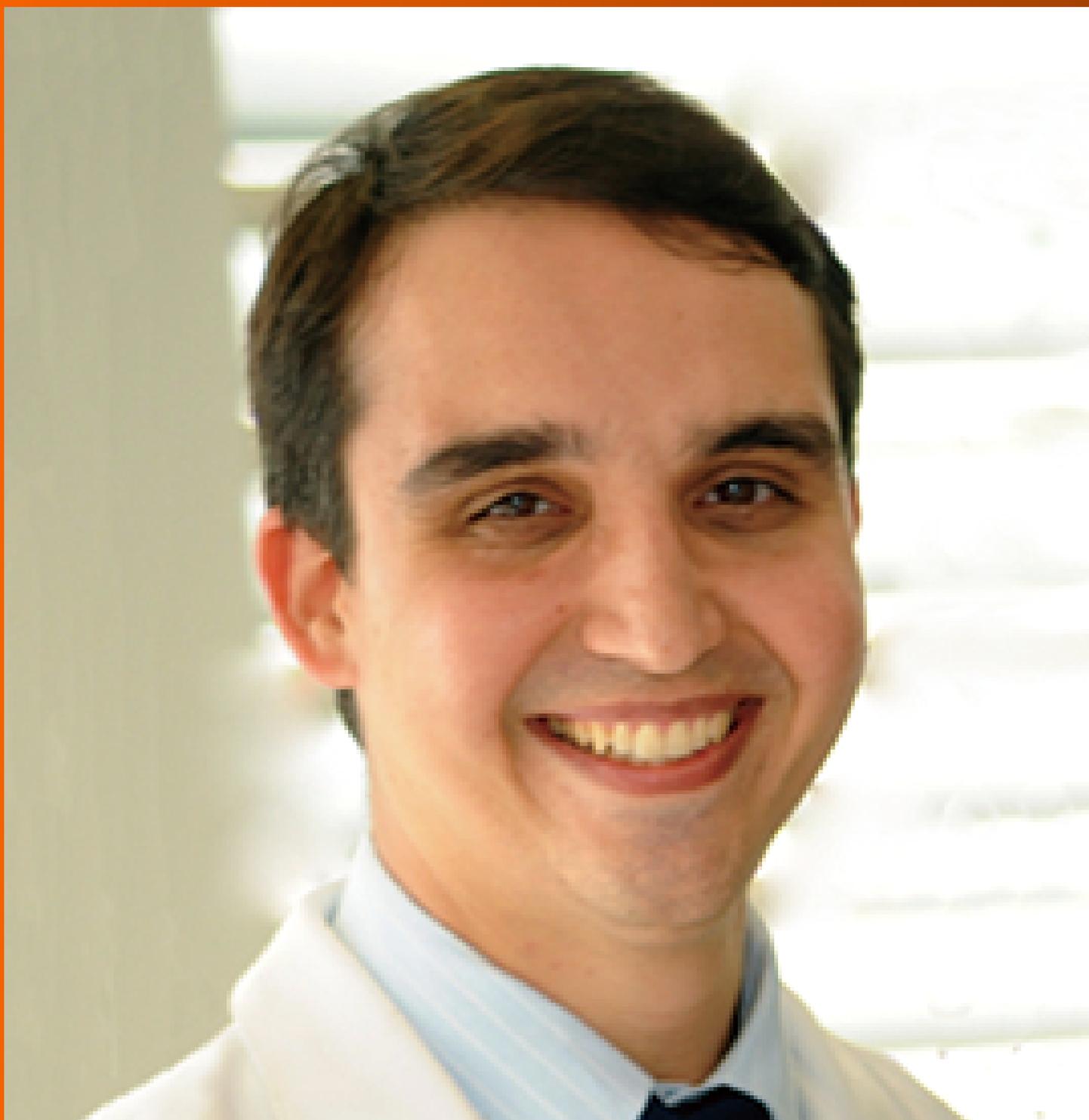


World Journal of *Clinical Cases*

World J Clin Cases 2019 March 26; 7(6): 691-808



REVIEW

- 691 Effects of apoptosis on liver aging
Hu SJ, Jiang SS, Zhang J, Luo D, Yu B, Yang LY, Zhong HH, Yang MW, Liu LY, Hong FF, Yang SL

