

# Minimizing the Urological and Psychological Morbidity of Urinary Tract Fistulae From VBAC

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## Abstract

**Background:** Because of the relative rarity of the condition, there is no consensus for the timing of surgical repair of fistulae following vaginal birth after Caesarean section (VBAC).

**Cases:** Three cases of urinary tract fistulae following VBAC are presented. Two patients had an early repair (24–48 hours after delivery), and the third had a repair at four months after delivery. The surgical approach and intraoperative findings for the early and late repairs are described, and the psychological effects of early and late repair are compared. The early repairs were not technically difficult and were associated with less psychological morbidity.

**Conclusion:** In the absence of contraindications, early repair of urinary tract fistulae diagnosed within the first few days after VBAC delivery is preferred. If early repair is attempted, perioperative conditions must be optimized; urogynaecologic or urologic expertise and assistance should be considered.

## Résumé

**Contexte :** En raison de la rareté relative de cette pathologie, il n'existe aucun consensus en ce qui a trait à la détermination du moment où l'on doit procéder à la réparation chirurgicale d'une fistule à la suite d'un accouchement vaginal après césarienne (AVAC).

**Cas :** Trois cas de fistule du tractus urinaire à la suite d'un AVAC sont présentés. Deux patientes ont bénéficié d'une réparation précoce (de 24 à 48 heures à la suite de l'accouchement), tandis que la troisième patiente n'a pu bénéficier d'une telle réparation que quatre mois à la suite de l'accouchement. L'approche chirurgicale et les constatations peropératoires associées aux réparations précoces et tardives sont décrites; de plus, les effets psychologiques de ces réparations sont comparés. Les réparations précoces ne se sont pas avérées difficiles sur le plan technique et ont été associées à une morbidité psychologique moindre.

**Conclusion :** En l'absence de contre-indications, il est préférable de procéder à la réparation précoce d'une fistule du tractus urinaire

**Key Words:** Urinary fistula, bladder fistula, vesicovaginal fistula, Caesarean section, adverse effects, vaginal birth after Caesarean, adverse effects, trial of labour, uterine rupture

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diagnostiquée dans les quelques premiers jours suivant un AVAC. Lorsqu'une réparation précoce est tentée, les conditions périopératoires doivent être optimisées; le recours au soutien de spécialistes en urogynécologie ou en urologie devrait être envisagé.

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## INTRODUCTION

Uterine and bladder rupture during attempted or successful vaginal birth after Caesarean section (VBAC) has been reported previously.<sup>1–6</sup> If diagnosed at the time of repeat Caesarean section (CS), the bladder injury is usually repaired immediately.<sup>1,2</sup> If diagnosed during or immediately after a successful vaginal birth, with development of severe pain, hematuria, or vaginal hemorrhage, the bladder injury is usually repaired immediately.<sup>3,4</sup> However, if a bladder injury is unrecognized at the time of repeat CS or after a successful vaginal delivery but becomes apparent within the first few hours or days postpartum because of vaginal leakage of urine, and if the patient's condition is stable, the injury has traditionally not been repaired immediately. Instead, the accepted approach for management has been conservative, placing a transurethral Foley catheter in the bladder. If the fistula does not spontaneously close, then definitive surgical repair is performed weeks or months later.<sup>5,6</sup>

We present three case reports of urinary tract fistula after VBAC that were not diagnosed at the time of repeat CS or at vaginal delivery but were recognized some hours later in otherwise asymptomatic, hemodynamically stable patients. In one case, definitive repair was delayed for four months, and in two cases, definitive repair was done within 24 to 48 hours of delivery. We describe the surgical findings and compare the psychological morbidity for these cases.

**CASE 1**

Jane (pseudonym), a 31-year-old woman with a history of previous low segment CS, elected to undergo a trial of vaginal birth and had an emergency vacuum-assisted vaginal delivery for fetal distress. Shortly after this second delivery, she experienced gross hematuria and urinary incontinence. Intravenous pyelography showed no abnormality. Cystography demonstrated a large “diverticulum” off the left side of the bladder. This was presumably the uterine cavity, as subsequent cystoscopy identified a 2 to 3 cm fistula on the posterior wall of the bladder, superior to the trigone. Vaginal examination showed this fistula communicating with a large defect in the cervix and vagina in the anterior midline. The initial management of the fistula was conservative, using transurethral Foley catheter drainage on an outpatient basis. Jane continued to leak urine vaginally and had a successful transabdominal repair four months later.

