VESICOCUTANEOUS FISTULA AND BLADDER INJURY IN POST HYSTERECTOMY PATIENT: A CASE REPORT

[1] Mahendra Yudha Pratama, [2] William Tendi, [3] Octoveryal Aslim, [3] Andhika Hernawan Novianda.

[1] General Practitioner, Ibu Fatmawati Soekarno Hospital, Surakarta.
[2] Department of Urology, Faculty of Medicine/ Universitas Indonesia, Cipto Mangunkusumo Hospital, Jakarta.
[3] Department of Urology, Ibu Fatmawati Soekarno Hospital, Surakarta.

ABSTRACT

Objective: *This article presents a case of vesicocutaneous fistula and bladder injury with intraabdominal adhesion in post-caesarian section and hysterectomy patients.* ***Case(s) Presentation:*** *A 29-year-old woman suffering from vesicocutaneous fistula and bladder injury 10 days after having a hysterectomy due to atonic uterus in post-caesarian delivery.* ***Discussion:*** *Cystography and cystoscopy confirmed the bladder perforation at the posterior and dome. Exploratory laparotomy was then performed and found that a bowel adhesion had occurred following the inflammatory process after the previous procedure. A bladder reconstruction was then performed, and the patient was then catheterized for almost two weeks.* ***Conclusion:*** *A routine follow up then revealed the patient had no more symptom and the surgical wound was closed without any further complication.*

Keywords: *Vesicocutaneous fistula, bladder injury,hysterectomy, bowel adhesion.*

ABSTRAK

Tujuan: *Artikel ini menyajikan kasus fistula vesikokutan dan cedera kandung kemih dengan perlengketan intraabdominal pada pasien pasca operasi caesar dan histerektomi.* ***Presentasi Kasus:*** *Seorang perempuan berusia 29 tahun yang menderita fistula vesikokutan dan cedera buli-buli 10 hari setelah dilakukan histerektomi karena atonia uteri pasca melahirkan secara sectio caesarea. Diskusi: Hasil sistografi dan sistoskopi menunjukkan perforasi buli pada bagian inferior dan dome. Operasi laparotomi eksplorasi kemudian dilakukan dan ditemukan perlengketan yang terjadi karena proses inflamasi dari prosedur sebelumnya. Rekonstruksi buli kemudian dilakukan dan pasien dipasang kateter selama hampir dua minggu.* ***Simpulan:*** *Hasil kontrol rutin menunjukkan pasien tidak ada lagi keluhan dan luka operasi menutup tanpa adanya komplikasi lainnya.*

Kata kunci: *Fistula vesikokutan, cedera kandung kemih, histerektomi, perlengketan usus.*

Correspondence: Mahendra Yudha Pratama; c/o: Ibu Fatmawati Soekarno Hospital, Jalan Lettu Sumarto No. 1, Surakarta, Jawa Tengah 57136, Indonesia. Email: pratatm@gmail.com.

INTRODUCTION

Bladder injury might occur as a complication of any surgical procedure in the abdominal or pelvic area and this condition may also leads to a vesicocutaneous fistula.[1] Vesicocutaneous fistula is suspected when there is a urine leakage from the surgical site, especially in a procedure involving the female reproductive organ since the female uterus and urinary system organs, including the bladder, are closely related. The risk of urology tract injury during gynecologic surgical procedures such as hysterectomy is always a concern. The incidence of urinary tract injury after a gynecologic or pelvic surgery ranges from 0.2% to 1%.[2]

Another complication that might contribute the incidence of vesicocutaneous fistula is the intraabdominal adhesion that could happen after a laparotomy procedure. The adhesion is caused by the inflammatory process that happened after the surgical procedure. In the case of abdominal hysterectomy, abdominal adhesion could lead to abdominal pain, bowel obstruction, even death.3 Adhesion occurs within 10 years in approximately one-third of patients after abdominal or pelvic surgery. Hysterectomy was a significant etiology of adhesion that ranged between 13.6 to 16.[3] cases per 1.000 procedures.[4]

This article presents a case of vesicocutaneous fistula and bladder injury with

intraabdominal adhesion in post-caesarian section and hysterectomy patients.

