



Abdominal sacrohysteropexy for large iatrogenic early postpartum vesicouterine fistula

Roxana Geoffrion^{*}, Sophia Badowski

Department of Obstetrics and Gynecology, University of British Columbia, Canada

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ABSTRACT

Sacrohysteropexy is a surgical technique employed for the surgical treatment of uterine prolapse when uterine preservation is desired. Vesicouterine fistulae are rare iatrogenic complications of difficult operative childbirth, typically via caesarean section. If further childbearing is planned, uterus-sparing fistula closure in layers, with interposition grafts, has been described. To further decrease recurrence rates, temporary suspension of the uterus away from the fistula site can be achieved via sacrohysteropexy with absorbable biologic graft. The graft eventually resorbs with return of the uterus to its normal pelvic anatomic location.

1. Introduction

Iatrogenic fistulae between female urinary and reproductive tracts are rare, but their incidence may be increasing with the universal increase in challenging or repeat caesarean deliveries.¹ Hemostatic sutures or thermal injury may cause vesicouterine fistulae which are the second most common abnormal communications between urinary and genital tracts post childbirth.¹

Symptoms are distressing and include various degrees of urinary leaking per vagina and gross hematuria plus or minus amenorrhea.² The early postpartum period is characterized by a rapid decline in circulating estrogen, with estradiol reaching postmenopausal levels at three months post childbirth in fully breastfeeding mothers.³ While high estrogen levels encourage wound healing in the immediate postpartum period, the postmenopausal or low estrogen state of breastfeeding mothers is associated with suboptimal or delayed wound healing and possible fistula recurrence. One of the largest case series reported a recurrence rate of 20% post surgical repair.² Surgical innovation involves the use of new materials, devices or surgical techniques to improve patient outcomes. In this case, innovative surgical techniques are needed to ensure complete resolution of the fistula at first repair attempt.

2. Case presentation

A primiparous patient desiring a large family underwent a difficult caesarean delivery for second stage arrest/cephalopelvic disproportion after uncomplicated term pregnancy and spontaneous labour. Fetal head

vaginal disimpaction was needed to deliver a 3320-g male fetus. Uterine incision was noted to be quite close to the bladder and a bladder injury was suspected. A dilute 250 ml solution of methylene blue was retrograde-instilled into the bladder and no spill was noted into the abdominal cavity. Symptoms of urinary incontinence were noted in the discharge summary two days postpartum. The patient was instructed to perform Kegel's exercises. Because of the intraoperative suspected bladder injury, a computed tomography pelvic scan was ordered and revealed a "minimum 3-mm diameter fistula between the posterior aspect of the bladder dome and the lower aspect of the uterus, with extravasation of contrast into the endocervical canal". Ureters were described as uninvolved with the fistula. A Foley catheter was placed for initial conservative management of the fistula. The patient was referred to a tertiary care centre for further management. Despite continuous bladder drainage via Foley catheter for 3 months postpartum, she experienced ongoing constant urinary leakage per vagina. Immediately postpartum, she also experienced passage of blood clots through and around the Foley catheter, with hematuria eventually stopping a few weeks later. The patient described her childbirth experience as traumatic and her constant vaginal passage of urine as unbearable. A persistent vesicouterine fistula was diagnosed via office cystoscopy and methylene blue tampon test 14 weeks postpartum. Normal pelvic support and pelvic floor muscle hypertonicity, presumably from daily Kegel's exercises, were noted.

^{*} Corresponding author. Suite 930, 1125 Howe St, Vancouver, BC, V6K 2K8, Canada.

E-mail address: roxygeo@hotmail.com (R. Geoffrion).

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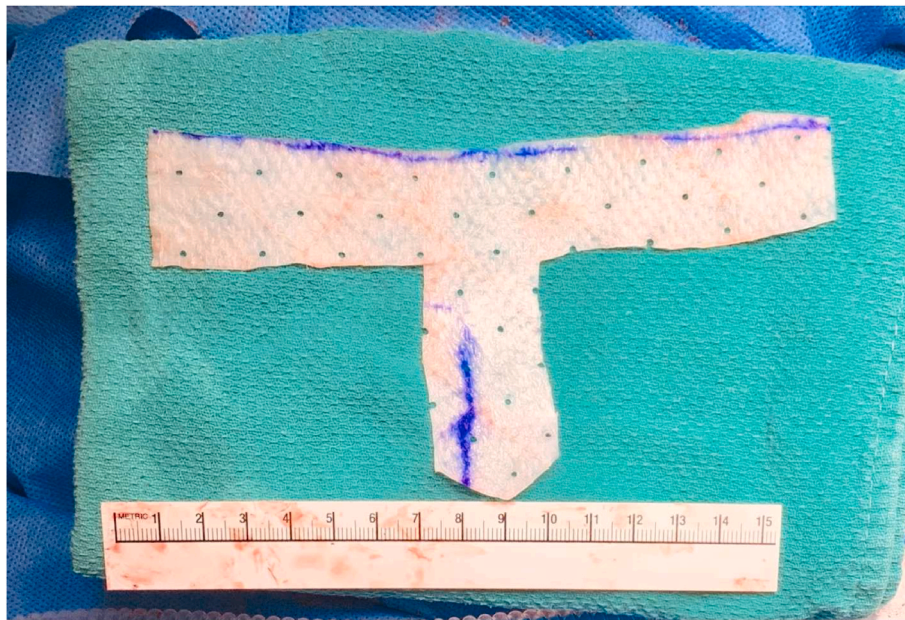


Fig. 1. Small intestine submucosa biologic graft.

