

Spontaneous Expulsion of Tubal Ligation Clips: A Case Report

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Abstract

Background: A rare complication of tubal ligation, expulsion of tubal clips has been sporadically reported in the literature.

Case: An otherwise well multiparous woman who had undergone two operative deliveries and a tubal ligation presented with menstrual discharge from her laparotomy incision. Following two surgical procedures to excise fistulous tracts, the patient spontaneously expelled three Hulka tubal ligation clips from the vagina.

Conclusion: Migration of tubal ligation clips and extrusion with associated tuboperitoneal fistula is a rare outcome of tubal ligation. Individual patient reactions to the presence of supposedly inert objects in the peritoneal cavity are unpredictable.

Résumé

Contexte : Une complication rare de la ligature des trompes, soit l'expulsion des clips tubaires, n'a été signalée que de façon sporadique au sein de la littérature.

Cas : Une femme multipare autrement en santé qui avait subi deux accouchements opératoires et une ligature des trompes présentait un écoulement menstruel provenant de son incision de laparotomie. À la suite de deux interventions chirurgicales visant l'excision de trajets fistuleux, la patiente a spontanément expulsé trois clips Hulka de ligature des trompes par le vagin.

Conclusion : La migration des clips de ligature des trompes et l'extrusion au moyen d'une fistule tubopéritonéale associée constituent des issues rares de la ligature des trompes. Les réactions de chaque patiente à la présence d'objets prétendument inertes dans la cavité péritonéale sont imprévisibles.

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INTRODUCTION

Tubal ligation is a popular contraceptive option in North America, with an estimated 6.5% of women of reproductive age undergoing the procedure each year.¹ Many options for performing tubal ligation are available, each with benefits and comorbidities. Complications may include tuboperitoneal fistula and tubal clip extrusion.

Key Words: Sterilization, tubal, postoperative complications, clip extrusion, Hulka clip, fistula

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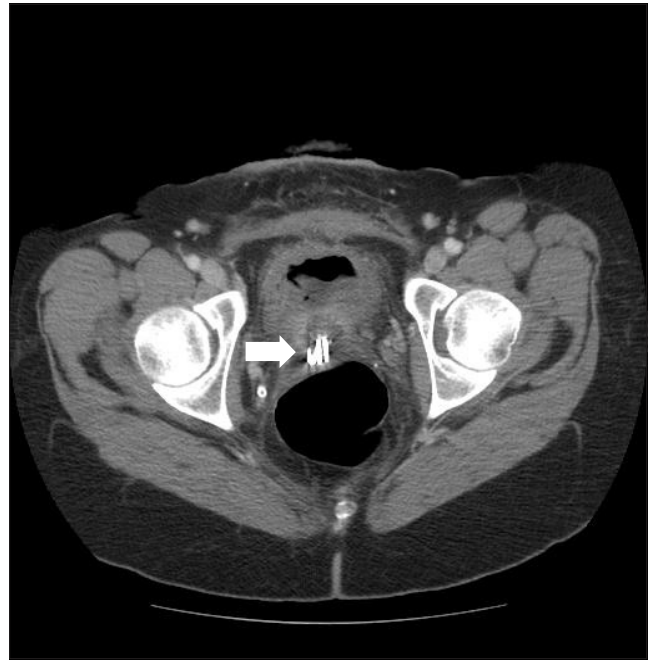
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One of the complications of tubal ligation, ectopic pregnancy may arise from sloughing of a devitalized tubal pedicle, from recanalization of the ligated ends of the fallopian tube, or from the development of tuboperitoneal fistulae.^{2,3} A tuboperitoneal fistula is an abnormal connection between the fallopian tube and the intraperitoneal space. The occurrence of ectopic pregnancy after tubal ligation suggests that the formation of a tuboperitoneal fistula following tubal ligation might be more common than currently thought. In a report of 54 patients presenting for reversal of tubal ligation at a mean 4.8 years after tubal ligation, hysterosalpingography identified tubal patency, thought to be secondary to tuboperitoneal fistulae, in 17% of subjects; whereas the rate of short-term failure of tubal ligation (at 3 months post-procedure) was reportedly 1% to 5%.² This suggests that the remodelling phase of wound healing may extend for years beyond the primary procedure.

An additional complication of tubal ligation includes clip extrusion. Two large studies of tubal sterilization have described incidences of clip extrusion, the first reporting three extrusions in a study of 5326 women,⁴ and the second reporting three extrusions in a study of 1381 women.⁵ These reports suggest an incidence of clip extrusion of up to 1 per 500 sterilizations, but only a few case reports describe extrusions of tubal ligation clips from the urethra, vagina, rectum, and anterior abdominal wall.⁶⁻⁹ These reports give several theories for the mechanism of extrusion, including clip migration, allergic response to the presence of the clips, and fistula formation.¹⁰

Materials used to occlude the fallopian tube include silicone rubber, stainless steel, gold, and titanium; all are thought to be relatively inert.¹¹ We describe here the presentation of a symptomatic fistula in a woman who had undergone tubal ligation followed by a prolonged clinical course resulting in the extrusion of three Hulka clips.

Figure 1. Before tubal clip extrusion: three tubal clips apparent between the bladder and uterus (white arrow) and posterior to the uterine fundus (black arrow); one tubal clip not shown.



THE CASE

A 37-year-old woman presented with concerns of episodic discharge like menstrual bleeding from her Caesarean section (CS) scar, occurring at the time of menses. The discharge had been present for approximately two years and had become progressively worse over time. The patient had not noted any foul odour, purulent matter, fecal matter, or urine emanating from the drainage site. Her menses were normal and regular. Her general health had been unremarkable.

