



A multipurpose uterine/vaginal manipulator for laparoscopic urogynecologic procedures

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Abstract

Introduction and hypothesis The use of an appropriate uterine manipulator is key to various laparoscopic gynecologic procedures. Adequate uterine manipulation is important for total or supracervical laparoscopic hysterectomies, laparoscopic sacrocolpopexy as well as laparoscopic repair of vaginal vault prolapse. While several uterine manipulators are available to choose from, their use may be specific to certain procedures and their cost may vary as well.

Methods This video aims to provide an introduction to a multipurpose, reusable uterine/vaginal manipulator that can be used for laparoscopic supracervical hysterectomy, laparoscopic sacrocolpopexy, laparoscopic hysteropexy as well as laparoscopic repair of vaginal vault prolapse.

Results The video highlights the user-friendly, easy-to-clean, reusable, multipurpose uterine/vaginal manipulator.

Conclusions The manipulator is designed for an efficient combination of laparoscopic urogynecologic procedures and supracervical hysterectomy.

Keywords Uterine manipulator · Vaginal manipulator · Laparoscopic Sacrocolpopexy · Laparoscopic supracervical hysterectomy · Laparoscopic repair of vaginal vault prolapse · Hysteropexy · Uterovaginal prolapse

Aim of the video/introduction

The use of uterine manipulators is well established, and it is clear that uterine manipulators offer the easiest way to handle the uterus during gynecologic surgery. Even

though several uterine manipulators are available, few studies have compared them with each other. A recent review did not find an optimal manipulator for gynecologic surgery [1]. Additionally, it is known that uterine manipulation can account for as much as 8% of the total procedure costs during laparoscopic hysterectomies [2].

Since the FDA published a warning about complications of vaginal mesh surgery in June 2011 [3], as a knee-jerk reaction, the production of vaginal meshes has been stopped by several companies. This has led to an increasing indication of laparoscopic sacrocolpopexy and laparoscopic repair of vaginal vault prolapse as well as laparoscopic hysteropexy (a form of uterine-sparing sacrocolpopexy) for women who prefer to have a uterine-preserving procedure. This increase in laparoscopic urogynecologic procedures calls for a universal, easy-to-use and cost-effective uterine/vaginal manipulator. In this video, we aim to introduce such a user-friendly,

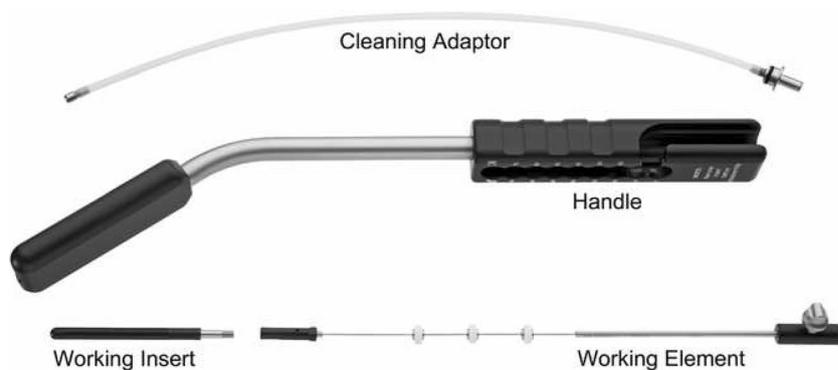
Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s00192-019-03940-x>) contains supplementary material. This video is also available to watch on <http://link.springer.com/>. Please search for this article by the article title or DOI number, and on the article page click on 'Supplementary Material.'

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Fig. 1 Sacrocolpopexy manipulator with its components: handle, working element, working insert and cleaning adaptor



reusable multipurpose uterine/vaginal manipulator primarily for urogynecologic procedures.

Methods

We designed and produced a uterine/vaginal manipulator (Figs. 1, 2 and 3) with a manufacturing and worldwide active company that produces and markets surgical instruments (Storz, Tuttlingen Germany). The decision was made to design a reusable instrument since our paper from 1995 revealed that reusable instruments are seven times less expensive than single-use instruments [4].