CASE(S) PRESENTATION

A 29-year-old female came to Ibu Fatmawati Soekarno Hospital on April 27th, 2023, complaining of bloody urine seeping from the surgical wound since 12 hours ago. Previously, the patient underwent hysterectomy procedure days prior to admission in another hospital due to atonic uterus after caesarian section delivery. During hysterectomy, the surgeon noticed a bladder injury at the posterior aspect. Thus, bladder repair and open cystostomy were performed. One week after that, the patient was in stable condition with clear yellow urine observed in both urinary catheter and cystostomy. The cystostomy tube was then removed and the patient was discharged. One day later, the patient was admitted to the emergency unit complaining the symptom described above. The patient's urinary catheter produced no urine, and spooling with saline solution revealed clotted bladder and manual clot evacuation was performed. Complaints of nausea, vomiting, shortness of breath, and a history of chronic disease were denied by the patient.

Physical examination then showed an anemic conjunctivae. Abdominal examination revealed the surgical suture was already ruptured partially with reddish fluid leakage. The patient also felt pain on the surgical site. Complete blood examination results showed decreased Hemoglobin (10.4 gr/dL), leukocytosis (19.250/mm^3) thrombocytosis (669.000/mm^3) and prolonged activated partial thromboplastin time (aPTT)

The patient was then diagnosed with vesicocutaneous fistula with suspected bladder perforation. The patient then underwent cystography, revealing an intraabdominal extravasation casued by a rupture of the bladder (Figure 1). A cystoscopy was also performed and showed a 3-cm perforation at the posterior aspect of the bladder and 1-cm perforation at the bladder dome. An exploratory laparotomy was then performed.

During laparotomy, an abdominal adhesion was found and adhesiolysis procedure was performed along with a bladder reconstruction. Further evaluation also revealed a severe adhesion between posterior bladder and vagina with about 200 ml of blood clot surroundings. In addition, the

Figure 1. Intraoperative cystography studies to confirm contrast extravasation.

perforated part at the posterior bladder was difficult to be accessed, and the repair was then attempted by opening the anterior part of the bladder from the perforated dome, we found 50ml of blood clot in the bladder cavity that goes to the doulgas cavity from the posterior bladder ruptured part. The clot was evacuated and then directly reconstruct the bladder and placed an abdominal drainage tube.

The patient was then on bedrest for 24 hours. The abdominal drain was removed on the 4th day after surgery and the urinary catheter was removed one week later along with the removal of the non-absorbable suture in the outpatient clinic. Now, patient felt no pain, and the surgery wound resolved without any complication.

DISCUSSION

Vesicocutaneous fistula is diagnosed when an abnormal tract connects the bladder to the skin, resulting in urine leakage.[1,5,6] In general, cause of fistules can be classified as congenital, acquired or iatrogenic.[1,7] In iatrogenic cause, most of vesicocutaneous fistula occurs after surgery.5 In this case, a patient came to the hospital complaining of bloody urine leaking from the surgical wound after hysterectomy, repair of bladder injury and removal of cystostomy tube. The same type of fistula might also happen from a procedure in the pelvic area, specifically tubal ligation8. Vesicocutaneous fistula can also happened in a delayed fashion, as described by Rajaian et al.[9] The study reported a 24-year-old man diagnosed with vesicocutaneous fistula after

cystostomy when he was 4 years old due to pelvic trauma. The fistula tract might also be developed due to foreign bodies, neoplasm or keloid mass. The tract can also be well-epithelialized or infected. An infection might precipitate a fistula in the urinary bladder. The pathophysiology process includes inflammatory cell infiltration related to urine seeping into the area of fistula. In addition, an inadequate closure of any cavity after a procedure can create a reservoir for infection in the deep tissue, allowing a fistula to form.[10] Another case report of vesicocutaneous fistula was also reported by Toufique1, in which a 30-year-old female with intermittent urine leakage at the abdominal scar after emergency caesarean section followed by hysterectomy. The case was then treated with conservative treatment using a urinary catheter for 3 weeks. In our case, the patient had a history of undergoing cesarian section, hysterectomy and open cystostomy. The laboratorium examination found that the patient had leucocytosis with neutrophils dominance which most likely happened because of infection, trauma and stress.[11]

Several factors that should be considered when deciding on the surgical procedure for vesicocutaneous fistula including the anatomic location of the fistula,major causes of the fistula, patient activity level,and presence of tumor.[6] Most bladder cutaneous fistula could close spontaneously without any surgical intervention. However, a fistula caused by foreign bodies of neoplasms usually persists. The same case also happens in a well-epithelialized fistula. For patient underwent a conservative treatment, it is important to ensure a low intrabladder pressure to allow the fistula to close spontaneously. Therefore, bladder catheterization is necessary to empty the bladder.[12] In addition, if an infection does occur, the source of infection should be treated immediately to prevent further damage of the wound and stop the urineleakage.Furthermore, should a surgical intervention is required, the bladder tissue that already forms granulation must be removed. The surgical closure should include closing all the layer start from the bladder, the subcutaneous tissue then the skin to eliminate dead space.[7] In this case report,the patient underwent an exploratory laparotomy to close the vesicocutaneous fistula.

