

Bilateral salpingo-oophorectomy and adhesiolysis with single port access laparoscopy and use of diode laser in a BRCA carrier

S. Angioni¹, A. Pontis¹, F. Sorrentino², L. Nappi²

¹ Division of Gynecology and Obstetrics, Department of Surgical Sciences, Division of Obstetrics and Gynecology, University of Cagliari, Cagliari; ² Division of Gynecology and Obstetrics, Department of Medical and Surgical Sciences, Institute of Obstetrics and Gynaecology, University of Foggia, Foggia (Italy)

Summary

Herein the authors report the first case of prophylactic bilateral salpingo-oophorectomy (BSO) in single port access laparoscopy (SPAL) with use of diode laser in a patient with BRCA1 mutation. As fimbria could be considered the site of origin for many serous carcinomas in BRCA mutation carriers, many studies are carried out to evaluate the possibility of preventing ovarian carcinoma with BSO. SPAL is a development of endoscopic surgery which further reduces invasiveness of surgical procedures. Diode laser presents a recognized precision for tissue cutting and coagulation and its use could be highly advantageous in SPAL surgery and in particular in such situations avoiding fallopian tube histology distortion and consequently improve the prognosis of BRCA carriers.

Key words: Diode laser; Ovarian carcinoma; Prophylactic salpingo-oophorectomy; Single port access laparoscopy; SPAL.

Introduction

Women who have a BRCA1 mutation have a 39% to 46% risk of developing ovarian cancer by the age of 70, while women with a BRCA2 mutation carry a 10% to 27% risk by the age of 70 [1]. Bilateral salpingo-oophorectomy (BSO) is suggested to BRCA mutation carriers between the ages of 35 to 40, or when childbearing is complete [2]. Consequently, a minimally invasive approach to perform BSO is advisable.

Case Report

A 43-year old woman, 2 para, referred to our department with a BRCA1 mutation diagnosis and previous a bilateral mastectomy for breast cancer. BSO was prescribed and a SPAL approach and the use of a new diode laser for cutting and coagulation was suggested. After complete information the patient consented to surgical treatment. X-Cone trocar was placed through a 20-mm umbilical incision and pneumoperitoneum was achieved (Figure 1). Intra-abdominal visualization was obtained with introduction of a five-mm 30 degree laparoscope [3]. A five-mm sheath bending/grasping forceps was inserted [4]. To perform adhesiolysis and bilateral salpingo-oophorectomy, a Dual wave lengths laser system was used to generate a 980-+1470 nm laser through a diode semiconductor (Figures 2-3). A 1,000 μ m fiber with an a-traumatic conic tip at the distal end was inserted in a dedicated laparoscopic sheath. A light guide allows to address the laser through optical fibers on the target tissue with an extreme precision. After coagulation of ovarian ar-

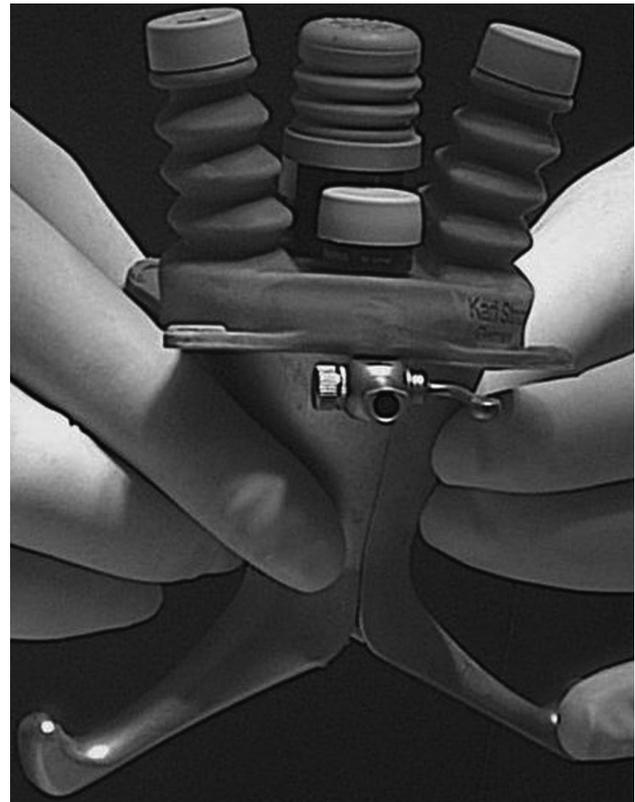


Figure 1. — X-Cone trocar.