MINIREVIEWS

- 705 Liver involvement in the drug reaction, eosinophilia, and systemic symptoms syndrome
Martinez-Cabriales SA, Shear NH, Gonzalez-Moreno EI

ORIGINAL ARTICLE**Retrospective Cohort Study**

- 717 Surgical method choice and coincidence rate of pathological diagnoses in transduodenal ampullectomy: A retrospective case series study and review of the literature
Liu F, Cheng JL, Cui J, Xu ZZ, Fu Z, Liu J, Tian H

Retrospective Study

- 727 Individualized minimally invasive treatment for adult testicular hydrocele: A pilot study
Lin L, Hong HS, Gao YL, Yang JR, Li T, Zhu QG, Ye LF, Wei YB

Observational Study

- 734 Successful totally transthoracic echocardiography guided transcatheter device closure of atrial septal defect in pregnant women
Chen Q, Cao H, Zhang GC, Chen LW, Xu F

CASE REPORT

- 742 Cardiac amyloidosis: A case report and review of literature
Taiwo AA, Alapati L, Movahed A
- 753 Successful treatment with hysteroscopy for infertility due to isthmocele and hydrometra secondary to cesarean section: A case report
López Rivero LP, Jaimes M, Camargo F, López-Bayghen E
- 759 *Aeromonas veronii* biovar *veronii* and sepsis-infrequent complication of biliary drainage placement: A case report
Monti M, Torri A, Amadori E, Rossi A, Bartolini G, Casadei C, Frassinetti GL

- 765 Induction chemotherapy with docetaxel, cisplatin and fluorouracil followed by concurrent chemoradiotherapy for unresectable sinonasal undifferentiated carcinoma: Two cases of report
Watanabe S, Honma Y, Murakami N, Igaki H, Mori T, Hirano H, Okita N, Shoji H, Iwasa S, Takashima A, Kato K, Kobayashi K, Matsumoto F, Yoshimoto S, Itami J, Boku N
- 773 Lump type crossed fused renal ectopia with bilateral vesicoureteral reflux: A case report
Choi T, Yoo KH, Song R, Lee DG
- 778 Multiple gastric angioliipomas: A case report
Lou XH, Chen WG, Ning LG, Chen HT, Xu GQ
- 785 Primary hepatic follicular dendritic cell sarcoma: A case report
Chen HM, Shen YL, Liu M
- 792 Effective chemotherapy for submandibular gland carcinoma ex pleomorphic adenoma with lung metastasis after radiotherapy: A case report
Chen ZY, Zhang Y, Tu Y, Zhao W, Li M
- 798 Photodynamic therapy as salvage therapy for residual microscopic cancer after ultra-low anterior resection: A case report
Zhang SQ, Liu KJ, Yao HL, Lei SL, Lei ZD, Yi WJ, Xiong L, Zhao H
- 805 Unexplained abdominal pain due to a fish bone penetrating the gastric antrum and migrating into the neck of the pancreas: A case report
Xie R, Tuo BG, Wu HC

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Successful treatment with hysteroscopy for infertility due to isthmocele and hydrometra secondary to cesarean section: A case report

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Abstract

BACKGROUND

An isthmocele is a scar defect in the uterine wall due to a cesarean section. Its prevalence is unknown, but it has been associated with secondary infertility. Here, we present a case where the patient suffered from an isthmocele that was associated with persistent hydrometra, which developed during *in vitro* fertilization.

CASE SUMMARY

The patient underwent hysteroscopic surgery, which successfully resolved the isthmocele as well as the hydrometra. Afterward, two high-quality, euploid embryos, determined by morphological assessment and pre-implantation genetic diagnostic testing, were transferred. This resulted in uterine pregnancy, as determined by serum β -human chorionic gonadotropin levels on day 14 (180 mU/mL) and ultrasound-confirmed presence of a gestational sac with a positive embryocardia at week 6. The pregnancy reached 36 wk without any complications, and the product was born in good health. We report a successful isthmocele treatment in a patient with secondary infertility, in which the isthmocele was the cause of persistent hydrometra.