In general, obstetric and gynecologic surgical procedures contributed to almost 65% of iatrogenic bladder injuries in all nonendoscopic processes. Bladder injury occurs in 0.05% to 0.66% of these cases. Caesarian delivery is associated with bladder injury especially when followed by hysterectomy. Intraoperative injury to the bladder during gynecologic surgical procedures can occur during hysterectomy, adhesiolysis or when attempting to reach an anterior cyst in transvaginal hysterectomy. Should a cystotomy be required during hysterectomy, a sharp rather than blunt cystotomy is recommended to avoid tissue tearing and facilitate repair. Most bladder injuries in gynecological surgery occur at the bladder ceiling or dome.[13] A study by Mamik et al. found that a history of caesarean section and total transabdominal hysterectomy is a primary risk factor associated with bladder injury.[14] In our case, the patient had a quite unusual location for a post-hysterectomy bladder perforation at the posterior of the bladder. The fistula then occurred from the bladder to the surgical wound. The risk of developing a fistula increases when an injury is undiagnosed.[15]

There are many strategies in bladder closure techniques. An initial continuous suture is often used to connect the bladder mucosa and muscle. Then a second layer suture may use either a continuous suture or a simple interrupted suture. Continuous catheter drainage should be placed after each bladder repair. To maintain bladder integrity, the duration of urinary drainage and bladder decompression should be at least 7 to 14 days. The duration of catheterization might be longer until up to three weeks if the bladder has not yet healed completely.[13,16] This is in accordance to the case reported in this article. The patient was catheterized for almost two weeks.

An intraabdominal adhesion of ileum was also found. Bowel adhesion is a common postoperative complication, especially after laparotomy.[17] Adhesion of the bowel is an irregular form of scar tissue that stretch and connect the intestinal loops that are normally not connected. This connective tissue forms after a surgery, trauma, infection or radiation therapy as a healing process in tissue damage. The pathophysiology of this phenomenon is when the tissue around the area of surgery underwent a repair mechanism, it releases messenger cells such as leucocytes, especially macrophages to attract mesothelial cells to re-epithelialize the injured site. This process could happen as an immediate inflammatory response that peaks on the fourth to fifth day after injury. The adhesion occurred because of the formation of fibrin gel matrix during this process. Because of poor resorption of the degraded tissue debris or incomplete fibrinolysis process, tissue scarring and

adhesion development begins. Most patients have no symptoms due to this condition. However, chronic abdominal pain, intestinal obstruction and female infertility might occur in some patients. Intraabdominal examination such as laparoscopy or laparotomy is the only way to evaluate the condition to confirm the diagnosis of adhesions.[18]

In our case, direct examination by exploratory laparotomy procedure found an ileal adhesion. As well known before, this patient had a history of cesarean section and hysterectomy. The same case was also reported by Shah et al., who observed a 48 years old female that came to the hospital with abdominal pain after a total hysterectomy one day prior.[19] It should also be noted that an adhesion can also be found years after abdominal-pelvic surgery, as reported by Minhem et al.[20] The author of this study reported an intestinal loop adhesion 16 years after an ovarian-sparing hysterectomy. Despite of these literatures, the pathogenesis of adhesion formation is still not well understood.

CONCLUSION

Bladder injury and vesicocutaneous fistula is a common complication of abdominal-pelvic surgery, especially gynecological procedure. The patient might present with a urine leakage from the surgical wound or complaining of bloddy urine. In addition, an intraabdominal adhesion might also occur and the patient is at risk of bowel obstruction. The easy way to find a bladder injury is by performing cystography or cystoscopy, whereas an intraabdominal adhesion could be examined by laparotomy or laparoscopy. Treatment for vesicocutaneous fistula and bladder laceration can be either conservative or surgical depending on the severity of the injury.

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