

Video Article

Use of a microsurgical vascular clip system (Yasargil clip) in laparoscopic fibroid enucleation

Younes et al. Use of a microsurgical vascular clip system

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Abstract

The purpose of this video is to demonstrate the use of a microsurgical temporary vascular clip system to facilitate laparoscopic enucleation of uterine fibroids.

Throughout the course of the last three decades, the laparoscopic route has been established as the therapy of choice in the surgical treatment of uterine fibroids. Laparoscopic fibroid enucleation is characterized by a low morbidity rate and high patient satisfaction levels.

Especially when facing a large fibroid or multiple fibroids, the well-vascularized myometrium can constitute a technical challenge in endoscopic fibroid enucleation: Diffuse bleeding may lead to significant intraoperative hemorrhage and extensive use of bipolar or monopolar diathermy in order to achieve hemostasis might lead to post-operative uterine wall necrosis with a potential risk of uterine rupture during following pregnancies.

To address this clinical challenge, we developed a technique with temporary interruption of uterine blood supply by applying a microsurgical vascular clip (Yasargil vascular clip system, Aesculap, Tuttlingen Germany) to the uterine artery and the utero-ovarian vessel arcade to minimize bleeding during endoscopic fibroid enucleation.

Keywords: Yargasil clips, Fibroid enucleation, Laparoscopy

Introduction

The purpose of this video was to demonstrate the use of a microsurgical temporary vascular clip system to facilitate laparoscopic enucleation of uterine fibroids.

Throughout the course of the last three decades, the laparoscopic route has been established as the therapy of choice in the surgical treatment of uterine fibroids. Laparoscopic fibroid enucleation is characterized by a low morbidity rate and high patient satisfaction levels (1). Especially when facing a large fibroid, the well-vascularized myometrium can constitute a

technical challenge in endoscopic fibroid enucleation: Diffuse bleeding may lead to significant intraoperative hemorrhage and extensive use of bipolar or monopolar diathermy in order to achieve hemostasis might lead to post-operative uterine wall necrosis with a potential risk of uterine rupture during following pregnancies (2)

To address this clinical challenge, we developed a technique with temporary interruption of uterine blood supply by applying a microsurgical vascular clip (Yasargil vascular clip system, Aesculap, Tuttlingen Germany) to the uterine artery and the utero-ovarian vessel arcade to minimize bleeding during endoscopic fibroid enucleation. Yasargil vascular clips have been originally used in the treatment of intra-cranial aneurysms (3). In surgical gynecology, Yasargil clips have been introduced for the treatment of vascular injuries during laparoscopic procedures (4).

The procedure is carried out under general anesthesia and the patient is placed in a dorsal lithotomy position. A Verres needle is introduced subumbilically and carbon dioxide is inflated intra-abdominally to a pressure of 8 mm Hg. We use low-pressure laparoscopy in order to minimize post-operative pain (5). Upon installation of the pneumoperitoneum a 12-mm trocar is inserted for the video laparoscope subumbilically (0 degree Endoeye, Olympus, Shinjuku, Japan) and three 5-mm ports are inserted in the left, middle and right lower abdominal quadrant, respectively. The peritoneal cavity is inspected and the uterine fibroid is identified. Hence, the peritoneum on the left pelvic brim is incised laterally to the external iliac artery and medially to the ligamentum ovarii suspensorium to access the retroperitoneum. The left uterine artery and the left ureter are identified by blunt dissection and a temporary 15 mm Yasargil clip with a clamp force of 0.88 Newton is applied to the uterine artery lateral to the ureter, (Yasargil clip system, FT 280T; Aesculap, Tuttlingen, Germany) (figure 1). This step is repeated on the contralateral site. The additional uterine blood supply via the utero-ovarian vessel arcade is occluded by placing a Yasargil clip on the ovarian ligament of each side (figure 2). All four Yasargil clips are marked with a vicryl suture to facilitate identification towards the end of the surgery. The uterine serosa and the myometrium is subsequently incised and the surface of the fibroid is exposed. The lower middle 5-mm port is replaced by a 10-mm port and the fibroid is grasped with a 10-mm tenaculum forceps. Hence, the fibroid is extracted from surrounding myometrium by blunt dissection. Closure of the uterus is achieved by interrupted intra-corporal double-layer sutures. Herby, a first stich is used to close the deep uterine muscle layer, while the following back-stich is used to close the superficial uterine muscle layer and the uterine serosa (figure 3). Following the closure of the uterus, the Yasargil clips are removed, both peritoneal incisions are closed by continuous suture and the blood circulation of the uterus is photo documented. Fibroids are morcellated by using an electric morcellator (Storz, Tuttlingen, Germany) and extracted through the midline trocar and at the end of the procedure an intra-abdominal drain (French gauge 18) is placed for postoperative monitoring purposes.