CONCLUSION

Hydrometra caused by secondary cesarean is an infertility factor, which can be corrected by hysteroscopy plus ablation of the isthmocele.

Key words: *In vitro* fertilization; Isthmocele; Hydrometra; Case report

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Core tip: Scarring associated with cesarean sections has been implicated with infertility. A possible link between cesarean section and infertility is the development of triangle shape scar named isthmocele. Isthmoceles can cause a retrograde passage of mucosanguineous content to the uterine cavity, instigating inflammation. This could lead to the development of hydrometra. We present a case of a woman who had a previous cesarean section and a latter failure to get pregnant by natural means. During the *in vitro* fertilization (IVF) procedure in our clinic, hydrometra developed. Upon reviewing transvaginal ultrasound, an isthmocele was found. Hysteroscopy correction of the isthmocele abolished hydrometra, and the patient was able to get pregnant by IVF. Physicians and other personnel should keep in mind that isthmocele is a possible cause of secondary infertility, which could be linked to the formation persistent hydrometra.

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INTRODUCTION

The routine practice of cesarean sections has increased around the world^[1]. Mexico has one of the highest cesarean rates, reaching 45% of total births^[2]. Cesarean sections are associated with many complications, such as placenta accreta, ectopic pregnancy, uterine rupture, and defective scarring in hysteroscopy^[3].

Isthmoceles are gap scars that develop in the myometrium due to the healing process associated with cesarean sections. In Mexico, the incidence rate of isthmocele is unknown; however, other countries' rates range between 19% and 56%^[3]. Isthmocele is associated with detrimental gynecological symptoms, such as abnormal uterine bleeding, pelvic pain, and infertility^[4]. With respect to infertility, an accumulation of blood within the isthmocele can cause a retrograde passage of blood to the uterine cavity, instigating inflammation and an adverse environment for embryo implantation^[4]. This accumulation of blood at the endometrium can be visualized during a transvaginal ultrasound, where an image suggestive of hydrometra can be seen.

In many cases, the diagnosis of an isthmocele is incidental in patients who suffer from intermenstrual "staining", dyspareunia, dysmenorrhea, or secondary infertility. Current diagnostic methods consist of transvaginal ultrasound, hysterosonography, and video hysteroscopy. With transvaginal ultrasound, the isthmocele appears as an anechoic zone with an isosceles triangle shape. The management of the isthmocele is not standardized, and correction typically involves invasive procedures^[5]. Here, we present a case of secondary infertility, where the diagnosis of isthmocele was indicated by the recurrent development of hydrometra. After isthmocele correction, the hydrometra was abrogated, and embryo transfer ended in a successful pregnancy.

CASE PRESENTATION

Chief complaints

A 37-year-old woman (Body-Mass Index: 23.62 kg/m²) was attending the Ingenes Institute in México City for secondary infertility.

History of present illness

The patient has been trying to get pregnant for 24 mo with negative results, using only natural methods to conceive. We proposed an *in vitro* fertilization (IVF) protocol, complimented with pre-implantation genetic diagnosis (PGD).

History of past illness

Three years prior to her attending Ingenes, she had one previous pregnancy, which was resolved by a cesarean section after placental detachment. Afterward, she

presented abnormal uterine bleeding with bloody or brown vaginal discharge, severe pelvic pain, dyspareunia, and urinary discomfort eight months after the cesarean.

Personal and family history

She had no other medical complications and was not taking any medications. No causes of male infertility were found in her partner.

