

Cesarean scar perforation in laparoscopic hysterectomy for endometrial cancer: a case report

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Perioperative complications tend to increase when performing hysterectomy in patients with a history of caesarean section. Therefore, the laparoscopic hysterectomy procedure requires careful consideration. Herein, we report the case of a patient with a history of caesarean section who underwent total laparoscopic hysterectomy for endometrial cancer. A 59-year-old woman was diagnosed with stage IA endometrial cancer preoperatively, and she underwent laparoscopic hysterectomy, bilateral adnexectomy, and pelvic lymphadenectomy. During these procedures, the bladder was observed to tightly adhere to the scar of a previous caesarean section, and the uterine was perforated due to detachment near the uterus to avoid damage to the bladder. After 2 years, there were no symptoms of recurrence. Our findings further demonstrated that bladder adhesions should be considered in laparoscopic surgery for patients with endometrial cancer who have a history of caesarean section.

Keywords

Endometrial cancer; Laparoscopy; Caesarean section

1. Introduction

Laparoscopic surgery for early endometrial cancer has significantly higher and lower incidence rates of intraoperative and postoperative complications, respectively, than laparotomy. Moreover, there is no difference in the prognosis between these two surgical procedures [1, 2]. Laparoscopic surgery is associated with a small wound site, shorter hospital stay, and a quick return to daily life post-surgery. Therefore, laparoscopic surgery is considered the standard procedure for endometrial cancer [3]. However, adverse events, such as prolonged operation time and a high incidence of lower urinary tract injuries, have been reported [4]. In particular, the incidence of lower urinary tract injury due to previous caesarean section has been reported to be high [2, 5–7].

Caesarean section is the most common surgery performed in women, with rates at an all-time high of 20–30% of all deliveries [8]. To date, approximately 20% of such women require a hysterectomy by the age of 55 years. However, adhesion of the bladder to the lower uterine segment makes dissection at the time of hysterectomy more difficult [8–10]. A previous literature review [11] stated that there is no significant difference in the risk of bladder injury from hysterec-

tomy in women who had undergone a previous caesarean section; however, a new meta-analysis reported a significant association between bladder injury and previous caesarean section [7]. This difference in results might be due to the differences in the number of participants in each study. Although the bladder can be dissected safely, uterine perforation at the incision site of the caesarean section is frequently experienced. Herein, we report the case of a patient with endometrial cancer and a history of a caesarean section who underwent a laparoscopic hysterectomy. During the procedure, the uterine incision site was perforated when the bladder was detached due to a strong adhesion of the uterus to the apex of the bladder.

2. Case report

A 59-year-old woman (height, 162 cm; weight, 86 kg; body mass index [BMI], 32.7 kg/m²) had been experiencing genital bleeding for 6 months and was referred to our hospital for detailed examination and treatment after receiving a false-positive result of endometrial cytology by her previous physician. She had four pregnancies and three deliveries (two vaginal deliveries, one caesarean section, and one spontaneous abortion). Her medical history included hypertension, diabetes, and dyslipidaemia. Both endometrial cytology and biopsy at our hospital revealed grade 1 endometrial cancer. Although computed tomography did not suggest metastasis in the lymph nodes or elsewhere, magnetic resonance imaging suggested myometrium invasion < 1/2, and therefore stage IA endometrial cancer was diagnosed preoperatively. Signs of myometrium thinning were not observed. Her treatment included laparoscopic hysterectomy, bilateral adnexectomy, and pelvic lymphadenectomy per the guidelines of the Japan Association of Gynaecologic Oncology [12]. Perioperatively, the bladder was observed to tightly adhere to the scar of a previous caesarean section (Fig. 1A). In an attempt to avoid damaging the bladder, the uterus was perforated (Fig. 1B). Because our institute does not receive a high volume of patients and is a rural hospital, it is stringently monitored by the Department of Health and Safety [13], and therefore we try to avoid organ injury for any reason. After

