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Case Report

Use of oxidized regenerated cellulose (Surgicel Nu-Knit) as a hemostat in laparoscopic endometriotic cystectomy: a case report

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ABSTRACT

Ovary is one of the common sites for occurrence of endometriosis. Endometriosis contributes to a major cause of infertility in young women. Apart from infertility, endometriosis is one of the important causes of severe secondary dysmenorrhea and chronic pelvic pain. Endometriotic cystectomy is often required in endometriotic cysts more than 3 cm in size. A 33 year old patient married for 4 years with primary infertility was diagnosed to have an endometriotic cyst of the ovary measuring 4x3 centimeters. Patient underwent laparoscopic endometriotic cystectomy under general anesthesia. Intraoperatively, the right ovary was enlarged and was adherent to the posterior surface of uterus and the uterosacral ligament of the same side. Adhesiolysis was done followed by removal of the ovarian endometriotic cyst. Post cystectomy oozing was controlled by application of Oxidized regenerated cellulose (Surgicel Nu-Knit) on the bleeding points. Postoperative course of the patient was uneventful and she was discharged after 7 hours in stable condition.

Keywords: Oxidized regenerated cellulose, Endometriotic cystectomy, Hemostasis

INTRODUCTION

Oxidized regenerated cellulose (Surgicel; Johnson & Johnson) is a well-recognized tool useful for hemostasis in various surgical fields ranging from cardiothoracic surgery, obstetrics and gynecology, neurosurgery and orthopedics.¹⁻³ It is a synthetic hemostat produced from wood pulp.² It acts by stimulating the innate coagulation mechanism, and in the process it expands and produces an acidic medium that converts hemoglobin to acid hematin, giving rise to black color, which is responsible for antimicrobial effect.^{2,4} Literature shows that oxidized cellulose exerts its effect through the intrinsic coagulation pathway.^{2,5} The exact mechanism of action as an effective hemostat remains elusive even after over half a century of its discovery and use.⁴ Oxidized regenerated cellulose also fulfills the first principle of hemostasis i.e. pressure. As it absorbs fluid, it swells and exerts pressure on the surrounding tissue contributing to hemostasis.^{2-4,6}

CASE REPORT

A 33 year old patient presented to the gynecology outpatient department with the chief complaints of inability to conceive and severe dysmenorrhea for the last 2 years. She was married for 2 years and was cohabiting regularly with her husband. She had a history of genital Koch's 3 years back for which she received anti-tubercular treatment for 6 months. On examination she was found to have slight tenderness in the right fornix. Ultrasound examination of the pelvis showed a heterochoic cyst of 4x3 cm. Semen analysis of husband was normal and hysterosalpingogram was suggestive of left tubal block. Patient underwent laparoscopy under general anesthesia on 9th December 2014. Intraoperatively, uterus, left ovary and bilateral fallopian tubes were normal. Right ovary was enlarged and was adherent to the posterior surface of the uterus and the right uterosacral ligament. An endometriotic cyst

measuring 4x4 cm was present in right ovary. The adhesions around the right ovary were freed and endometriotic cystectomy was done. Minor oozing from the posterior surface of the uterus was controlled with bipolar cauterization. Slight amount of oozing was also present on the ovary and on the right uterosacral ligament (Figure 1). Cauterization was not attempted at the ovarian surface with the apprehension of compromising ovarian reserve. Similarly cauterization was not done at the uterosacral ligament keeping risk of ureteric injury in mind. Decision of Surgicel Nu-Knit application on the bleeding points was taken. Surgicel Nu-Knit was folded into a narrow cylindrical shape and inserted into the abdominal cavity via 5mm port. Nu-Knit was then placed on the oozing points on the right ovary and uterosacral ligament (Figure 2). Further observation for 5 minutes was done to note any active bleeding. Laparoscopic ports were removed after ensuring hemostasis, pneumoperitoneum was released and port sites closed. Vitals were monitored in the postoperative period. Patient was discharged in stable condition after 7 hours of surgery.

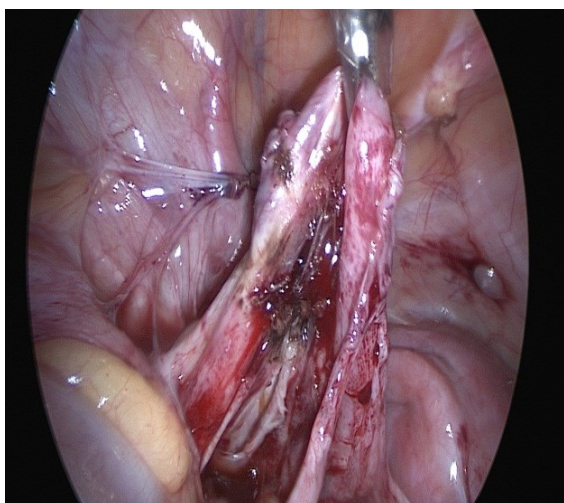


Figure 1: Ovary after cystectomy.

