Introduction

Total hysterectomy is one of the most established gynecological laparoscopic surgeries [1-3]. Uterine manipulation enables adequate uterine exposure, positioning the ureter far from the uterine arteries allowing its ligation, and preservation of the pneumoperitoneum during colpotomy [1, 4-6]. A device that provides proper uterine manipulation is of paramount importance for this procedure.

Although several devices are available in medical literature [6], cost is usually high.[1] Some authors describe, as an alternative, total laparoscopic hysterectomy without a uterine manipulator [7, 8]. Others have published the use of alternative devices created by a combination of other instruments that play the role of a manipulator adapting to locally available tools, like tubal patency test cannula [9] and uterine curette [10]. However, these fail to preserve the pneumoperitoneum during colpotomy.

The purpose of this article is to introduce a simple and inexpensive way to assemble a device that accurately and safely manipulates the uterus, while maintaining the pneumoperitoneum during colpotomy.

Materials and Methods

The bladder tip is tied using a two-way Foley catheter with a cotton thread immediately before the cuff. The authors prefer a 22F (7.33-mm diameter) Foley catheter and a #0 cotton thread (Figure 1). A hysterometer is inserted into the urine lumen of the Foley catheter, using lubricant (water or lidocaine jelly). The hysterometer is inserted through the entire length of the catheter until its tip meets the knot. The entire hysterometer is placed inside the catheter (Figures 2 and 3). The tip of a 60-cc long-tip syringe is cut in the middle. The syringe barrel is also cut to fit the length of the vagina. If the vagina is long, the entire length of the barrel is maintained and the finger flanges are trimmed with scissors. (Figures 4 and 5). The catheter tip is inserted (with the hysterometer inside), through the tip of the syringe. The rear end of the barrel works as a cup and pointed upwards to the vagina to help delineate the incision line for colpotomy (Figures 5 and 6). After hysterometry, the cervix is dilated up to 8 mm using Hegar dilators and the tip of the catheter is inserted through the cervical canal. The catheter balloon is insufflated with 5 cc of distilled water or saline solution. This step is performed under laparoscopic view.

Discussion

The uterine manipulation is considered one of the most important surgical steps in a laparoscopic hysterectomy. In a low resource scenario, the surgical costs are still a challenge.[1] The main objective of this study is to share an easy way to perform the uterine manipulation at a lower cost.

The device insertion is safer under laparoscopic view, although it may take longer than a blind insertion. Endometrial cancer patients have a potential risk for tumor cell spread in the peritoneal cavity in the event of uterine perforation.

This device we are introducing is similar to the one described by Abd-El-Maeboud et al. Both manipulators enable a firm grip on the uterus, are lightweight, and made with low-cost and widely available parts. By replacing the tracheal cannula for the Foley catheter, our device is thinner and its insertion into the uterus is easier. The catheter also enables the syringe barrel to move with ease, preventing an air leak during colpotomy.

The disposable 60cc plastic syringe barrel has a standard 2cm diameter, almost the same size as the average cervix[11]. In women with a large cervix, the open rear end of the barrel may not fit around it. Since the barrel is made of plastic, the colpotomy with monopolar energy should be
performed with steady and precise movements, so as not to melt the plastic cuff.

This manipulator is made of items that are cheap and readily available in most hospitals around the world. Syringes and Foley catheters are also available in different sizes and shapes, so the manipulator can be adapted by each service to fit a patient’s unique anatomy. The catheter cuff decreases the risk of uterine perforation and enables the vaginal extraction of small uteri without grasping it.

Sanmartin et al. demonstrated, in a prospective cohort, that the use of manipulators in endometrial cancer patients treated by laparoscopy did not increase the rate of positive
Uterine manipulator – low budget option

peritoneal cytology or recurrence, and did not reduce the overall five-year survival [12]. Clamping, coagulating, and sealing the fallopian tubes before placing the manipulator is a technique that apparently prevents the migration of neoplastic cells into the peritoneal cavity during hysterectomy [12, 13].

The main feature of a uterine manipulator is the anatomical exposure of the uterus and neighboring structures [1]. The authors believe this manipulator fulfills the role of uterine exposure in laparoscopic surgery, while not yielding extra safety issues. This device is a low-cost alternative that may enable laparoscopic hysterectomies where traditional manipulators are not available.

References


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