Revised manuscript accepted for publication December 4, 2014

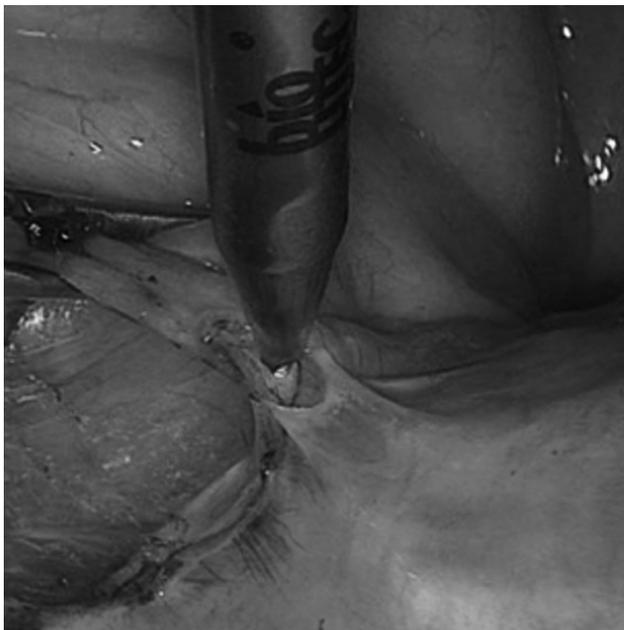


Figure 2. — Adhesiolysis with diode laser.

teries with a bipolar forceps they were sectioned with the laser. Adnexae were removed separately with an endobag.

At the end of the laparoscopic procedure to possibly prevent or decrease the occurrence of post-surgical adhesions 500 cc of warm lactated Ringer's solution was instilled in the pelvis [5]. Suture of the fascia was performed to prevent hernia formation (Vicryl 0, single stitches). Closure of the cutaneous wound and reconstruction of the umbilical shape was performed with absorbable single stitches.

Results

No intraoperative and postoperative complications were observed. Pain score measured immediately after surgery in the recovery unit was 3. The postoperative pain scores after six, 24, and 48 hours were 3, 2, and 1, respectively. The patient received a painkiller only six hours after surgery. Patient was discharged the day after surgery and fully recovered in one week. Pathology evaluation of adnexae did not show any subclinical disease. At one-month follow-up the patient cosmetic satisfaction was assessed using the Body Image Questionnaire (BIQ) that showed the maximum scores.

Discussion

A new paradigm for the pathogenesis of ovarian cancer based on a dualistic model and the recognition that the majority of "ovarian" carcinomas originate outside the ovary, assist in organizing this complex group of neoplasms and facilitates the development of new and novel approaches to prevention, screening, and treatment. In



Figure 3. — Salpingectomy with diode laser.

particular, type II ovarian carcinomas are composed of tumors that are aggressive, present in advanced stage, and develop from intraepithelial carcinomas in the fallopian tube [1]. BRCA carriers have a very high risk of developing such carcinoma during their life [1]. Consequently a BSO is suggested at 40 years of age or when child-bearing has been completed. Nowadays the role of minimally invasive surgery as multiport laparoscopy in oncology is growing [6, 7]. Moreover, single-port access (SPAL) laparoscopic surgery has been recently introduced into the field of minimally invasive surgery and implemented in gynecologic procedures [4, 5]. The main advantage of SPAL surgery is the excellent cosmetic outcome, less postoperative pain, and a faster recovery [8-11]. Recently, an exponential growth in the use of diode lasers has been observed in almost every area of pure and applied sciences. The currently available 980+1470 Nm diode laser may have certain advantages. A diode is an electronic laser consisting of two semiconductor materials with the size of a grain of sand. This technology makes it possible for this laser to be the smallest available. A microprocessor-controlled system regulates the flow of electrical current transmitted from the base unit to the surgical site by a solid quartz-core, fiber-optic cable. The heated tip can then be used to incise, excise, and coagulate tissue while a zone (0.3-0.6 mm) of thermo-coagulation provides excellent hemostasis of vessels up to two mm in diameter. In contrast to the CO₂ laser, the diode laser is more often used in contact mode with minimal tissue penetration of only 0.3-0.6 mm. A visible light beam is combined with the invisible laser beam. Its use in gynecology has been recently described for salpingectomy with an excellent surgical outcome and no complication [12].