The surgery to close the fistula required a cystotomy made at the dome of the bladder and extended posteriorly to the level of the fistulous communication. The cervix, vagina, and bladder were separated at the point where they communicated with each other. The defect in the cervix and upper vagina was closed with interrupted polyglactin (Vicryl) sutures. The bladder was closed with continuous poliglecaprone (Monocryl) suture and reinforced with interrupted poliglecaprone suture. The bladder peritoneal flap was mobilized and interposed between the cervical–upper-vaginal and bladder suture lines. An omental graft was not required. The urethral catheter was removed on the seventh postoperative day, and the suprapubic catheter was removed on the 14th day.

Jane was interviewed about her experience 24 months after definitive repair of the fistula. She had a vivid recall of her experience and described the four-month interval between delivery and repair as “devastating” and her quality of life during this time as “pitiful.” In addition to caring for her newborn and her three-year-old daughter, she had to take care of the Foley catheter and the drainage bag. Because the catheter did not completely prevent urinary leakage, she also had to wear adult urinary incontinence diapers. Jane’s mother moved into her home to provide emotional support and to help Jane and her husband care for their children. Jane’s self-esteem was negatively affected in several ways. Because of her constant urinary leakage, she felt “dirty, stinky, and smelly.” She would sit only on certain chairs, and after definitive repair she discarded the chair that she had used the most. She gained weight because of relative inactivity and because eating was one of her few pleasures. During the four months until definitive repair, Jane’s primary coping strategy was to focus on the surgery date and to

remind herself that that her situation was not permanent. The constant urinary leakage during the time from diagnosis to definitive repair of the fistula had a significant negative effect on Jane’s quality of life and psychological well-being.

**CASE 2**

Sally (pseudonym), a 28-year-old woman, had previously undergone a lower uterine segment CS at term. For her second delivery, Sally had an unsuccessful trial of forceps followed by a repeat lower uterine segment CS. The fetal head was impacted in the pelvis but was successfully delivered from above. There was an extension of the uterine incision at its right extremity, but this was visualized and repaired. Hematuria was seen in the catheter drainage bag immediately after surgery. A few hours later, Sally began having vaginal gushes of urine, soaking her perineal pad every 20 to 30 minutes. Intravenous pyelography confirmed leakage of contrast into the vagina and confirmed that the ureters were not involved.

We discussed with Sally the options of continuing the transurethral Foley catheter and delaying repair (if no spontaneous resolution), or undertaking immediate repair. Sally opted for early surgical repair, and this was carried out under general anaesthetic approximately 24 hours after her repeat Caesarean section.

Cystoscopy was performed initially, and this showed a 2 to 3 cm defect just above the trigone where the base of the bladder communicated with the uterine cavity. Thus, as in the previous case, this was a vesico-cervical-vaginal fistula. Ureteral catheters were placed to help identify the ureters during mobilization of the bladder and repair of the defect. The skin and fascia from the recent CS incision were reopened. The previous uterine incision was taken down, the defect in the base of the bladder identified, the bladder mobilized from the lower uterine segment, and the bladder defect closed with two layers of polyglycolic (Dexon) suture. The uterine incision was closed in a single layer of chromic catgut. During surgery there was minimal bleeding from the uterine incision, likely because of local thrombosis. The bladder flap peritoneum was mobilized and interposed between the suture lines in the bladder and in the uterus to decrease the risk of recurrent fistula. A suprapubic catheter was placed and removed at two weeks postoperatively. The ureteric catheters were removed at the end of surgery.

The postoperative course was uncomplicated, and Sally was discharged on the fourth day.

Sally was interviewed about her experience 16 months after the repair of her fistula. She described the delivery and subsequent early repair as a “whirlwind” experience. Although

she recalled being concerned in the first few hours after the bladder injury was diagnosed, she did not remember a lot of specific detail about her symptoms, investigations, surgical treatment, or subsequent postoperative recovery. By noon on the day after her delivery, the decision had been made to attempt early repair. Psychologically, Sally viewed the CS and subsequent fistula repair as having been one surgical procedure. She felt that there was not much difference between her experience of these two surgical procedures and the delivery of her first child (delivered by CS 18 months earlier), except that she required more assistance in the hospital during the first few days after the fistula repair surgery. The psychological impact of the urinary tract fistula on Sally seemed minimal. She stated that the bladder injury and surgery to repair it had very little impact on her life and that it was “almost as if it didn’t happen.”

### **CASE 3**

Nancy (pseudonym), a 25-year-old woman, had a previous uncomplicated lower uterine segment Caesarean section. For her second delivery, Nancy had a successful low forceps-assisted vaginal delivery. Approximately 24 hours after this second delivery, Nancy began having continuous leakage of fluid from the vagina. Methylene blue dye solution instilled through a urethral catheter leaked out of the vagina. A voiding cystogram confirmed a communication between the urinary and reproductive tracts. Approximately 48 hours after delivery, Nancy had a successful transabdominal repair of her vesico-cervical-vaginal fistula.