Physical examination upon admission

The patient underwent a standard course of controlled ovarian stimulation (Depot GnRH agonist, Cetrotide 0.25 mg daily dose, Merck, Darmstadt, Germany). In the immediate days after controlled ovarian stimulation started (9 d), we observed the formation of hydrometra. The patient was given a single dose of Triptorelin (0.2 mg; Gospeptyl daily Ferring Pharmaceuticals, Saint-Prex, Switzerland). Stimulation was prolonged until the diameter of leading follicles was > 18 mm (18-22 mm). Then, recombinant human chorionic gonadotropin (hCG) (Choragon 1000 IU, Ferring Pharmaceuticals, Saint-Prex, Switzerland) was administered, and oocytes were retrieved after 36 h with ultrasound guidance. All 14-18 mm follicles were aspirated, and 20 ova were collected. It was decided to proceed to fertilization and culture. The ova were fertilized by intracytoplasmic sperm injection, and six embryos developed (2AB, 2BB, and 2BC Inner cell mass/Trophoblast quality). With the embryos that reached day 5, a trophoctoderm biopsy was collected for PGD, and then the embryos were frozen. After PGD, four euploid embryos were considered for implantation; however, it was decided to postpone implantation for one month to allow for endometrial preparation.

The endometrial preparation was carried out with the application of an *in situ* agonist prior to the Luteal phase (Triptorelin 3.75 mg, Gospeptyl daily, Ferring) and transdermal application of 17- β -estradiol (Evorel 50). On day 10 of endometrial preparation, the formation of hydrometra was again evident, so it was decided to cancel the endometrial preparation cycle and perform an endometrial cavity evaluation-closing of any ostia by hysteroscopy with the suspicion of a possible hydrosalpinx. The proximal closing of tubal ostia was performed without any complications, finding a normal cavity. A second endometrial preparation was performed with the same protocol. On day 10 of the endometrial preparation, the formation of hydrometra was again evident, so we decided to cancel the cycle, and treat the patient with progestin (Utrogestan, 100 mg every 12 h, 5 d, SEID, Barcelona, Spain). A new endometrial preparation with estradiol valerate (Primogyn, Bayer Health) was tried using 6 mg/d as the maximum dose, and on the 13th d of preparation, the hydrometra formation was again evident.

Laboratory examinations

None.

Imaging examinations

A transvaginal ultrasound was performed, and in addition to hydrometra, the presence of an isthmocele was located at the anterior wall of the uterine isthmus. Its base was 6.6 mm and height was 6.1 mm, indicating the presence of a second-degree isthmocele (Figure 1). Re-evaluation of a previous hysteroscopy video was performed, where a thorough evaluation of the defect area was not performed, probably due to the absence of characteristic symptoms.

FINAL DIAGNOSIS

Presence of a second-degree isthmocele leading to hydrometra.

TREATMENT

The patient agreed to a surgical hysteroscopy, to correct the area containing the isthmocele. The procedure was performed by finding the myocell sac with neovascularization and mucosanguineous content. The procedure consisted of leveling the isthmocele area with a monopolar resectoscope loop (Monopolar Karls Storz 24 Fr. with lens telescope of 2.9 mm and 12), with subsequent application of monopolar ablation energy in the bed of the isthmocele using a roll ball electrode. The procedure was performed with 1.5% glycine as distension medium and guided at times by transabdominal ultrasound (procedure time: 25 min, see Figure 2).