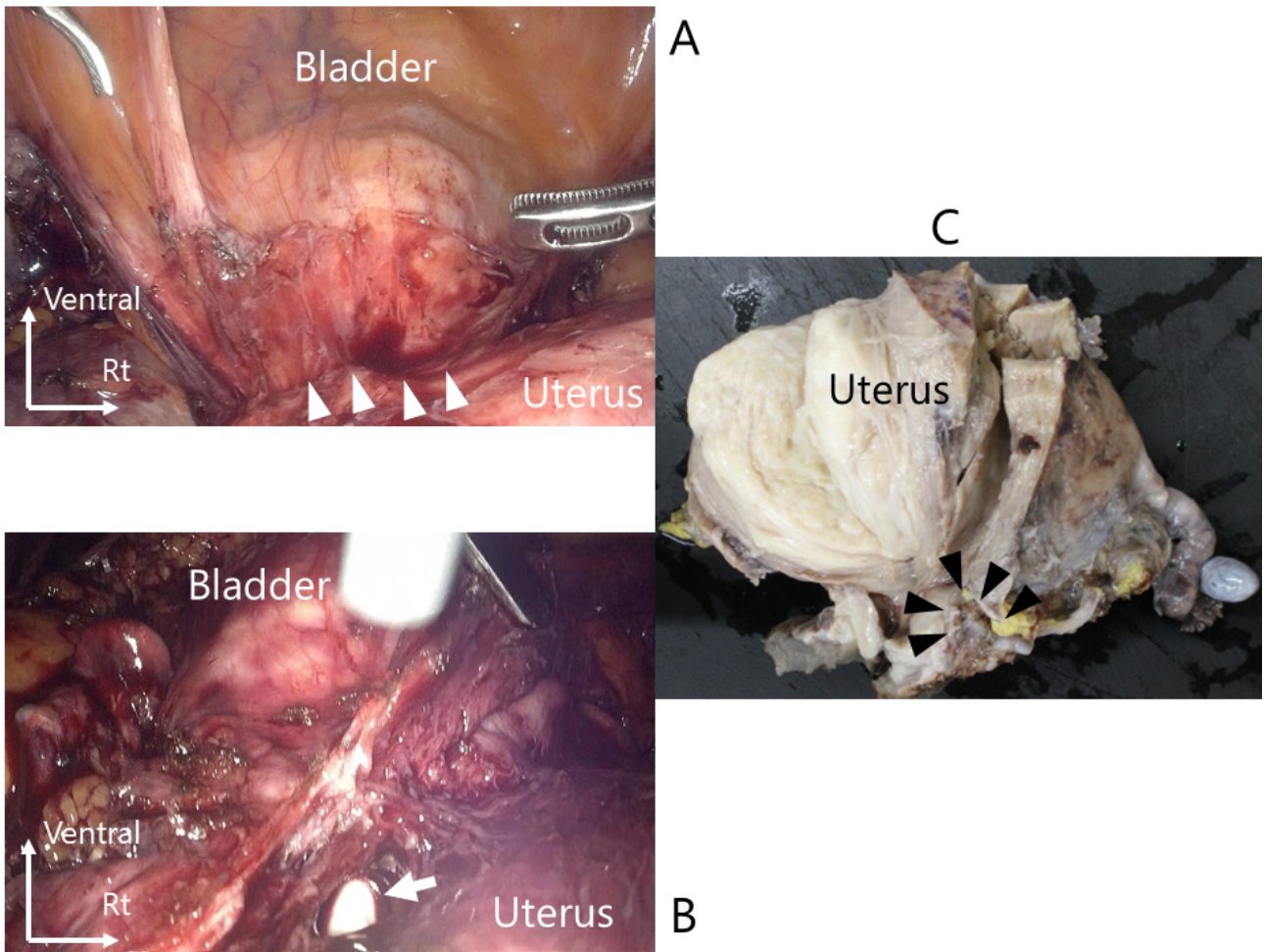


Fig. 1. (A) Arrowhead: Tight adhesion between the bladder and the cervix. (B) Arrow: Caesarean section scar is perforated, and uterine manipulator is visible. (C) Arrowhead: The perforation site is inlaid with the bladder.

hysterectomy, the abdominal cavity was washed thoroughly with saline solution, and the operation was completed without delay. She was discharged with no complications. The postoperative diagnosis was similar to the preoperative diagnosis, indicating endometrial cancer IA and no risk factors for recurrence. In addition, the perforation site was inlaid with the bladder because of a previous caesarean section (Fig. 1C). At the 2-year follow-up, there were no signs of recurrence.

3. Discussion

We experienced a case of uterine perforation at the site of an old caesarean section scar during the dissection of the bladder after performing laparoscopic total hysterectomy in a patient with endometrial cancer. The patient had a history of a single caesarean section; thus, laparoscopic surgery was attempted. However, as the bladder firmly adhered to the uterus, uterine perforation occurred as a result of excision in the uterus side, rather than the bladder side, on the purpose to avoid bladder damage.