Preoperative cystoscopy confirmed the presence of a 2 cm defect in the posterior wall of the bladder, just above its base, communicating with the uterine cavity. The ureteral openings were patent and some distance from the defect. Laparotomy was performed through a Pfannenstiel incision. A non-bleeding vertical rupture was seen in the lower segment of the uterus, extending down to the cervix. The bladder was mobilized and the defect in the bladder closed with one layer of continuous chromic catgut suture and a second imbricating layer of continuous polyglactin suture. The defect in the uterus and cervix was closed with interrupted figure-of-eight polyglactin sutures. A suprapubic catheter was inserted and removed on the 11th postoperative day.

Nancy was interviewed about her experience 27 months after her surgery. She recalled being confused about the incontinence when it was discovered. After the fistula was diagnosed and surgery was discussed, she remembered being alarmed, feeling that surgery was “too serious” to treat the incontinence. However, prior to surgery Nancy recalled feeling confident in her surgeon and having a lot of family support. She felt that her postsurgical recovery had

been straightforward. She denied that this experience had any negative impact on her psychological well-being or quality of life. The only lingering issue for Nancy was a general concern about her risk of a similar problem should she decide to have a third child.

### **DISCUSSION**

Contrary to expectation, we found that when repair of a urinary fistula following VBAC was performed within 24 to 48 hours of the diagnosis, the tissue planes between the uterus and bladder were easily identified and similar to those encountered at repeat Caesarean section. Intraoperative bleeding was minimal, with the preoperative and postoperative hemoglobin levels being similar in the second and third cases.

Although the two early fistula repairs were straightforward to perform, we do acknowledge that this is a small number of cases and that more experience should be accumulated before advocating attempts at early repair in the majority of cases. There may be a very limited time for potential repair in the postpartum period beyond which an attempt at repair may be more difficult to perform and fraught with increased risk of bleeding, other complications, or failure.

The patient whose repair was delayed for four months showed a degree of psychological suffering that was clearly higher than in the patients who had early repair, and this was attributed directly to the continuous incontinence. Observer or recall bias may explain the nature of some of the findings at the interviews. Nevertheless, because of the potential psychological morbidity associated with postpartum urinary fistulae and the relative ease of repair in the two early cases, we feel that early repair (within the first 24 to 48 hours) should be considered as long as there are no absolute contraindications. If early repair is considered, the patient and her family should be involved in the decision making, with discussion of all the options and their advantages and disadvantages. Perioperative conditions should be optimized by the use of antibiotic and heparin prophylaxis. Urogynaecologic or urologic expertise may be required for cystoscopy, ureteric catheterization and more extensive bladder mobilization for a secure cystotomy repair.

Traditionally, late repair is recommended for obstetric fistulae. This recommendation appears to have arisen from anecdotal case reports of spontaneous closure with a transurethral Foley catheter.<sup>7,8</sup> Further, most of the prior experience with obstetric vesicouterine fistulae is from developing countries where the mechanism of injury is often related to prolonged obstructed labour, tissue ischemia, and necrosis.<sup>9</sup> To optimize success rates for repair of obstetric fistulae in developing countries, a reasonable time interval for demarcation of ischemic tissue damage is

recommended.<sup>9</sup> Access to fistula hospitals and attention to improving preoperative nutritional status are other reasons why repair may be delayed.<sup>9</sup> However, the mechanism of injury for vesico-cervical-vaginal fistulae after VBAC in developed countries is less likely related to tissue ischemia and necrosis and more likely related to vesicouterine scarring from the previous CS, with distension and then sudden rupture of the lower uterine scar into the bladder.<sup>3</sup> Because of the potential morbidity from uterine scar dehiscence and rupture, VBAC patients in developed countries are rarely left in prolonged obstructed labour. Nutritional status and access to expertise for repair are not usually barriers in developed countries. Perhaps immediate repair of these injuries (in developed countries) is more straightforward, having better success rates than delayed repair because there is less inflammation and induration, and because involution and superimposed bacterial colonization and infection have not yet been established. Repair of the injury prior to the normal processes of involution may benefit from the normal postpartum physiological processes of repair and recovery of function. Perhaps early repair will ultimately have higher success rates for all of these reasons. The timing of repair for vesicovaginal fistulae arising from gynaecologic surgery has been re-examined in recent urological series and reviews, with many authors recommending early repair because of patient discomfort and the lack of evidence supporting late repair as the better treatment option.<sup>10</sup>

## **CONCLUSION**

Because vesicovaginal fistulae after VBAC are relatively rare, there is no consensus on the optimal timing of repair. It may not be possible to obtain good evidence or extensive experience for this clinical condition. Besides maximizing success rates and minimizing complications, another objective of surgery is to relieve symptoms and suffering.

Psychological suffering should be included in the equation when contemplating timing of repair for urinary tract fistulae after VBAC.

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