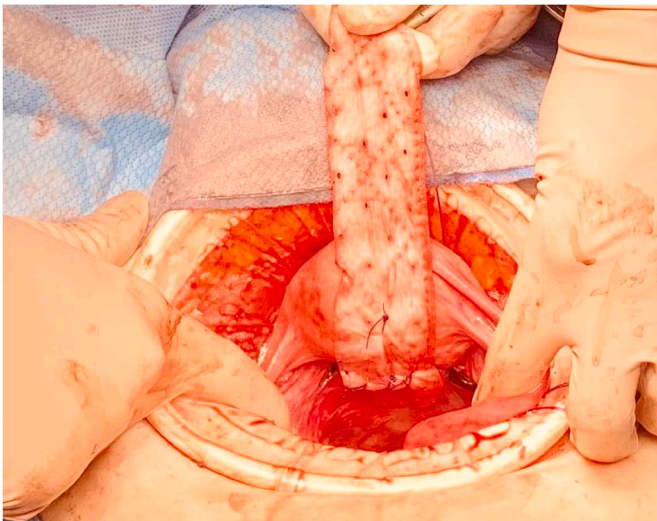


Fig. 2. Graft attached to the posterior aspect of the uterus.

2.1. Surgical management

The vesicouterine fistula was visualized cystoscopically above the trigone and a ureter stent was passed into the fistula tract for later localization. Ureteric stents were also placed into the ureters bilaterally. A Pfannenstiel incision was used for access. The fistula tract was fully excised. Bladder trigone and lower uterine segment were closed in alternating tension-free layers with absorbable sutures. A watertight seal was confirmed with methylene blue. The fistula was in close proximity to the internal cervical os and therefore a cervical dilator was used to delineate the cervical canal and ensure the internal cervical os was not obliterated through uterine closure. Sacrohysteropexy was then performed using an inverted T-shaped sheath (Fig. 1) of porcine small intestine submucosa autologous graft: posterior portion was attached to the back of the uterus (Fig. 2); arms of the T were passed through the broad ligament windows and attached to the anterior cervix covering the uterine fistula repair site (Fig. 3); bottom of the T was attached to the anterior sacral ligament at the level of the sacral promontory. Delayed

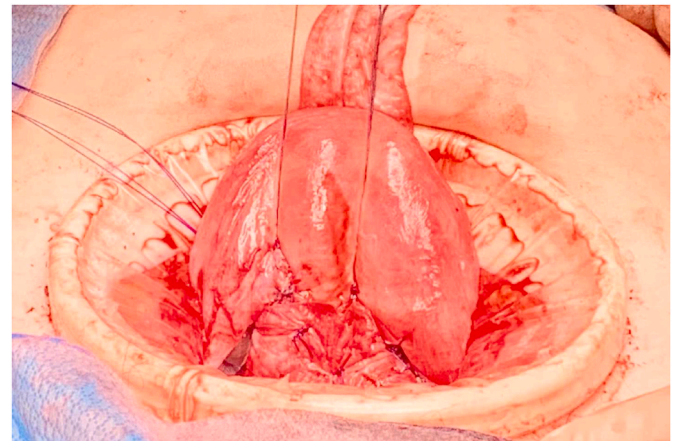


Fig. 3. Graft emerging through broad ligament windows and attached to the anterior aspect of the uterus, covering the repaired fistula.

absorbable PDS sutures were used at all attachment points. This achieved excellent elevation of the uterus away from the site of the fistula. A thin omental layer was placed above the biologic graft, behind the bladder, and secured to the lower uterine segment with delayed absorbable sutures, covering the graft and for purposes of further interposition. A Foley catheter was placed and left in situ for 14 days postoperatively, then removed following a normal voiding cystourethrogram. Three months postoperatively, the patient was symptom-free and started planning her next pregnancy, with delivery via elective caesarean section.

3. Discussion

Principles of fistula repair include removal of the entire tract, layered tension-free closure with watertight layers in alternating directions, and the use of interposition grafts, typically autologous omental.⁴ Essentially, the suture lines need to be separated to encourage healing and avoid recurrence of the abnormal communication tract. Hysterectomy is indicated for definitive management if no further childbearing is desired, or if other uterine pathologies are present.⁴

Sacrohysteropexy is a surgical technique employed for the surgical treatment of uterine prolapse when uterine preservation is desired.⁵ It involves suspending the uterus to the sacral promontory with a graft of non-absorbable material also known as synthetic mesh. Biologic absorbable material and sutures have been used for colpopexy, with durability inferior to synthetic mesh, presumably because of dissolution of the graft. Small intestine submucosa grafts have been shown to gradually dissolve, while acting as a scaffold for collagen deposition along anatomic lines. Suspending the uterus close to or above the pelvic brim after fistula tract excision and uterine closure theoretically allows time for fistula healing and may reduce recurrence rates.

4. Conclusion

Sacrohysteropexy with absorbable graft can be successfully undertaken in the case of known suboptimal healing states such as in recently postpartum patients, to separate repaired organ layers and hopefully prevent fistula recurrence. The use of a biologic graft with known absorption time is desirable to ensure exaggerated temporary elevation and subsequent return of the uterus to its normal anatomic position within the lower pelvis.

Consent

Written consent obtained from the patient for publication of her images and clinical course.

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Declaration of competing interest

None.

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