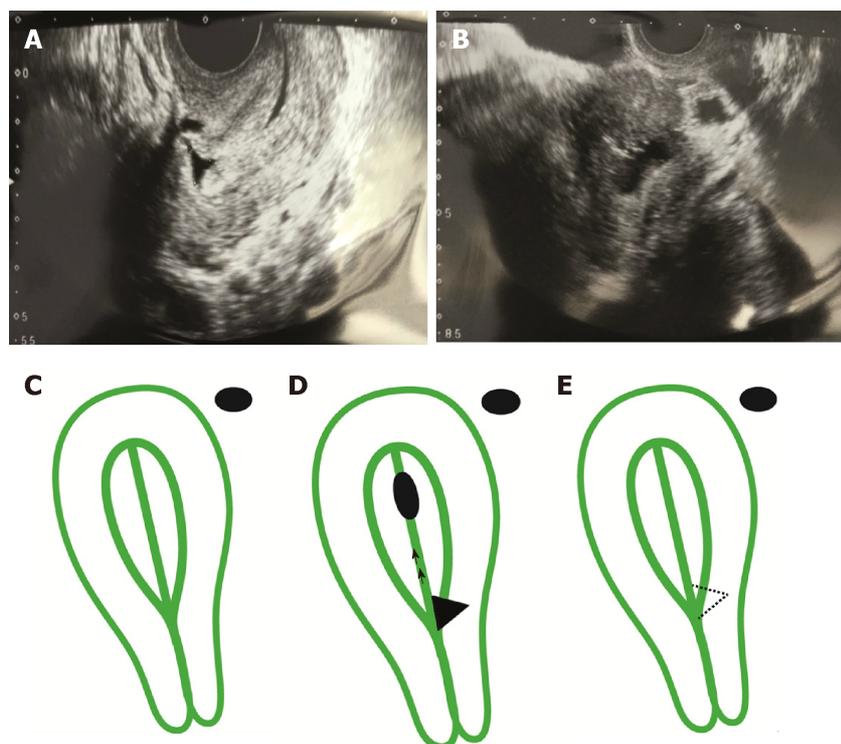


Figure 1 Transvaginal ultrasonographic images. A 37-year-old female suffering from persistent hydrometra during *in vitro* fertilization underwent a transvaginal ultrasonographic examination. A: Panel A indicates the presence of a second-grade isthmocele; size 6.6 mm (base) × 6.1 mm (height); B: Panel B demonstrates the hydrometra and isthmocele. All images were taken with a Toshiba Xario 100 ultrasound with an endovaginal probe, frequency 7 megahertz (MHz); C: Diagrammatic representations of the uterus showing a normal uterus in Panel C; D: Hydrometra and isthmocele in Panel D; E: and result after resection in Panel E.

OUTCOME AND FOLLOW-UP

Postoperative monitoring was performed for one week. Afterward, endometrial preparation was resumed with the transdermal application of 17- β -estradiol (Evorel 50, Janssen Pharmaceuticals). This time, there was no hydrometra formation, and embryo transfer could be completed. Two embryos were transferred, and 9 d after the transfer, implantation was confirmed by serum β -hCG (180 mU/mL). We were able to visualize the presence of a gestational sac in the uterine fundus with the presence of an embryo and positive embryocardia at week 6 and normal development parameters at week 12.4 (Figure 3). Pregnancy was followed with regular visits; the patient did not present any complications, and the product was born in good health (3.3 kg).

DISCUSSION

With caesarian sections becoming a more common practice, the rate of isthmocele complications is also augmented. Although isthmocele diagnosis mainly occurs incidentally, identifying factors associated with isthmocele could improve diagnostic rates. Here, we show that recurrent hydrometra during IVF was associated with an unknown isthmocele. The isthmocele was discovered on a secondary, more sensitive ultrasound.

Hydrometra is associated with pregnancy complications and failure^[4]. Here, we document a case report that demonstrates that hydrometra is an indicator of an isthmocele. Moreover, correction of the isthmocele attenuated the hydrometra, suggesting that the former was the cause of the latter. Hydrometra, the accumulation of mucus or watery fluid in the uterine cavity, would be a predictor as for isthmocele were shown to accumulate blood, leading to a retrograde passage of blood to the uterine cavity^[4], promoting a suboptimal state for pregnancy.

Currently, there are only invasive procedures to correct an isthmocele. Using resection and ablation, the isthmocele was corrected, and the persistent hydrometra was attenuated. Afterward, the patient achieved implantation, and the product was delivered with no other complication. This does suggest that, under the conditions