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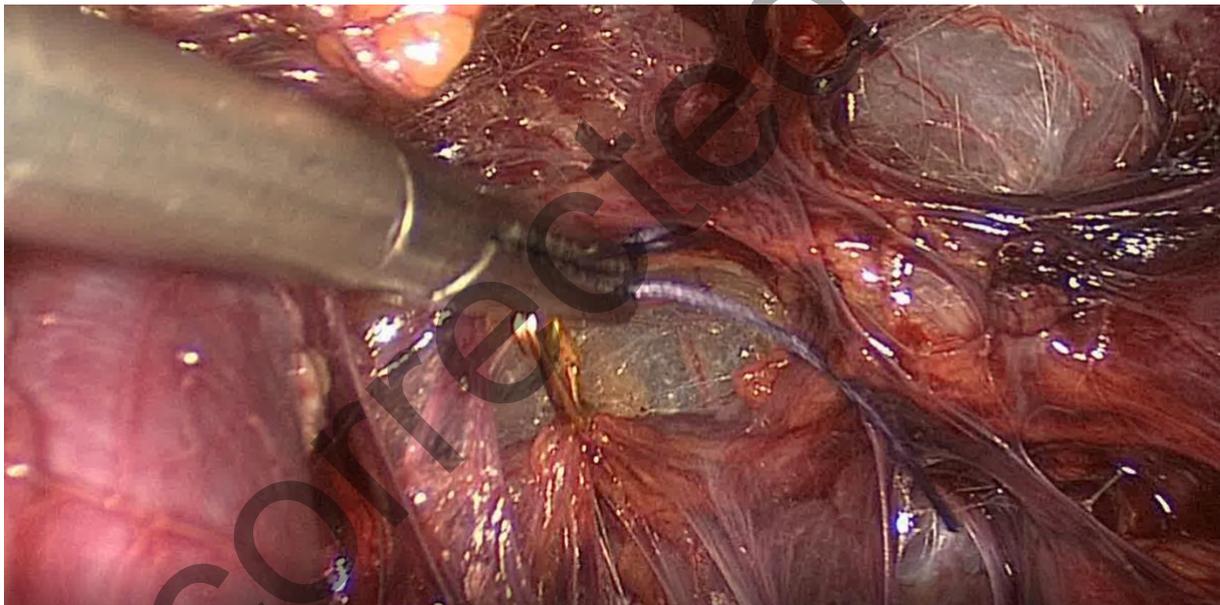


Figure 1. The left uterine artery and the left ureter are identified by blunt dissection and Yasargil clip is applied to the uterine