Her medical and surgical history included two Caesarean sections, eight and six years prior to her presentation, the second being an elective repeat CS. She had undergone an uneventful laparoscopic tubal ligation six months after her second CS. In the operative report the surgeon described placing two Hulka clips on the isthmic portion of each fallopian tube. No comment was made of any surgical complication or difficulties encountered either during the procedure or postoperatively. The practice of placing two clips on each tube was standard for some surgeons at our institution during the interval when the patient underwent her procedure. She denied any symptoms that might suggest inflammatory bowel disease, autoimmune disorder, or compromised immune function. She had been well since her last delivery, and her family history was unremarkable.

On examination the patient appeared well. Her abdomen was obese with a pannus that obscured the suprapubic region

when upright but not when supine. Immediately below her CS scar in the suprapubic region was a 2 mm opening with surrounding erythema, resembling a recently opened sebaceous pustule. At the time of examination, there was no discharge, and nothing could be expressed from this opening. The remainder of the examination was normal.

Cultures of the skin opening were negative. Computed tomography with fistulogram showed a connection between the left adnexa at the site of the tubal ligation clips and the anterior abdominal wall. There was an additional connection between the left tubal clips and the right tubal clips, with no evidence of abscess formation.

The patient consented to undergo laparotomy to excise the fistulous tract. A lacrimal duct probe was used to delineate the course of the tract, and the previous CS scar was opened. The left fallopian tube and ovary were found to be adherent to the anterior uterine body and fundus with close proximity to the bladder. This adnexal mass was the terminal point of probing using the lacrimal duct probe. After the ureters were identified, a left salpingo-oophorectomy was performed. Extensive adhesions prevented identification of ovarian and tubal tissue, and no tubal ligation clips were seen or palpated during the course of the procedure. As the fistula was in close proximity to the bladder, not all of the fistulous tract could be excised. The portion that remained was curetted to promote fibrotic closure. The patient was given intravenous antibiotics during her admission, and she

Figure 2. Following clip extrusion. One tubal clip remains between the bladder and uterus (white arrow) following extrusion of two tubal clips; one tubal clip not shown.



was discharged on the third postoperative day. The pathology report described a fistulous tract with no evidence of malignancy.

The patient was seen one month after surgery with a wound infection. She was admitted to hospital, the wound was opened and packed, and the patient was again treated with intravenous antibiotics. Imaging did not demonstrate evidence of an intra-abdominal abscess. Cultures from the opened wound grew *Escherichia coli*. The patient had regular wound care with dressing changes and was discharged on oral antibiotics.

Eight months after treatment for the wound infection, the patient presented again with recurrent fistulae. She had noted purulent matter coming from the area of her previous laparotomies. On examination, three cutaneous lesions, each draining serous fluid, were noted. Computed tomography (Figure 1) and fistulogram showed a sinus tract from the anterior abdominal wall to the left tubal clip, which was thought to be in the region of the previously excised left adnexa. There was another fistulous tract extending from the area of the left tubal clip to the region of the right tubal clip, in the right adnexa. A slightly enlarged spleen was also noted. No lymphadenopathy or other intra-abdominal abnormalities were noted.

Screening for autoimmune markers in serum was noncontributory. Cultures taken from the abdominal wound grew *Enterococci* and coagulase negative *Staphylococci*.

Blood cultures were negative. Consultation with the infectious diseases service led to a recommendation for administration of broad spectrum antibiotics and removal of the tubal ligation clips. After consultation, the general surgery service recommended excision of visible and mobile tissue with curettage of unresectable segments of the fistulous tract. The gynaecologic oncology service was also consulted for surgical assistance during further surgery.

The patient was treated with broad spectrum antibiotics and returned to the operating room four days after admission. A small incisional hernia was identified. The fistulous tracts were cannulated at their external openings using a pediatric feeding tube, and the tracts were instilled with methylene blue dye. A portion of the anterior abdominal wall was excised to remove the exit sites of the fistulae. It was apparent that one of the fistulous tracts entered the bladder, because dye was noted in the urinary catheter bag before the abdomen was entered. This opening was identified within the bladder and was excised and the bladder closed. The repaired cystostomy was reinforced by suturing it against the body of the uterus. The right adnexa and both round ligaments were then excised. Again, dense adhesion formation, previously seen and now compounded by the previous procedure, obliterated the normal pelvic anatomy to a large degree, and no ligation clips could be seen or palpated within the pelvic tissues. The fascial layer of the abdominal wall was closed, but the skin was left open with sutures

placed for delayed primary closure. The Foley catheter remained in place to promote healing of the cystotomy.

On the second postoperative day, the patient developed a fever that persisted despite administration of broad spectrum antibiotics until the seventh postoperative day. No abscess formation or other focus of infection was identified on imaging. On the eighth postoperative day the patient noted vaginal spotting and four days later passed two Hulka clips transvaginally. Subsequent speculum examination of the vagina showed an area of erosion in the anterior vaginal fornix with no evidence of foreign material.

Imaging on the following day showed two clips remaining in the region between the bladder and the vagina (Figure 2). The patient was discharged on oral antibiotics the next day. Ten months later, she spontaneously passed a third Hulka clip transvaginally. She has remained well since that time. The patient has opted to leave the remaining fourth Hulka clip in situ.

DISCUSSION

Extrusion of the occluding device has been reported after application of tubal rings, Filshie clips and Hulka clips.⁵⁻⁷ However, there is no consistent explanation of why clip extrusion might occur. Some authors have suggested an immune-mediated reaction to foreign materials is responsible.⁸

We can postulate that the process of fistula formation and later clip extrusion were products of the same host reaction. Further, we feel that theories of tuboperitoneal fistulae and immune mediated reactions to the foreign clip material can

explain, at least in part, both delayed sterilization failure and clip extrusion.

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The woman whose story is told in this case report has provided signed permission for its publication.

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