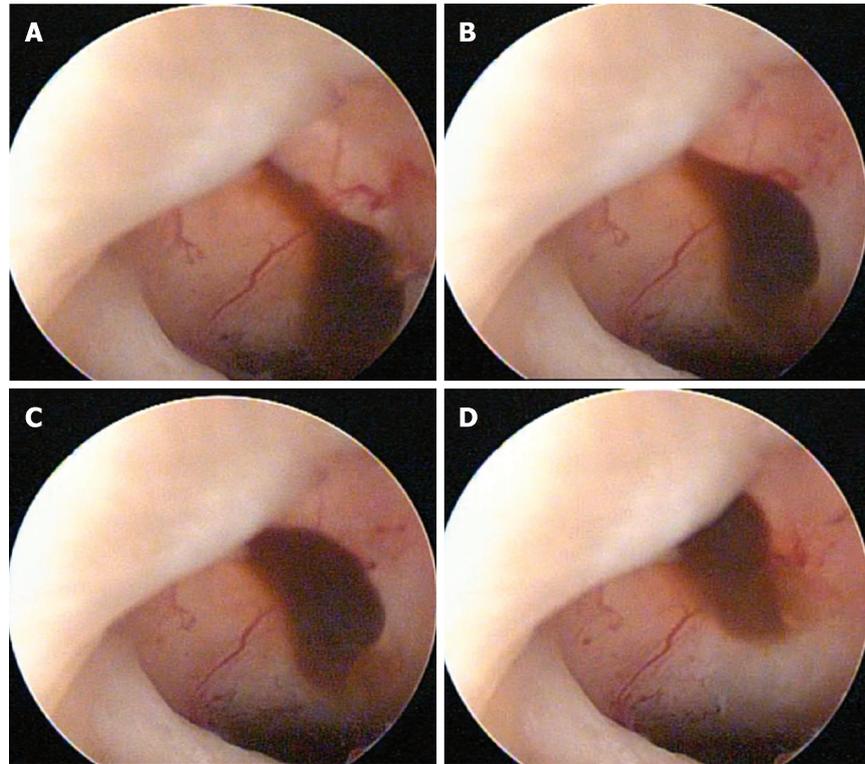


Figure 2 Isthmocele at the time of surgery. Images were selected from the video recorded during surgery. The procedure was performed by finding the myocell sac containing neovascularization and mucosanguineous content, leveling the isthmocele area with a monopolar resectoscope loop, and subsequent application of monopolar ablation energy in the bed of the isthmocele using a roll ball electrode. The procedure was performed guided at times by transabdominal ultrasound (procedure time: 25 min; 2× magnification).

presented with this case report, the invasive correction of the isthmocele does not alter the female reproduction potential; however, more studies are required.

Hydrometra could be a prognostic indicator for isthmocele. The patient came to our IVF facility due to secondary infertility and, because of our examination process, the hydrometra was discovered. This presents a problem for women who try to get pregnant, who are not using IVF nor can afford specialized care. Since isthmocele is a possible cause of infertility, examining for isthmocele or hydrometra should be performed if the patient has had a previous caesarian and problems to get a subsequent pregnancy.

CONCLUSION

This is the first report of a successful isthmocele treatment in a patient with secondary infertility, where an isthmocele associated with persistent hydrometra formation and infertility. Physicians, Gynecologists, Human Reproduction Biologists, and Gynecological Endoscopists should keep in mind that isthmocele is a possible cause of secondary infertility, also possibly linked to the formation of persistent hydrometra.

