Novel treatment (new drug/intervention; established drug/procedure in new situation)

Technique of abdominal hysterectomy for non-puerperal uterine inversion

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Summary

A 52-year-old postmenopausal woman presented with lower abdominal pain, bleeding per-vaginum and a mass protruding per-vaginum of 1-week duration. A clinical diagnosis of non-puerperal uterine inversion due to fundal leiomyoma was made. Non-puerperal uterine inversion is a rare clinical condition and usually follows a benign or malignant mass attached to the fundus of uterus. Surgical procedures described in the literature use different techniques to first reposition the uterus followed by hysterectomy. However, repositioning the uterus is not always successful. Surgery for inverted uterus is technically difficult due to close proximity of the ureters to the ovarian and uterine vessels due to traction on the vascular pedicles, difficulty in repositioning the uterus and constraints of mobilising the bladder down due to the inverted uterus. This paper illustrates the salient steps of surgery to safely accomplish abdominal hysterectomy without repositioning the uterus to treat this rare condition.

BACKGROUND

Non-puerperal uterine inversion is a rare clinical condition, which has been reported in literature only as a few case reports.^{1 2} Due to the infrequent nature of this clinical condition, many gynaecologists might not see any case of non-puerperal uterine inversion in their entire clinical career. However, when faced with a case, there is paucity of literature to guide the clinician in surgical management of the case.

Most surgical procedures described in the literature use different techniques to first reposition the uterus followed by hysterectomy.^{1 3} We describe here the salient steps of surgery to safely accomplish abdominal hysterectomy for this unusual presentation without attempting to reposition the uterus.

CASE PRESENTATION

A 52-year-old lady was admitted with severe lower abdominal pain followed by bleeding per-vaginum and a mass protruding from her vulva of 5-day duration. She was a nullipara with a history of myomectomy done 23 years ago. She gave a history of menorrhagia associated with dysmenorrhoea in her premenopausal years. She was menopausal since 7 years. On examination, she was poorly nourished and pale. The infraumbilical midline scar on the abdomen was supple. A large pedunculated globular mass of size 13×10 cm with lobulated surface was seen hanging with a 4-cm thick pedicle. The pedicle had raw surface which bled on touch (figure 1). A thin rim of cervix was felt around the protrusion. The uterus could not be identified on vaginal or rectal examination. A provisional diagnosis of non-puerperal uterine inversion was confirmed by examination under anaesthesia. Only 1 cm length of uterine sound could be inserted beyond the cervical rim (figure 2).

INVESTIGATIONS

Abdominal ultrasound examination outlined the ovaries and the inverted uterus. Transverse section of the pelvis showed both ovaries pulled together in the midline behind

Figure 1 Inverted uterus with fundal fibroid seen protruding from the vulva.

the bladder and surrounded by a thick band of cervical tissue (figure 3). Longitudinal section showed the two parallel endometrial surfaces lying superior and inferior to the inverted serosal surface in the middle. Ovary was seen at the cervical rim (figure 4).

Figure 2 Sounding the uterine cavity. Anterior cervical rim is seen with raw surface of inverted uterus.

Figure 3 Abdominal USS transverse section showing both ovaries pulled to midline into the funnel of cervical rim.

Figure 4 Abdominal USS longitudinal section showing inverted walls of uterus with central echo of inverted serosal surface and the endometrial echoes seen above and below. Part of the ovary is seen at the cervical rim.

Biopsy from the firm, globular mass confirmed a leiomyoma.

DIFFERENTIAL DIAGNOSIS

Non-puerperal uterine inversion due to leiomyoma is commonly confused with pedunculated uterine or cervical fibroid. The mass attached to the fundus may be benign or malignant, and this would dictate the extent of surgery. Examination under anaesthesia and biopsy from the mass are essential before embarking on definitive surgery.

TREATMENT

Our patient was counselled and prepared for abdominal hysterectomy.

On literature search, most case reports describing the 'steps of surgery' involve repositioning of uterus as the first step.⁴ On laparotomy, the inverted uterus is usually described as a narrow transverse slit surrounded by a thick ring of cervical tissue with the round ligaments, fallopian tubes and ovaries pulled into this slit.⁵

In view of the previous laparotomy and a large leiomyoma, our main concerns were:

- (A) Any attempt to reposition the uterus would be technically difficult and would contaminate the operating field.
- (B) Limited access to the pelvis due to adhesions because of previous myomectomy.
- (C) Close proximity of the ureters to the ovarian and uterine vessels due to traction on the vascular pedicles.
- (D) Constraints of mobilising the bladder down due to the inverted uterus.

Surgical technique

We describe here the salient steps of the surgical technique used to safely accomplish abdominal hysterectomy in a non-puerperal inverted uterus without repositioning.

Abdomen was opened by a midline infraumbilical incision. Vertical incision was preferred as it would facilitate exposure of retroperitoneal space.

The position of the inverted uterus was identified as a narrow transverse slit within the pelvis with the ligaments and ovaries pulled into the depression (figures 5 and 6).

Figure 5 Per-operative view of the ovaries in transverse slit of inverted uterus near the cervical rim correlates with figure 3.