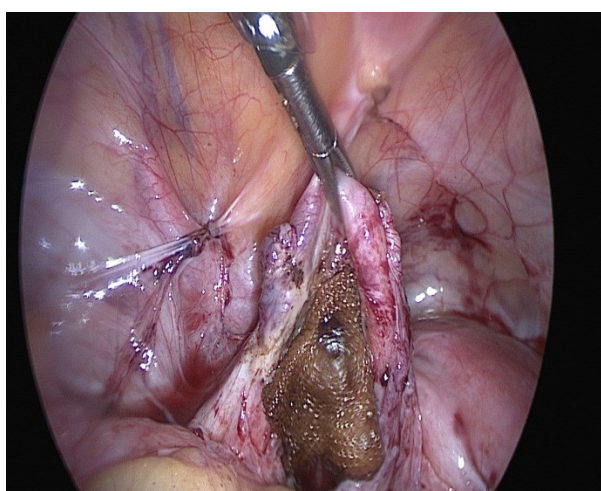


Figure 2: Surgicel Nu-Knit placed in cystectomy bed.

DISCUSSION

Intraoperative bleeding prolongs the overall time taken for a surgery, which if not properly managed leads to secondary complications. A number of hemostatic agents are available for control of bleeding during surgery. Oxidized cellulose is well-known and accepted because of its ease of use, favorable biocompatibility, and bactericidal properties. Oxidized regenerated cellulose has been used as an effective hemostat in grade IV liver injury and Grade V splenic injury, according to a case report.⁷

A prospective study was conducted by Sharma et al to evaluate the efficacy and safety of laparoscopic oxidized cellulose application at the site of uterine perforation in 30 patients out of 1786 patients undergoing first trimester termination of pregnancy by surgical method. In the patients with uterine perforation Oxidized cellulose (Surgicel absorbable hemostat), was applied to the perforation site, the site was checked again for hemostasis, approximately after 2 minutes. In cases where hemostasis was not achieved with local Surgicel hemostat application, polyglactin 910 sutures (Vicryl) were placed on the bleeding points. Patients were hospitalized for at least 24 hours to observe for hemodynamic stability and abdominal distension. They concluded that laparoscopic application of oxidized cellulose was successful in achieving hemostasis in all cases of perforation in the fundal, anterior and posterior wall, and upper lateral uterine wall.⁸

A case report by Sharma et al describes the use of Surgicel Nu-Knit as a hemostat to treat constant oozing of blood from the uterine caesarean section incision in a 28-year-old female at 38 weeks of her second pregnancy. Despite good approximation, an oxytocin drip, intravenous ergometrine, and prostaglandin F2 alpha, bleeding persisted, following which a rectangular piece of Surgicel Nu-Knit Hemostat was placed on the incision site. It was stitched on the bleeding site with 2-0 interrupted vicryl (polyglactin 910) sutures followed by local pressure application. The abdomen was closed in layers after observing for hemostasis for another 10 minutes. The observed bleeding stopped with the use of Surgicel hemostat. There was no post-partum hemorrhage. The patient's postoperative course was uneventful.⁹

A case series by Awonuga et al. describes 1 patient following cesarean hysterectomy and 3 patients following debulking surgery for advanced gynecologic cancer who had the ORC/Penrose pack placed with good results.¹⁰ All had undergone ligation of the uterine or hypogastric arteries for bleeding to no avail. Estimated blood loss at surgery ranged from 2500 to 6000 mL and the patients received several units of blood and coagulation products. Drain effluents were observed to quantify post-op blood loss. 48 hours after surgery the ORC/Penrose drain was removed at bedside in 3 patients. The fourth had the pack removed under laparoscopic guidance 96 hours following

surgery for fear of injury to the left ureter, which had been dissected free from the tumor on its entire pelvic course. All patients were reported to have done well.¹⁰

CONCLUSION

The use of oxidized regenerated cellulose as a hemostatic agent in the present scenario is simple and very effective. Additionally, the risk of compromising ovarian reserve with use of energy sources for hemostasis is also minimized.

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Ethical approval: Not required

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