



Systematic assessment of surgical complications in laparoscopically assisted vaginal hysterectomy for pelvic organ prolapse



Anke R. Mothes, Marc P. Radosa, Ingo B. Runnebaum*

Department of Gynaecology, Jena University Hospital, Friedrich-Schiller-University Jena, Bachstreet 18, D-07743 Jena, Germany

ARTICLE INFO

Article history:

Received 4 July 2015

Received in revised form 25 August 2015

Accepted 17 September 2015

Keywords:

Pelvic organ prolapse

Native tissue repair

Laparoscopically assisted hysterectomy

Clavien–Dindo classification

Surgical safety

ABSTRACT

Objective: To assess patient safety and complication rates in native tissue vaginal prolapse repair combined with laparoscopically assisted vaginal hysterectomy and prophylactic salpingectomy/salpingoophorectomy.

Study design: This was a single-centre retrospective study conducted at the University Hospital, Urogynaecological Unit, with a certified urogynaecological surgeon. A cohort of 321 consecutive patients received laparoscopically assisted vaginal hysterectomy for pelvic organ prolapse grade II–IV combined with defect-specific vaginal native tissue repair. Analysis of the total cohort and subgroups according to prolapse grade and concomitant laparoscopic procedures was performed. Student's *t*-tests and chi-squared tests were used for descriptive statistical analysis. Surgical complications were classified using the Clavien–Dindo (CD) classification system of surgical complications.

Results: Complications were classified as CD I (1.87%), CD II (13.39%), CD IIIa (0.62%), and CD IIIb (1.87%); no CD IV or CD V complication occurred. One (0.31%) intraoperative bladder lesion, but no rectal lesion, ureter lesion, or intraoperative haemorrhage requiring blood transfusion, was noted. The overall morbidity rate, including the intraoperative bladder lesion and the CD I complication, was 18.06%. All ($n = 321$) patients underwent prophylactic salpingectomy. Additional oophorectomy was performed in 222 post-menopausal patients. Pelvic adhesions were found in 123 (38.31%) patients and 148 (46%) patients presented grade IV prolapse. Operating time was longer for grade IV than for grade II/III prolapse ($p < 0.01$), but CD III complication rates did not differ between these groups. Operating time was longer when laparoscopic adhesiolysis was performed ($p = 0.025$), but this factor did not affect CD III complication rates.

Conclusions: The combination of vaginal site-specific prolapse repair with laparoscopically assisted hysterectomy leads to low complication rates. Prophylactic salpingectomy or salpingoophorectomy can be performed safely in combination with hysterectomy for pelvic organ prolapse. In terms of surgical safety laparoscopy seems to be a meaningful addition to vaginal native tissue prolapse surgery.

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Introduction

Patients undergoing surgery deserve as much safety as possible. For optimal therapeutic results, it is well accepted that vaginal prolapse repair requires an advanced experience level in gynaecologic surgery. In older patients with pelvic organ prolapse (POP), uterine size is often reduced, but uterine shape – namely, cervical elongation – presents a surgical challenge [1]. Extensive vaginal preparation along an elongated uterine cervix [1] can cause surgical complications affecting neighbouring organs, such as the urinary bladder, ureters, and rectum, and large wound surface area

can lead to the development of haemorrhage and haematoma. When the vaginal approach is used, additional detailed laparoscopic visualisation of pelvic structures [2] can increase the safety of surgical preparation, thereby decreasing complication rates. Another well-known advantage of laparoscopy is that it enables the safe performance of salpingectomy or salpingoophorectomy [3,4]. For benign conditions requiring hysterectomy, several authors have advocated combination with salpingectomy or salpingoophorectomy as the standard of care [4–8]. Other authors, however, consider current evidence to be insufficiently convincing to recommend prophylactic salpingectomy in combination with every hysterectomy [9].

Several standardised classification systems for the evaluation of surgical morbidity associated with different operative techniques for POP have been proposed recently [10,11]. The objective of this

* Corresponding author. Tel.: +49 3641 9 33063; fax: +49 3641 9 33064.

E-mail address: Direktion-Gyn@med.uni-jena.de (I.B. Runnebaum).

retrospective analysis was to assess surgical complications of laparoscopically assisted vaginal hysterectomy (LAVH) for POP using the Clavien–Dindo (CD) classification, a valid and widely adopted tool for quality assessment in urological surgery [11]. We hypothesised that in terms of safety laparoscopic assistance could be a meaningful addition to vaginal hysterectomy for POP. The results of this study can facilitate the development of strategies to improve the safety of patients undergoing prolapse surgery.

