

# Laparoscopic oophorectomy either with or without hysterectomy for early breast cancer

E. Kucera<sup>1</sup>, M.D., Ph.D.; Z. Holub<sup>2</sup>, Assoc. Prof. M.D., Ph.D.; G. Svobodova<sup>2</sup>, M.D.

<sup>1</sup>Department of Obstetrics and Gynecology, Institute of Care for Mother and Child, Prague,  
<sup>2</sup>Department of Obstetrics and Gynecology, Baby Friendly Hospital, Kladno (Czech Republic)

## Summary

**Objectives:** The aim of this study was to assess the surgical results, complications and pathological findings of laparoscopic ovarian ablation either with or without hysterectomy in women with early-stage breast cancer (BC).

**Methods:** Ninety women in early breast cancer stage who underwent laparoscopic bilateral salpingo-oophorectomy (BSO) either with or without hysterectomy were identified in a retrospective study conducted between January 2000 and December 2006. Tamoxifen antiestrogen therapy was used prior to hysterectomy.

**Results:** Forty-eight consecutive patients underwent laparoscopic hysterectomy with bilateral salpingo-oophorectomy and 42 with ovarian ablation only. The mean operative time for the laparoscopic hysterectomy and bilateral salpingo-oophorectomy or BSO alone was 82 min and 47.8 min, respectively. Blood loss was minimal in both groups (range: 20-250 ml). The rate of postoperative complications was very low (4.4%). One of all ovaries removed by laparoscopy showed ovarian breast carcinoma metastasis. Histopathologic examination revealed concomitant findings of leiomyoma, adenomyosis or endometrial abnormalities in 64.5 % of hysterectomy specimens.

**Conclusion:** Our experience with ovarian ablation either with or without hysterectomy confirmed that the use of a minimally invasive technique is feasible. We assume that ovarian ablation and hysterectomy is an appropriate treatment for premenopausal women at risk (BRCA positive) or for patients with concomitant benign uterine pathology, treated with tamoxifen in first-line therapy. Removing the uterus allows women to take only estrogens rather than combination HRT. Further investigation into the indications of disease where laparoscopic ablative surgery is appropriate in the management of early breast cancer is needed.

**Key words:** Breast cancer; Laparoscopy; Oophorectomy; Hysterectomy.

## Introduction

The ovaries produce hormones that can affect the development of breast cancer (BC). One option for women with BC before menopause is ovarian ablation, i.e., stopping the ovaries from working by radiotherapy or surgery to remove them. In women under 50 with breast cancer, ablation of functioning ovaries significantly improves long-term survival, at least in the absence of chemotherapy [1].

Laparoscopic oophorectomy offers potential advantages over other methods of ovarian ablation. Oophorectomy combined with hysterectomy could be used in women with increased risk of developing different endometrial pathologies including endometrial cancer following previous therapy by tamoxifen. The pathological findings, surgical results and complications of laparoscopic surgery in the management of breast cancer were assessed in this retrospective study.

## Material and Methods

The retrospective cohort study was conducted at two endoscopic centres of the Czech Society of Gynecological Endoscopy (Prague, Kladno) in the Czech Republic and included 90 premenopausal women with early breast cancer who were selected for ovarian ablation on the basis of the treatment decision made by the patient and her oncologists. The

patients were subdivided into the following two groups according to extension of surgical procedure. Group A included patients who were treated using tamoxifen as first-line hormonal therapy. For second-line therapy, laparoscopic oophorectomy and hysterectomy were indicated in these patients. Laparoscopic bilateral salpingo-oophorectomy (BSO) alone was performed in patients (Group B) without previous tamoxifen therapy in second-line therapy. Operative procedures for total laparoscopic hysterectomy (TLH), laparoscopic assisted vaginal hysterectomy (LAVH) and salpingo-oophorectomy in more detail have been previously described [2]. Electrosurgery or the harmonic scalpel was used as the primary method of dissection and hemostasis. Statistical differences in the demographic characteristics of the two groups of patients were determined by the chi-square test by an independent biometrician. A p-value of less than 0.05 was considered significant.

## Results

The mean age of the study cohort was 43.3 years (range, 32-51). Eighty-one women (91%) were under 50 years of age. No difference was found in demographic data between the studied groups (Table 1). Five women with BRCA mutations were identified in Group A. The surgical results and pathologic findings are shown in Tables 2 and 3. The average time required for laparoscopic hysterectomy and bilateral salpingo-oophorectomy or BSO alone was 82 min (Group A) and 47.8 min (Group B), respectively. Blood loss was minimal in both groups (range, 20-250 ml). Oral intake was resumed the next morning, and the patients were discharged within

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Table 1. — Patient characteristics.

Parameter	Group 1 (n = 48)	Group 2 (n = 42)	p value
Age (years) (range)	44.0 (33-52)	42.6 (32-51)	NS
Weight (kg) (range)	71.6 (59-90)	72.9 (62-86)	NS
Previous pelvic surgery (%)	5 (10.4)	3 (7.0)	NS

NS: not significant.

Table 2. — Surgical outcome.