The design of the manipulator is comparable to others available, with one end for holding and the other end for the vaginal cuff or cervix/uterus. The vaginal probe end of the manipulator has a retractable sound (working insert) that serves a multipurpose function facilitating the surgical technique. For vaginal vault prolapse, the working insert can be completely retracted (position 0). For subtotal hysterectomy, the working insert is pushed forward to a position where the sound reaches just short of the uterine cavity fundus (typically

position 7 for average uterine size). This will provide excellent uterine manipulation during the supracervical hysterectomy and when the cervix is circumcised and the corpus uteri detached (working insert retracted to position 1). The cervix can then be manipulated with ease for the sacrocolpopexy (typically position 3 or 4) without the necessity of pulling the manipulator out for changing the tip and new positioning, which saves 3 min surgical time for changing to another instrument (unpublished data). When uterine-sparing sacrocolpopexy (hysteropexy) is planned, the working insert can stay in position 7 and the entire procedure can be performed with the same instrument. Similarly for supracervical hysterectomy alone, the working insert can initially be kept at position 7 and then moved to position 1 before circumcising the cervix.

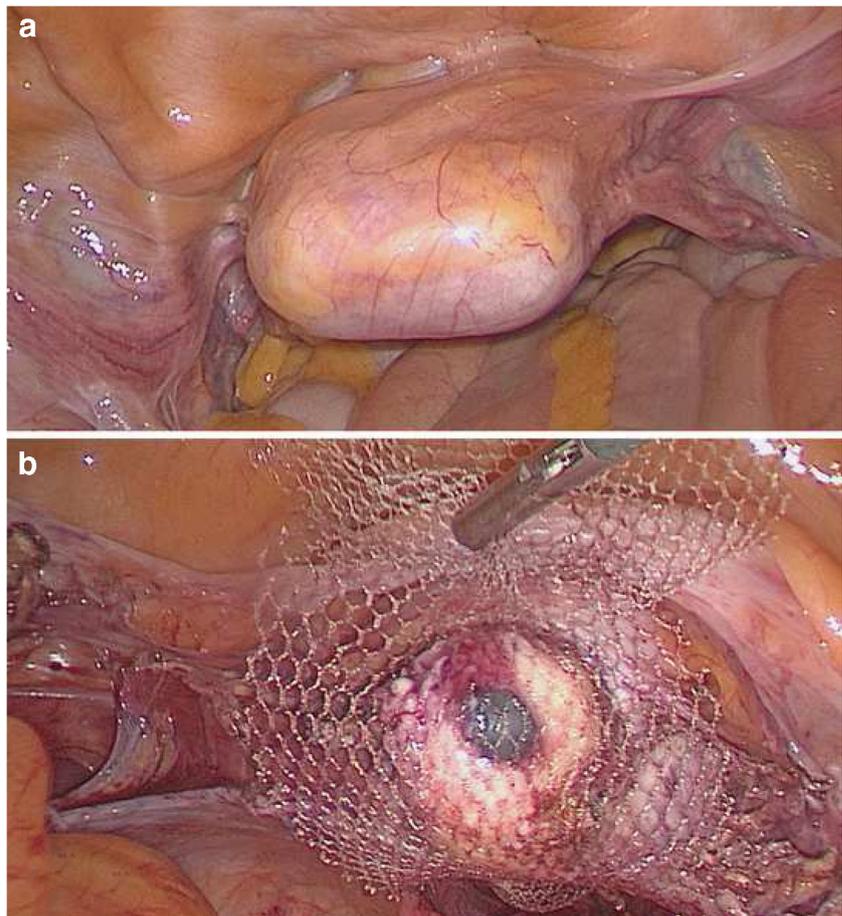
Conclusion

In this video, we highlight a new vaginal/uterine manipulator for laparoscopic urogynecologic procedures combined with supracervical hysterectomies. Due to its simple design and

Fig. 2 Manipulator for four different purposes: **a** position 7 cm for uterine manipulation (supracervical hysterectomy and sacro-hysteropexy); **b** position 4 cm for cervical manipulation after supracervical hysterectomy (sacro-cervico-colpopexy); **c** position 0 for manipulation of the post-hysterectomy vault (sacrocolpopexy)



Fig. 3 Intraabdominal presentation of the manipulator during post-hysterectomy vault sacrocolpopexy (a) and sacro-cervico-colpopexy with mesh (b)



multifunctionality, it is easy to use, and with its reusability it supports cost effectivity.

Compliance with ethical standards

Conflicts of interest The first author is, together with Karl Storz, the developer of the instrument. Royalties go to the employer/hospital. Therefore, there is no financial conflict of interest of the first or other two authors.

Consent Written informed consent was obtained from the patient for publication of this video article and any accompanying images.

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