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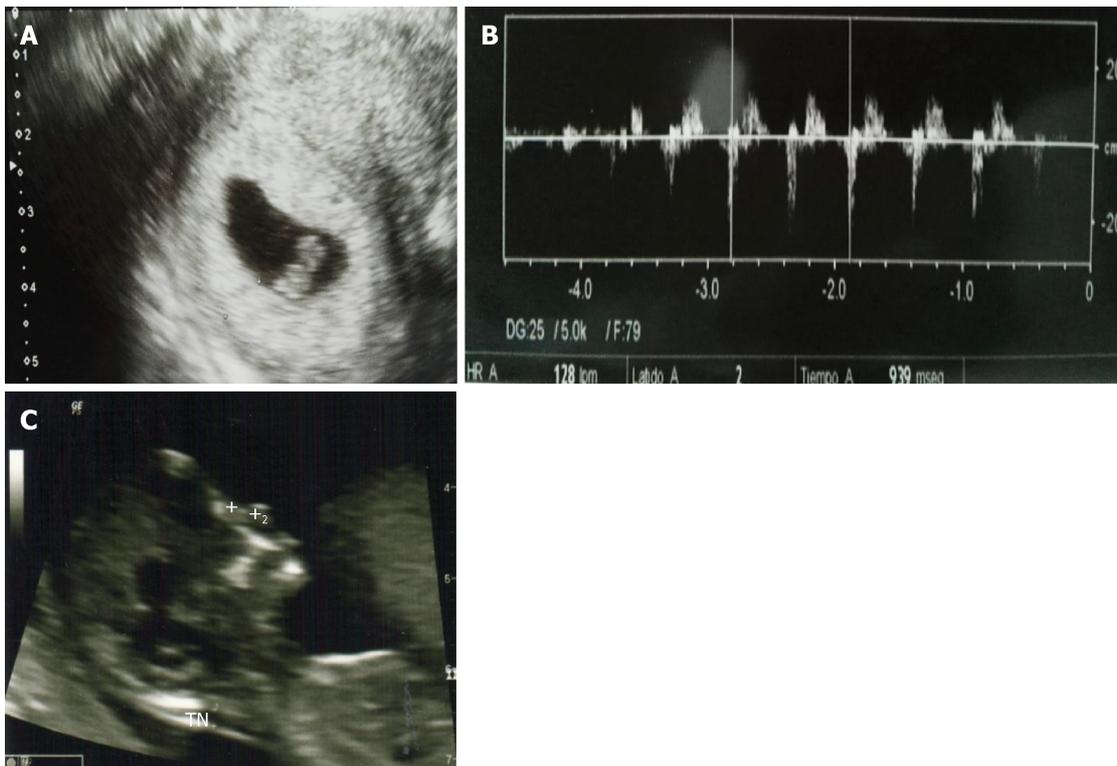


Figure 3 Pregnancy ultrasounds. After isthmocele correction, 2 embryos were implanted. A: Panel A indicates that at Week 6 the presence of one fetal sac by transvaginal ultrasonogram; B: Transabdominal ecogram is showing the embryo's heartbeat; C: Panel C is showing the live fetus, normal nasal bond (2.5 cm), normal nuchal fold thickening (1.8), and no signs of chromosomopathies, using transabdominal ultrasonogram. The length of the cervix was 3.3 cm.

REFERENCES

- 1 **Betran AP**, Torloni MR, Zhang JJ, Gülmezoglu AM; WHO Working Group on Caesarean Section. WHO Statement on Caesarean Section Rates. *BJOG* 2016; **123**: 667-670 [PMID: 26681211 DOI: 10.1111/1471-0528.13526]
- 2 **González Pérez GJ**, Vega López MG, Cabrera Pivaral CE, Cesáreas en México: aspectos sociales, económicos y epidemiológicos. Evolución reciente y variaciones sociogeográficas de la tasa de cesáreas en México. *Cesáreas en México: aspectos sociales, económicos y epidemiológicos. Primera edición ed.* Guadalajara, Jalisco: Universidad de Guadalajara; 2011; 7-35
- 3 **van der Voet LF**, Bij de Vaate AM, Veersema S, Brölmann HA, Huirne JA. Long-term complications of caesarean section. The niche in the scar: a prospective cohort study on niche prevalence and its relation to abnormal uterine bleeding. *BJOG* 2014; **121**: 236-244 [PMID: 24373597 DOI: 10.1111/147-0528.12542]
- 4 **Florio P**, Filippeschi M, Moncini I, Marra E, Franchini M, Gubbini G. Hysteroscopic treatment of the cesarean-induced isthmocele in restoring infertility. *Curr Opin Obstet Gynecol* 2012; **24**: 180-186 [PMID: 22395067 DOI: 10.1097/GCO.0b013e3283521202]
- 5 **Cohen SB**, Mashiach R, Baron A, Goldenberg M, Schiff E, Orvieto R, Bouaziz J. Feasibility and efficacy of repeated hysteroscopic cesarean niche resection. *Eur J Obstet Gynecol Reprod Biol* 2017; **217**: 12-17 [PMID: 28829973 DOI: 10.1016/j.ejogrb.2017.08.010]



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