Parameter	TLH+BSO (n = 29)	LAVH+BSO (n = 19)	BSO (n = 42)
Time of surgery (min)	89.2 (55-95)	78.9 (45-100)	47.8 (30-70)
Blood loss (ml)	170 (50-220)	180 (80-250)	(30-70)
Postoperative hospital stay (day)	3.2 (1-4)	3.4 (1-5)	2.5 (1-5)
<i>Complications</i>			
Conversion	0	0	1
Ureteral lesion	0	1	0
Fever	1	1	0
Total	1	2	1

Total laparoscopic hysterectomy (TLH); Laparoscopic-assisted vaginal hysterectomy (LAVH); BSO (bilateral salpingo-oophorectomy).

Table 3. — Results of histological examination of the specimen.

Parameter	Group 1 (n = 48)	Group 2 (n = 42)
Leiomyoma	25	—
Adenomyosis	7	—
Endometrial abnormalities	7	—
CIN	1	—
Normal ovary	40	36
Ovarian cysts	4	3
Ovarian endometrioma	3	1
Ovarian cystadenoma	1	0
Ovarian fibroma	1	1
Dermoid	1	0
Ovarian cancer	0	1

two or three days after surgery. Complications occurred in four patients (4.4%). One case of ureteral injury occurred one week after total laparoscopic hysterectomy and bilateral salpingo-oophorectomy, when the left ureter was partially cauterized too close to the infundibulopelvic ligament for excessive venous bleeding. After ureteral stenting, reanastomosis was successfully performed two months. We converted to laparotomy in one patient: the decision to perform abdominal hysterectomy, bilateral salpingo-oophorectomy, pelvic and paraaortic lymph node dissection was based on an intraoperative frozen biopsy from the ovary during primary laparoscopic surgery. The malignant changes of both ovaries, pelvic and paraaortic lymph nodes were confirmed. Histopathologic examination revealed concomitant findings of leiomyoma, adenomyosis or endometrial abnormalities in 64.5 % of hysterectomy specimens.

## Discussion

Radiotherapy is currently the standard method used for ovarian ablation by 60% of consultants in the United

Kingdom (UK). The benefit of LHRH analogues lies in their ability to reverse the menopausal effect, which is particularly useful if the patient wishes to have the effect reversed to severe side-effects. Laparoscopic surgery is the preferred method of 8% of consultants in the UK [3]. Currently, there are no exact published exact data from the Czech Republic. The data regarding laparoscopic surgery obtained from the database of the Czech Society of Gynecologic Endoscopy allowed us to assume a similar percentage to the data from the UK [4].

With the development of the endoscopic technique and increasing experience with laparoscopy, both surgical morbidity and postoperative inpatient stay have been reduced. In our study, the average of hospital stay for both groups was 2.8 days and rate of complications was low (4.4%). There is one issue regarding cost, with an average cost for laparoscopic salpingo-oophorectomy of 1,090 GBP, open oophorectomy of 840 GBP, and monthly Zoladex of about 1,500 GBP per annum [5]. There was no reduction in the overall costs of laparoscopic surgery and conventional surgery in Japan. The cost of one year's supply of tamoxifen was equivalent to the overall cost of surgical oophorectomy. We suppose that, when the laparoscopic equipment (staplers, 256 GBP) is changed to electrocautery, the cost for laparoscopic and open procedures will be similar.

Uterine growths such as polyps, tumors, endometrial thickening and cancers occur in a significant number of women who were treated by tamoxifen. In a recent study, precancerous uterine and endometrial changes were seen in 10% of the women taking tamoxifen [6]. The histopathological results of our study confirmed findings of endometrial abnormalities in seven patients (16.6%). The mean duration of tamoxifen therapy before surgery was only six months. We may assume that the number of endometrial lesions will increase after longer duration of antiestrogen therapy. The higher the dose of tamoxifen and the longer it is taken, the greater the risk of changes. Women who took it for five years or more had a seven times higher risk of endometrial cancer. The total risk for all women who used tamoxifen at all was increased by 50%. Advanced endometrial cancers were more common in women who had taken tamoxifen long-term than in those who had not. The 3-year survival for endometrial cancer was "significantly worse" for long-term tamoxifen users [6]. Beiner *et al.* [7] reported that women with BRCA mutations taking tamoxifen have a greater than 11-fold increase of endometrial cancer.

For premenopausal women undergoing prophylactic BSO, the symptoms associated with early and sudden menopause may adversely affect their quality of life. A recent review demonstrated that short-term hormone replacement therapy for relief of menopausal symptoms does not negate the benefit of prophylactic BSO in decreasing breast cancer risk in BRCA mutation carriers [8]. Removing the uterus allows women to take estrogen only rather than combination HRT [9].

## Conclusion

Laparoscopic oophorectomy has an important role in the management of premenopausal breast cancer and this study confirms that it is well tolerated and gives good perioperative short-term results. From the medical and economic viewpoint, laparoscopic surgery should be considered an alternative to adjuvant chemotherapy in premenopausal women. We assume that ovarian ablation and hysterectomy is an appropriate treatment for risk premenopausal women (BRCA positive) or for patients with concomitant benign uterine pathology, treated with tamoxifen in first-line therapy. Additional hysterectomy can eliminate the risk of endometrial cancer, increase the survival rate of women with breast cancer and decrease the risk of combined HRT.

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Address reprint requests to:

Z. HOLUB, M.D., Ph.D.

Head of Department of Obstetrics and Gynecology

Baby Friendly Hospital

Vancurova 1548

27258 Kladno (Czech Republic)