

Research Letter

Vesicovaginal fistula formation after oocyte retrieval

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Development of a vesicovaginal fistula (VVF) is a devastating condition that has profound effects on both the physical and psychological health of a patient [1]. VVF is uncommon in the developed world. In modern urological practice, around 90% of cases are caused by inadvertent injury to the bladder during surgery [2]. The reported incidence after pelvic surgery is 0–52% [3]. Other less common causes include pelvic malignancy, pelvic irradiation, obstetric trauma, and infection including tuberculosis [4].

Transvaginal ultrasound-guided oocyte retrieval has been performed since 1985 [5]. It is a safe and well-tolerated procedure. In this technique, oocytes are collected by passing a 16–18 gauge needle attached to a transducer through the vaginal wall in the lateral superior fornices under ultrasound (US) guidance into the stimulated ovarian follicles. The main reported complications are minor vaginal bleeding and pelvic infection. Injuries to the surrounding organs, such as the bowel and bladder or large vessels, are rare. In the literature, a few case reports of ureterovaginal fistula have been found, but to our knowledge, VVF formation after oocyte pickup has not been reported [6].

Recent advances have improved the success of VVF repair—a challenge that can test even the most experienced gynecologic surgeon. For example, it is now apparent that small, uncomplicated fistulae respond well to conservative treatment [7].

Here, we present a rare case of VVF after US-guided oocyte retrieval and its conservative management in the form of continuous urinary catheter drainage for 3 weeks' duration.

The patient was a 28-year-old woman P0 + 1 referred from the Assisted Conception Unit to the urogynecology clinic at a university hospital after embryo transfer with a history of passing watery vaginal discharge requiring a pad. The couple had infertility due to a male factor and was on the second cycle of *in vitro* fertilization (IVF). Oocyte retrieval was performed by a junior consultant at a private center using a single-lumen 16-gauge needle. Day 3 after oocyte retrieval, three embryos

were transferred successfully under US guidance with a full bladder. Her past history includes a mid-trimester abortion following the previous (*in vitro* fertilization) treatment, which required no evacuation. She had no surgical history and no history of pelvic infection, and her cervical smear was normal. Vital signs including her temperature were within normal limits. On examination, the bladder was not full initially, so it was filled with 350 mL of methylene blue dye; consequently, leaking was noted from the apex of the vagina at lateral fornix on the left side. She was advised to have a voiding cystogram, but the patient refused any radiological investigation because she had embryo transfer 1 day ago. A 14-French Foley's catheter (Unomedical Sdn Bhd, Bakar Arang Industrial Estate, 08000 Sungal Petani, Kedah, Malaysia) was inserted for continuous drainage. She was seen again after 3 weeks. She had a successful pregnancy and remained completely dry during this period. The bladder was filled with 350 mL of methylene blue dye, no leaking was noted, and the Foley's catheter was removed. She did not complain of any leaking afterward. Of note, magnetic resonance imaging was contraindicated in the first trimester and was performed at 17/52 for the confirmation of bladder integrity. Other radiological investigation could not be performed because of pregnancy.

VVF is the most common type of urogenital fistula [7]. Presentation and prognosis vary depending on the cause. Transvaginal ultrasound-guided oocyte aspiration is a common, well-tolerated, and safe procedure. Injuries to the surrounding structures such as bowel, bladder, or large vessels are rare [8,9].

Regarding the treatment of VVF, in this case, the fistula was small and simple, so conservative management in the form of bladder catheterization for 3 weeks was initiated. As a rule, conservative therapy should be reserved for simple fistulae that are less than 1 cm in size, diagnosed within 7 days of indexed surgery, lacking association with carcinoma or radiation, and subject to at least 4 weeks of constant bladder drainage [7].

The incidence of spontaneous closure of fistula after bladder drainage alone ranged from 0% to 100%. Among all the assessed criteria, the interval to drainage seems to have the best correlation with success. This finding is most likely explained on the basis of the epithelization of the fistulous

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tract with time preventing healing [10]. In 1985, Zimmern et al [11] concluded that if the fistula is small and the leakage of urine is ceased with the placement of a Foley's catheter, the fistula has a high spontaneous cure rate with a 3-week trial of Foley's catheter drainage.

In particular, large VVFs never resolve with conservative management. By contrast, spontaneous closure of a small VVF after catheter drainage alone has been reported. Of 151 VVFs, three (2%) were managed successfully by catheterization in one series; of note, they were all treated immediately post-surgery [2].

Elkins and Thompson [12] noted some success with continuous bladder drainage, the rates ranged from 12% to 18%. Successful cases were characterized by the following criteria: continuous bladder drainage for up to 4 weeks, and VVFs diagnosed and treated within 7 days of surgery, less than 1 cm in size, and not associated with carcinoma or radiation. In our case, VVF was diagnosed and treated by catheterization within 4 days of surgery, and had responded successfully to the conservative management.

The aim of our case report is to alert all obstetricians and gynecologists, especially reproductive endocrinologists, to this rare complication as early intervention with Foley catheter drainage can cure the condition without long-term morbidity.

References

- [1] Smith GL, Williams G. Vesicovaginal fistula. *BJU Int* 1999;83:564–70.
- [2] Tancer ML. Observations on prevention and management of vesicovaginal fistula after total hysterectomy. *Surg Gynecol Obstet* 1992;175:501–6.
- [3] Mattingly RF. Acute operative injury to the urinary tract. *Clin Obstet Gynaecol* 1978;5:123–49.
- [4] Ba-Thike K, Than-Aye, Nan-Oo. Tuberculous vesico-vaginal fistula. *Int J Gynaecol Obstet* 1992;37:127–30.
- [5] Wikland M, Enk L, Hamberger L. Transvesical and transvaginal approaches for the aspiration of follicles by use of ultrasound. *Ann N Y Acad Sci* 1985;442:182–94.
- [6] Mongiu AK, Helfand BT, Kielb SJ. Ureterovaginal fistula formation after oocyte retrieval. *Urology* 2009;73:444. e1–3.
- [7] Kohli NJ, Miklos JR. Meeting the challenge of vesicovaginal fistula repair: conservative and surgical measures. *OBG Manage* 2003;15:16–27.
- [8] Ludwig AK, Glawatz M, Griesinger G, Diedrich K, Ludwig M. Peri-operative and post-operative complications of transvaginal ultrasound-guided oocyte retrieval: prospective study of >1000 oocyte retrievals. *Hum Reprod* 2006;21:3235–40.
- [9] Bennett SJ, Waterstone JJ, Cheng WC, Parsons J. Complications of transvaginal ultrasound-directed follicle aspiration: a review of 2670 consecutive procedures. *J Assist Reprod Genet* 1993;10:72–7.
- [10] Bazi T. Spontaneous closure of vesicovaginal fistulas after bladder drainage alone: review of the evidence. *Int Urogynecol J Pelvic Floor Dysfunct* 2007;18:329–33. Review. Erratum in: *Int Urogynecol J Pelvic Floor Dysfunct* 2007;18:475.
- [11] Zimmern PE, Hadley HR, Staskin D, Raz S. Genitourinary fistulas: vaginal approach for repair of vesicovaginal fistulas. *Clin Obstet Gynaecol* 1985;12:403–13.
- [12] Elkins T, Thompson J. Lower urinary tract fistulas. In: Walters M, Karram M, editors. *Urogynecology & reconstructive pelvic surgery*. St Louis: Mosby; 1999. p. 355–66.