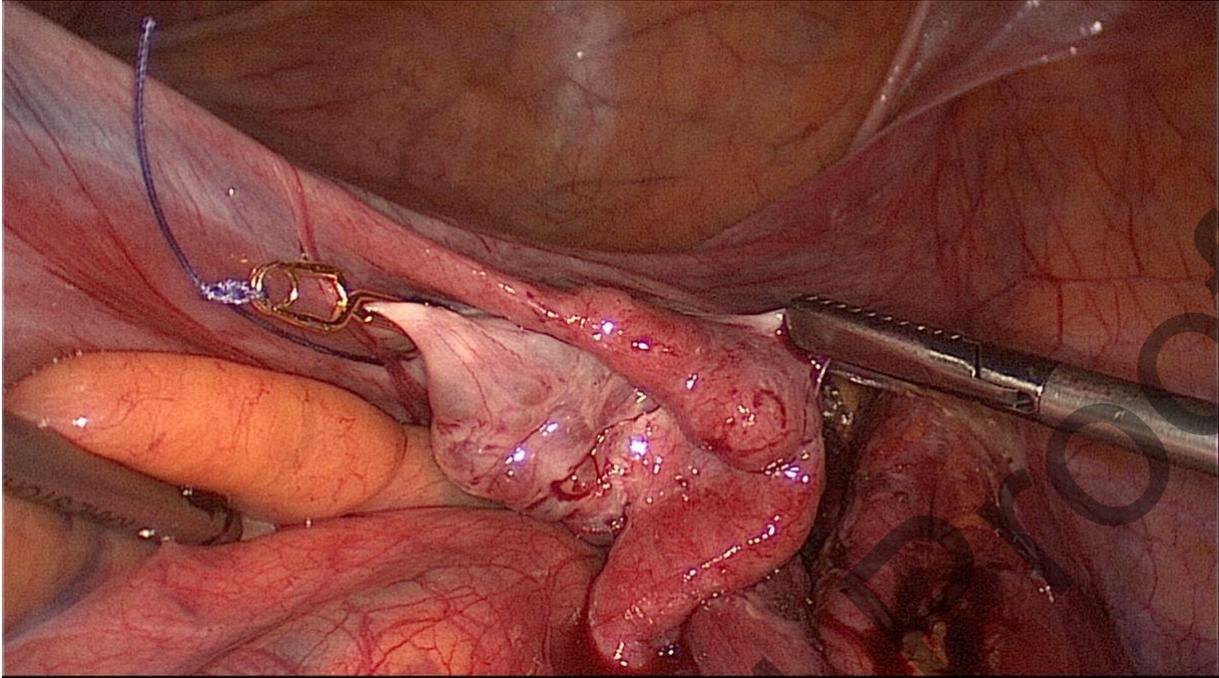


Figure 2. Additional uterine blood supply via the utero-ovarian vessel arcade is occluded by placing a Yasargil clip on the ovarian ligament of each side

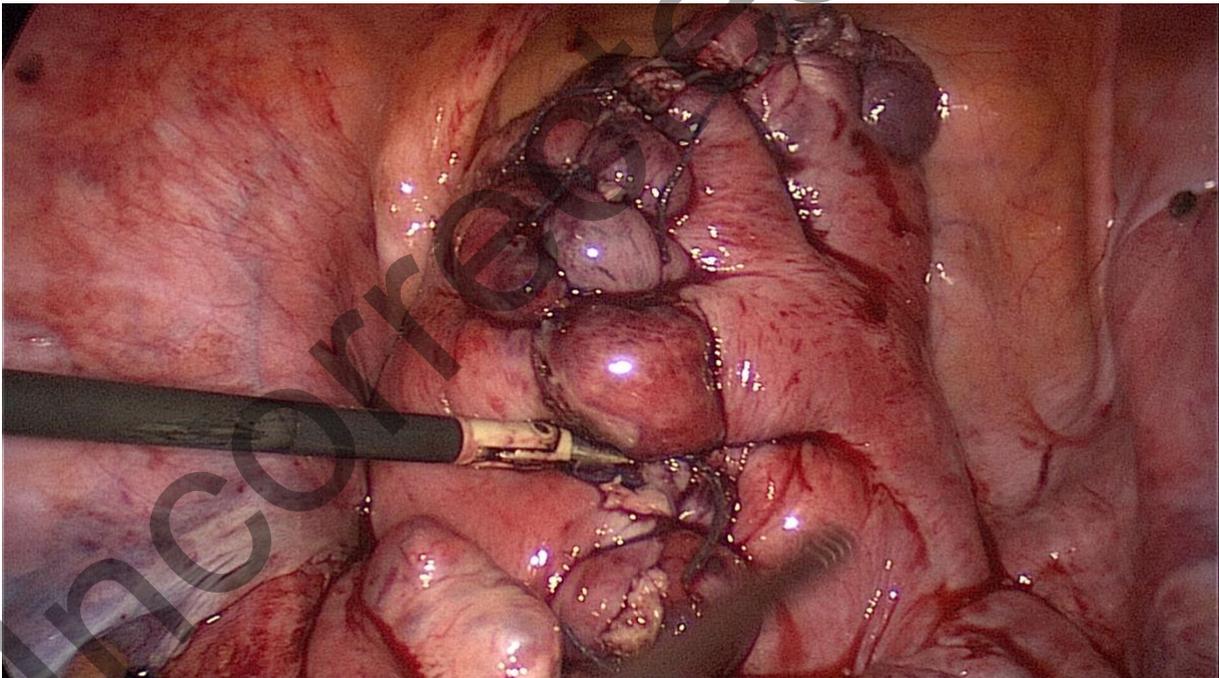


Figure 3. Reconstruction of the uterine wall: a first stich is used to close the deep uterine muscle layer, while the following back-stich is used to close the superficial uterine muscle layer and the uterine serosa