In SPAL, diode laser could be very useful as it consents to cut and coagulate without changing instruments with extreme precision, causes minimal thermal damage, is surgically time-saving, and improves the possible advantages of this approach. In BRCA carriers, SPAL BSO with the use of diode laser could be the best minimally invasive surgical approach. Another possible advantage of diode laser could be the avoidance of any thermal distortion of the fallopian tube consenting an early detection of microscopic serous carcinoma developing in the fimbria.

References

- [1] Lancaster J.M., Powell C.B., Kauff N.D., Cass I., Chen L.M., Lu K.H., et al.: "SGO committee statement: Society of Gynecologic Oncologists Education Committee statement on risk assessment for inherited gynecologic cancer predispositions". *Gynecol. Oncol.*, 2007, 107, 159.
- [2] Daly M.B., Axilbund J.E., Buys S., Crawford B., Farrell C.D., Friedman S., et al.: "Genetic/Familial High-risk Assessment: Breast and Ovarian. NCNN". *J. Natl. Compr. Canc. Netw.*, 2010, 8, 562.
- [3] Angioni S., Mereu L., Maricosu G., Mencaglia L., Melis G.B.: "Single Port Access Laparoscopy (SPAL) for endometrioma excision". *Journal of Endometriosis*, 2010, 2, 95.
- [4] Angioni S., Maricosu G., Mereu L., Mencaglia L., Melis G.B.: "Single-port access laparoscopic assisted vaginal hysterectomy in a case of uterine ventrofixation using a new reusable device". *J. Obstet. Gynaecol. Res.*, 2011, 37, 933. doi: 10.1111/j.1447-0756.2010.01444.x. Epub 2011 Mar 16..
- [5] Rizzo A., Spedicato M., Mutinati M., Minoia G., Angioni S., Jirillo F., et al.: "Peritoneal adhesions in human and veterinary medicine: from pathogenesis to therapy. A review". *Immunopharmacol. Immunotoxicol.*, 2010, 32, 481. doi: 10.3109/08923970903524367.
- [6] Tinelli R., Litta P., Meir Y., Surico D., Leo L., Fusco A., et al.: "Advantages of laparoscopy versus laparotomy in extremely obese women (BMI>35) with early-stage endometrial cancer: a multicenter study". *Anticancer Res.*, 2014, 34, 2497.
- [7] Litta P., Saccardi C., Conte L., Codroma A., Angioni S., Mioni R.: "Sertoli-Leydig cell tumors: Current status of surgical management: Literature review and proposal of treatment". *Gynecol. Endocrinol.*, 2013, 29, 412.
- [8] Mereu L., Angioni S., Melis G.B., Mencaglia L.: "Single access laparoscopy for adnexal pathologies using a novel reusable port and curved instruments". *Int. J. Gynaecol. Obstet.*, 2010, 109, 78.
- [9] Liliana M., Alessandro P., Giada C., Luca M.: "Single-port access laparoscopic hysterectomy: a new dimension of minimally invasive surgery". *J. Gynecol. Endosc. Surg.*, 2011, 2, 11.
- [10] Mencaglia L., Mereu L., Carri G., Arena I., Khalifa H., Tateo S., et al.: "Single port entry-are there any advantages?" *Best. Pract. Res. Clin. Obstet. Gynaecol.*, 2013, 27, 441.
- [11] Mereu L., Angioni S., Pontis A., Carri G., Mencaglia L.: "Single port access laparoscopic myomectomy with X-Cone". *Gynecol. Surg.*, 2011, 8, 337.
- [12] Angioni S., Mais V., Pontis A., Peiretti M., Nappi L.: "First case of prophylactic salpingectomy with single port access laparoscopy and a new diode laser in a woman with BRCA mutation". *Gynecol. Oncol. Case Rep.*, 2014, 9, 21. doi: 10.1016/j.gynor.2014.05.002. eCollection 2014.

Address reprint requests to:
 S. ANGIONI, M.D., Ph.D.
 Department of Surgical Sciences,
 Division of Obstetrics and Gynecology,
 University of Cagliari
 SS554, Blocco Q, University Hospital
 09042 Monserrato (Italy)
 e-mail: sangioni@yahoo.it