The frequency of performing caesarean section has increased rapidly in recent years [14], and the prevalence of

hysterectomies in patients with a history of caesarean section has similarly increased [14]. Hysterectomy leads to higher rates of adjacent organ damage, postoperative infection, fistula formation, and blood transfusion in patients who have undergone caesarean section than in those who have not [6, 14, 15]. In addition, approximately 45% of patients with a caesarean section have adhesions [16]. Indeed, when performing laparoscopic hysterectomy in a patient who has undergone a caesarean section previously, strong adhesion between the bladder and the uterus may be observed as the bladder might have risen to the cranial side of the anterior wall of the uterus following a caesarean section procedure. This severe bladder adhesion may result in uterine perforation, which can cause spillage of cancer cells. Therefore, conversion to laparotomy may be preferred for patients with a history of caesarean section delivery and severe bladder adhesions.

The adhesions in the bladder and the uterus obscure the individual dissectible layers, while misinterpreted dissectible layers lead to bladder injury or result in uterine perforation, as observed in this case. A study indicates that laparoscopic

surgery has a worse prognosis than laparotomy because of the tumour cell spillage [17]. Spillage of cancer cells into the abdominal cavity by uterine perforation should be avoided. Indeed, when bladder adhesion to the uterus is observed, stronger abdominal traction can be performed with laparotomy, and the detached surface can be emphasised. Assumptively, laparotomy conversion is more suitable than laparoscopic surgery for patients with strong adhesions when performed by an inexperienced surgeon. Therefore, such surgeons should consider conversion to laparotomy if it is difficult to remove adhesions during surgery, and it is better to avoid laparoscopic surgery in patients with many caesarean sections.

Filling the bladder with saline is another technique utilised to clarify the boundary with the uterus, which may be cause for concern [18]. Several reports in the literature aimed to decrease these serious urological complications by for example dissecting from the vaginal rout [19] or laterally to the adhesions [20]. Although Shellhaas and colleagues (2009) [18] did not detect a statistically significant beneficial effect of filling the bladder with saline, shorter operation times, shorter postoperative hospital stays, and fewer bladder injuries were noted in patients whose bladders were filled. Therefore, inexperienced doctors should take this into consideration to prevent complications.

4. Conclusions

This case report indicated that bladder adhesion should be considered in laparoscopic surgery for endometrial cancer patients with a history of caesarean section. Given the inevitable differences in surgeon experience, if an inexperienced surgeon feels that there are tight adhesions, conversion to laparotomy should be considered.

Author contributions

K.A. conceived and designed the experiments; K.C. and K.I. analysed the data; I.T. and T.K. contributed reagents and materials; A.K and R.K. wrote the paper.

Ethics approval and consent to participate

Under the hospital's regulations, consent forms were obtained by comprehensive agreement.

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Conflict of interest

K. Chikazawa received lecture honoraria from Ethicon (Tokyo, Japan), Terumo (Tokyo, Japan), and Chugai Pharmaceutical Co. (Tokyo, Japan). R. Konno received research funds from Yakult Pharmaceutical Industry Co. (Tokyo, Japan) and Chugai Pharmaceutical Co. (Tokyo, Japan) and lecture honoraria from Japan Vaccine Co. (Tokyo, Japan), MSD Japan (Tokyo, Japan), and Chugai Pharmaceutical Co. (Tokyo, Japan). The organisations that provided funding did

