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# How Do Surgeon Preferences and Technique Variances Affect Outcome?

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# How Do Surgeon Preferences and Technique Variances Affect Outcome?

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## Introduction

- Surgical technique variations may be due to surgeon preferences and training, as well as local norms and tool availability or tool selection.
- A case study involving two different surgical tools (uterine manipulator vs. myoma screw) in robot-assisted hysterectomy was conducted to study the effects of tool selection.

## Objectives

- Compare the effects of the uterine manipulator with the myoma screw on the surgical procedure, including ease of anatomy visualization and delineation, and time to task completion.



Figure 1: Use of uterine manipulator with a colpotomizer cup during hysterectomy.



Figure 2: (Top) Myoma screw. (Bottom) Uterine manipulator.

## Methods

- Three different hysterectomy procedures were studied: salpingo-oophorectomy, total, and supracervical hysterectomy.
- Videos of the three different types hysterectomy procedures were either recorded at the Miami Valley Hospital, or retrieved from video databases on the internet, such as the WLH (India UAE) (<https://www.youtube.com/channel/UC5GRDQvh5Ze-agGcaMeveKw>).
- Procedures were performed using either a uterine manipulator or a myoma screw (Figs. 1 and 2).
- Task analysis was conducted based on the videos and validated with expert surgeons.
- Analysis included visualization of anatomical field, bleeding during surgery, time to task completion, as a function of technique variation and tool selection.

## Results

- During hysterectomy procedure, an incision must be made at the cervicovaginal canal.
- When the uterine manipulator is used (Fig. 3), the blue colpotomizer cup provides visual landmark and guidance for incision.
- Myoma screw (Fig. 4) is inserted vertically through abdomen or vaginally, and thus is not visible.
- Surgeon must rely on training and experience to visualize the anatomy of patient.

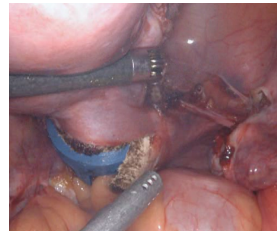


Figure 3: The blue colpotomizer cup of the uterine manipulator is visible to aid visualization of the anatomy.

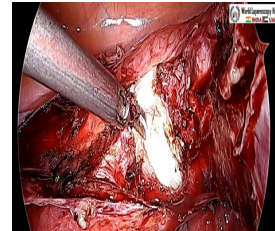


Figure 4: No visible landmark from the myoma screw to aid visualization of the anatomy.



Figure 5: Contour of the colpotomizer cup is visible through the uterus body at the cervicovaginal junction.

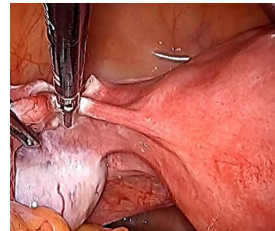


Figure 6: Delineation of cervicovaginal junction posterior to the uterus body is not possible with the myoma screw.

- Uterine manipulator dilates the cervicovaginal canal and allows vaginal cuff to be delineated (Fig. 5). Allows for maximal visualization of uterine arteries and ureters, reducing possible complications.
- Myoma screw is used to rotate uterus; does not dilate the cervicovaginal canal. Results in more difficulty in finding uterine arteries.

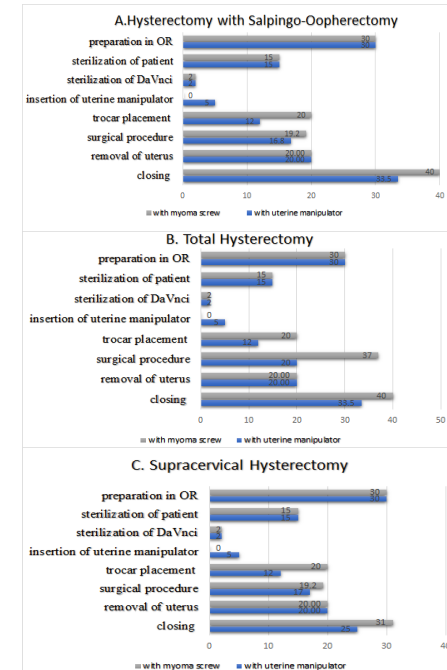


Figure 7: Timeline analysis results for three different hysterectomy procedures. For each phase of the procedure, the graphs show the time to task completion with either the myoma screw (grey bars) or with the uterine manipulator (blue bars). Note: data based on routine cases with patient uterus smaller than 250g.

## Conclusions

- Being able to manipulate the uterus body during hysterectomy is critical for success of procedure.
- Uterine manipulator or myoma screw utilized throughout the procedure.
- Time to task completion can vary depending on surgeon experience, confidence, and operating speed.
- Patient outcomes in observed cases were similar due to surgeon expertise, despite difference in tool selection.

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