

# The Filshie Clip for Laparoscopic Adnexal Surgery

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## ABSTRACT

**Background:** Gynecologic endoscopic procedures are increasingly common and require the ability to control large vascular structures.

**Method:** The Filshie clip is a silicone-lined, titanium occlusive device, originally designed and Food and Drug Administration (FDA) approved for surgical contraception. This device also has the potential for occluding vascular structures during laparoscopic surgery.

**Experience and Results:** We describe a salpingectomy, an excision of bilateral hydrosalpinges, and a salpingo-oophorectomy. We performed all procedures laparoscopically using this device as the primary modality for assuring hemostasis.

**Conclusion:** The Filshie clip is a useful and economical device for assuring hemostasis during gynecologic endoscopic surgery.

**Key Words:** Laparoscopy, Adnexal surgery, Filshie clip.

## INTRODUCTION

Filshie first described a titanium clip lined with a silicone coating used for surgical sterilization in 1981.<sup>1</sup> These one-time use clips are applied with a reusable applicator and can be used either laparoscopically or during open procedures. Thousands of laparoscopic female sterilization procedures have been reported in the world's English language literature,<sup>2-10</sup> and the clip's efficacy and safety have been confirmed by such experience. In recent years, laparoscopic surgeons have expanded the range of procedures for which this device can be used. These have included cholecystectomy, appendectomy, and postpartum surgical sterilization. We report on the use of this device for laparoscopic management of an ectopic pregnancy, bilateral hydrosalpinges, and an ovarian mass.

## MATERIALS AND METHODS

The Filshie clip (Avalon Medical Corporation, Williston, VT) is a single-use, silicone-lined, titanium clip placed with a reusable applicator and designed to permanently occlude the mid-isthmus portion of the fallopian tube segment<sup>1</sup> (**Figure 1**). The silicon component of the clip applies continuous pressure to structures even after metal fatigue has affected the titanium component of the clip.<sup>1</sup> The device has been shown to exert 2 to 3 times the normal systolic blood pressure between its jaws, making it a theoretical candidate for sealing arteries up to approximately 5 mm in diameter. The size of the clip, 14 mm x 3.4 mm x 4 mm, allows for the sealing of large tissue structures containing 1 or more arteries and veins, such as the infundibulopelvic ligament and utero-ovarian pedicle.<sup>11</sup>

## EXPERIENCE AND RESULTS

### Case 1

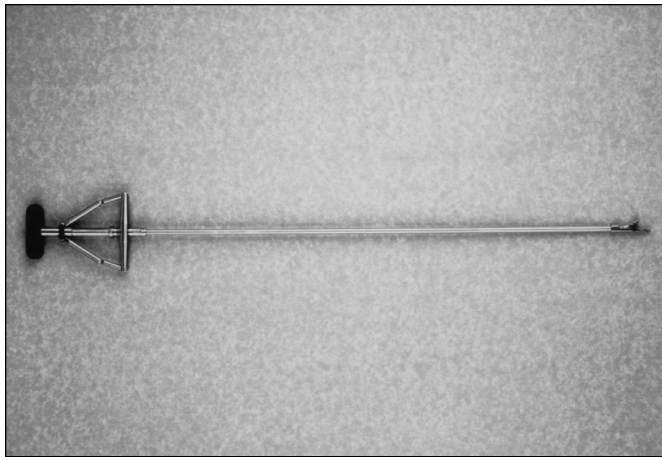
D.J. is a 33-year-old, gravida 2, para 1, who presented to the emergency department with acute right lower quadrant pain and vaginal bleeding. The physical examination demonstrated a tender, slightly enlarged, right adnexa. Laboratory results revealed a positive beta-HCG. She underwent transvaginal sonography, which revealed a 2-

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**Figure 1.** Filshie clip applicator device.

cm cystic adnexal complex with fetal heart motion and approximately 400 cc of fluid in the pouch of Douglas. The patient consented to, and underwent, laparoscopic salpingectomy for a ruptured ectopic pregnancy. The salpingectomy was performed by placing a Filshie clip in the midisthmic portion of the fallopian tube proximal to the ectopic pregnancy. The underlying mesosalpinx was transected and rendered hemostatic with monopolar scissors. The specimen was removed using an endoscopic bag. The patient did well postoperatively and was discharged on day one.

### **Case 2**

C.M. is a 39-year-old, gravida 3, para 0, infertility patient with bilateral tubal obstruction documented by a hysterosalpingogram. Also noted at the time of the study were bilaterally dilated adnexal structures consistent with hydrosalpinges. She was referred for, and consented to, a bilateral salpingectomy prior to in vitro fertilization therapy. At laparoscopy, the presence of 2 large hydrosalpinges was confirmed. Filshie clips were placed on the cornual nonpathologic portions of the fallopian tubes. The distal portions of the tubes were excised using laparoscopic scissors. The ovaries were left undisturbed for future ovulation induction. The patient was discharged the evening of her surgery.

### **Case 3**

R.F. is a 38-year-old, gravida 3, para 3, noted to have a symptomatic adnexal mass discovered during an annual examination. Transvaginal sonography revealed a 3 x 4 x 4-cm complex predominantly cystic ovarian mass. The CA 125 was in the normal range. The patient consented to, and underwent, a laparoscopic salpingo-oophorectomy. The round ligament was transected and opened toward the infundibulopelvic ligament, which had been identified and skeletonized. Using endoscopic scissors, a window was created in the posterior leaf of the broad ligament, well above the clearly identified ureter. The window was enlarged bluntly. A Filshie clip was placed across the utero-ovarian pedicle, and a second clip was applied across the infundibulopelvic ligament. The intervening tube and ovary were excised using laparoscopic scissors, and the specimen was removed using a laparoscopic bag. The patient underwent an uneventful recovery and was discharged on postoperative day one. The final pathology was consistent with a mature teratoma.

### **DISCUSSION**

Advanced operative laparoscopy has transformed gynecologic surgery. Complex surgical procedures once considered possible only via a laparotomy incision are now routinely performed using an endoscopic approach. Such advances have been made possible by a combination of improved instrumentation and greater surgical experience. Despite diminished hospital lengths of stay and decreased patient discomfort, critics of this approach have focused on the difficulty of some of these techniques and the expense associated with much of the disposable equipment associated with this surgical approach.

A range of techniques and devices have been developed for establishing hemostasis during laparoscopic cases.<sup>11</sup> For many surgeons interested in advancing their laparoscopic surgical repertoire, mastering complex laparoscopic techniques and the ability to implement these in an operative situation, presents an obstacle. Approaches that rely on extra- or intracorporeal knot-tying, monopolar or bipolar electro-surgical techniques, or endoscopic stapling devices may be difficult for some gynecologists to master. By comparison, Filshie clip placement may provide a quick and relatively simple alternative for achieving hemostasis.

From an economic standpoint, the Filshie clip compares very favorably with other laparoscopic tools and devices. The clips retail for approximately \$45 a pair in the United States. Likewise, the applicator device is reusable, durable, and competitively priced. The utilization of this approach beyond surgical sterilization is reasonable for institutions that have invested in this system.

## CONCLUSION

The Filshie clip is a relatively inexpensive, quick, and technically straight-forward approach to vascular pedicle ligation during complicated laparoscopic procedures. Though not specifically developed for this purpose, the design of this permanent occlusive device lends itself well to the management of vascular structures.

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