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References

- [1] Walker JL, Piedmonte MR, Spirtos NM, Eisenkop SM, Schlaerth JB, Mannel RS, *et al.* Laparoscopy compared with laparotomy for comprehensive surgical staging of uterine cancer: gynecologic oncology group study LAP2. *Journal of Clinical Oncology*. 2009; 27: 5331–5336.
- [2] Walker JL, Piedmonte MR, Spirtos NM, Eisenkop SM, Schlaerth JB, Mannel RS, *et al.* Recurrence and survival after random assignment to laparoscopy versus laparotomy for comprehensive surgical staging of uterine cancer: gynaecologic oncology group LAP2 study. *Journal of Clinical Oncology*. 2012; 30: 695-700.
- [3] National Comprehensive Cancer Network. 2020. Available at: www.nccn.org.
- [4] Chang EJ, Mandelbaum RS, Nusbaum DJ, Violette CJ, Matsushima K, Klar M, *et al.* Vesicoureteral injury during benign hysterectomy: minimally invasive laparoscopic surgery versus laparotomy. *Journal of Minimally Invasive Gynecology*. 2020; 27: 1354-1362.
- [5] İnan AH, Budak A, Beyan E, Kanmaz AG. The incidence, causes, and management of lower urinary tract injury during total laparoscopic hysterectomy. *Journal of Gynecology Obstetrics and Human Reproduction*. 2019; 48: 45-49.
- [6] Lindquist SAI, Shah N, Overgaard C, Torp-Pedersen C, Glavind K, Larsen T, *et al.* Association of previous cesarean delivery with surgical complications after a hysterectomy later in life. *JAMA Surgery*. 2017; 152: 1148.
- [7] Xu Y, Wang Q, Wang F. Previous cesarean section and risk of urinary tract injury during laparoscopic hysterectomy: a meta-analysis. *International Urogynecology Journal*. 2015; 26: 1269-1275.
- [8] Rooney CM, Crawford AT, Vassallo BJ, Kleeman SD, Karram MM. Is previous cesarean section a risk for incidental cystotomy at the time of hysterectomy? A case-controlled study. *American Journal of Obstetrics and Gynecology*. 2005; 193: 2041-2044.
- [9] Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Reports*. 2002; 50: 1-101.
- [10] Vessey MP, Villard-Mackintosh L, McPherson K, Coulter A, Yeates D. The epidemiology of hysterectomy: findings in a large cohort study. *British Journal of Obstetrics and Gynaecology*. 1992; 99: 402-407.
- [11] Agostini A, Vejux N, Colette E, Bretelle F, Cravello L, Blanc B. Risk of bladder injury during vaginal hysterectomy in women with a previous cesarean section. *The Journal of Reproductive Medicine*. 2005; 50: 940-942.
- [12] Nagase S, Katabuchi H, Hiura M, Sakuragi N, Aoki Y, Kigawa J, *et al.* Evidence-based guidelines for treatment of uterine body neoplasm in Japan: Japan Society of Gynecologic Oncology (JSGO) 2009 edition. *International Journal of Clinical Oncology*. 2010; 15: 531-542.
- [13] Worley MJ, Jr, Anwandter C, Sun CC, dos Reis R, Nick AM, Frumovitz M, *et al.* Impact of surgeon volume on patient safety in laparoscopic gynecologic surgery. *Gynecologic Oncology*. 2012; 125: 241-244.
- [14] Rattanakanokchai S, Kietpeerakool C, Srisomboon J, Jampathong N, Pattanittum P, Lumbiganon P. Perioperative complications of hysterectomy after a previous cesarean section: a systematic review and meta-analysis. *Clinical Epidemiology*. 2019; 11: 1089-1098.
- [15] Brummer THI, Jalkanen J, Fraser J, Heikkinen A, Kauko M, Mäkinen J, *et al.* FINHYST, a prospective study of 5279 hysterectomies: complications and their risk factors. *Human Reproduction*. 2011; 26: 1741-1751.

- [16] Hesselman S, Högberg U, Jonsson M. Effect of remote cesarean delivery on complications during hysterectomy: a cohort study. *American Journal of Obstetrics and Gynecology*. 2017; 217: 564.e1-564.
- [17] Ramirez PT, Frumovitz M, Pareja R, Lopez A, Vieira M, Ribeiro R, *et al*. Minimally invasive versus abdominal radical hysterectomy for cervical cancer. *New England Journal of Medicine*. 2018; 379: 1895-1904.
- [18] Shellhaas CS, Gilbert S, Landon MB, Varner MW, Leveno KJ, Hauth JC, *et al*. The frequency and complication rates of hysterectomy accompanying cesarean delivery. *Obstetrics & Gynecology*. 2009; 114: 224-229.
- [19] Purohit R, Sharma JG, Meher D, Rakh SR, Choudhary M. A laparovaginal strategy to avoid bladder injury during laparoscopic-assisted vaginal hysterectomy in cases with ventrofixed uterus following previous cesarean section. *International Journal of Women's Health*. 2018; 10: 579-587.
- [20] Chang WC, Hsu WC, Sheu BC, Huang SC, Torng PL, Chang DY. Minimizing bladder injury in laparoscopically assisted vaginal hysterectomy among women with previous cesarean sections. *Surgical Endoscopy*. 2008; 22: 171-176.