Surgeon's index finger was inserted into the depression to hook out the round ligaments in the lateral edge of the slit (figures 7 and 8).

Figure 6 Transverse slit with inverted flowerpot appearance shows the ligaments, tubes and ovaries pulled to midline into the funnel of cervical rim.

Figure 7 Hooking out the round ligament out from the transverse slit by using the surgeon's index finger.

Figure 8 Both round ligaments are held by Babcock forceps. The first step involves ligation and transaction of round ligament.

After dividing and ligating the round ligaments, the incision on the peritoneal fold was extended towards the paracolic gutter to gain access to retroperitoneal space (figure 9).

Ureter was identified on the medial peritoneal fold and traced from pelvic brim downwards (figure 10).

Ovarian vessels were identified in the infundibulo-pelvic ligaments and clamped away from the ureters (figure 11).

The incision on the anterior leaf of broad ligament was extended caudally on both sides to open the utero-vesical

Figure 9 After transacting the right round ligament, the peritoneal incision is extended towards the paracolic gutter to gain access to retroperitoneal space.

Figure 10 Right ureter is seen attached to medial peritoneal flap (forceps point to the ureter). Ureter is traced from pelvic brim downwards. Iliac vessels are also seen in the image.

pouch above the cervical rim. The uterine arteries were identified crossing the ureters superiorly from lateral to medial side to disappear into the slit (figure 12). Using a Mixer forceps, the uterine vessels were lifted away from the ureters then ligated and divided.

Next, the surgeon's index finger was again inserted into the slit to pull up and hold the rim of cervix with Babcock forceps (figure 13).

This allowed the bladder to be mobilised down to give a 1.5 cm clear vaginal margin. The vault was then opened anteriorly (figure 14).

The incision was extended laterally taking care to keep the incision line above the level of the ureters. The uterosacral ligaments could be identified in the posterior aspect of vaginal vault. Their attachments to the vault were preserved while extending the incision posteriorly (figure 15). The specimen which was now free was pushed down into the vagina. Vaginal vault was then closed.

On examining the specimen, it was interesting to note the uterine vessels dipping into the slit of inverted uterus (figure 16).

Figure 11 Ovarian vessels in the infundibulo-pelvic ligament are hooked on the surgeon's finger to be clamped safely away from the ureters.

Figure 12 Mixer forceps traces the ureter into the pelvis to identify the uterine vessels crossing the right ureter from lateral to medial side to dip into the transverse slit. Uterine vessels are safely ligated near their origin.

OUTCOME AND FOLLOW-UP

Postoperatively, the patient had an uneventful recovery. She received thromboprophylaxis for 5 days and was discharged on sixth postoperative day.

DISCUSSION

Various case reports in the literature suggest different procedures to reposition the non-puerperal uterine inversion after enucleating the fibroid.¹⁻⁶ This could be achieved by vaginal route by a vertical incision on the cervicoisthmic constriction ring anteriorly (Spinelli procedure) or posteriorly (Kustner procedure).² Houltain procedure achieves the same by abdominal route. Many authors have acknowledged that repositioning the uterus is not always successful.³⁻⁶ The abdominal route is preferred over the vaginal as the incision of the uterus is reduced to a minimum, and the uterine wall can be more accurately sutured and the haemorrhage more efficiently controlled when preserving the uterus.⁷ We believe that if the inverted uterus is to be removed its relations with adjacent structures can be better visualised through the abdominal route. The simple surgical technique described above will be helpful in achieving the desired goal.

Non-puerperal uterine inversion is an uncommon clinical condition. Cases will still have to be managed with

Figure 13 Surgeon's finger is used to identify the rim of cervix, which is pulled-up and held with Babcock forceps.

Figure 14 Vaginal vault is safely opened anteriorly keeping a clear margin of vagina away from the bladder and ureters.

Figure 15 Edges of vaginal vault are held with Babcock forceps. Uterosacral ligaments are identified in the 5' and 7'o clock position to accomplish vault closure and resuspension.

Figure 16 Specimen of inverted uterus with fundal fibroid after the surgery. Both the uterine vessels can be seen disappearing into the rim of cervix.

little or no prior experience. High index of suspicion for the diagnosis and clear understanding of the surgical anatomy will ensure a successful outcome.

Learning points

- Surgery for inverted uterus is technically difficult due to close proximity of the ureters to the ovarian and uterine vessels due to traction on the vascular pedicles, difficulty in repositioning the uterus and constraints of mobilising the bladder down due to the inverted uterus.
- It is feasible to safely accomplish abdominal hysterectomy for uterine inversion without attempting to reposition the uterus as described and illustrated in the paper.

Acknowledgements The authors wish to acknowledge the expertise of Dr Vivek Chail, Radiologist, and Dr Apoorva, Postgraduate Student (OBG) of Vydehi Institute of Medical Sciences and Research Centre, Bangalore, for providing the excellent images of this case.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Saxena R, Shah T, Thirumalappa S, Sarangapani K. Technique of abdominal hysterectomy for non-puerperal uterine inversion.

BMJ Case Reports 2011;10.1136/bcr.01.2011.3729, date of publication

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