Materials and methods

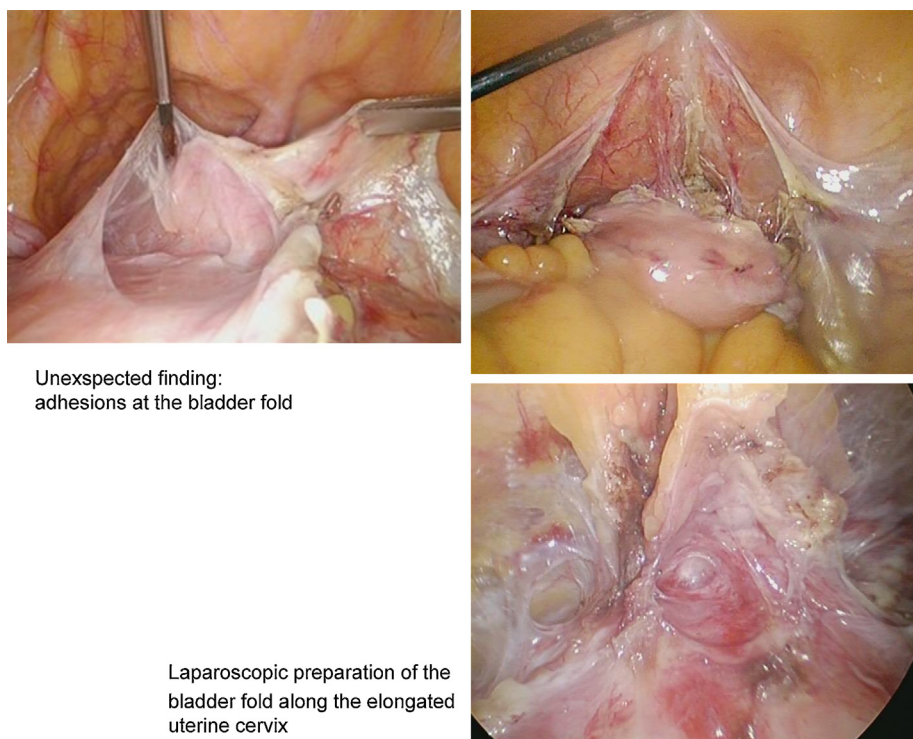
Data from 321 consecutive patients who underwent type III LAVH [2] combined with vaginal native tissue repair for POP, performed by a certified pelvic floor surgeon between 2009 and 2014, were analysed. In all cases, the hysterectomy procedure was indicated due to uterine pathology (uterine fibroids, uterine cervical elongation) or demanded by the patient.

Procedures included laparoscopic panoramic examination of the peritoneal cavity for pathologic findings, opening of the bladder fold and preparation along the elongated uterine cervix (Fig. 1), concomitant laparoscopic procedures (i.e. salpingectomy, salpingoophorectomy, adhesiolysis, myomectomy) when required, defect-specific vaginal repair, extensive vaginal preparation in cases of grade IV prolapse [12], and a laparoscopic ‘second look’ for trans-peritoneal visualisation of bilateral ureter peristalsis and haemostasis at the vaginal apex. In pre- and peri-menopausal women and on patient demand, the ovaries were preserved. Laparoscopic bladder preparation along the elongated uterine cervix reduces the extent of vaginal preparation required. It also allows the anterior opening of the peritoneal cavity in a distal location, as well as improved visualisation of tissue layers (Fig. 2) at vaginal preparation steps. The semi-circular colpotomy shown in Fig. 2 was performed vaginally but the distal site of the anterior peritoneal opening was determined by prior laparoscopic preparation steps along the uterine cervix as mentioned before.

Defect-specific vaginal native tissue repair consisted of lateral paravaginal or central anterior compartment repair, posterior compartment repair, and sacrospinous fixation, depending on the presenting pelvic-floor defect pattern. The ‘second look’ approach required the patients’ position on the operating table to be changed from dorsal to the lithotomy position, followed by a return to dorsal. Intraoperative suprapubic catheter insertion was not performed routinely. Standard intra- and postoperative inpatient care included the use of single-shot antibiotics (Cefuroxim 1500 mg, Hikma Pharma GmbH, Gräfelting, Germany and Metro-nidazol 500 mg, Actavis Group PTC, Hafnarfjörður, Island), vaginal packing with local haemostatic agents (Gelaspon[®], Chauvin GmbH, Berlin, Germany) for 24 h, vaginal iodine (Traumasept[®], Dr. Wolff, Bielefeld, Germany) and estriol (Oekolp[®] 0.03 mg, DR. KADE Pharma, Berlin, Germany) suppositories on alternating postoperative days, transurethral catheters for two postoperative days, and lactulose syrup (Bifiteral[®] 667 g/l, Abbott, Hannover, Germany) to prevent constipation.

The following data were collected from the hospital’s computerised database, as well as handwritten and electronic patient charts: number of consecutive prolapse hysterectomies performed, concomitant performance of laparoscopic procedures (i.e. adhesiolysis, salpingectomy, salpingoophorectomy), number of grade IV prolapses, presence of uterine cervical elongation, uterine weight, patient’s body mass index (BMI), operating time, and perioperative complications. Cervical elongation was defined as a corpus:cervix ratio ≤ 1.5 [13]. Surgical complications were classified using the CD system. Briefly, complications were classified according to the need for postoperative medical or surgical interventions in a patient-centred approach [14]. The evaluation interval comprised the duration of hospitalisation and a 48-h re-admission period.

Data were analysed using the Statistical Package for the Social Sciences (SPSS) software (version 15.0; SPSS Inc., Chicago, IL, USA). Student’s *t*-test and the chi-squared test were used for descriptive analysis.



Unexpected finding:
adhesions at the bladder fold

Laparoscopic preparation of the
bladder fold along the elongated
uterine cervix

Fig. 1. Laparoscopic preparation of the bladder fold. Note the unexpected finding of adhesions on the bladder fold.

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