



Review

Is there a justification for hysterectomy in patients with borderline ovarian tumors?



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ABSTRACT

Objective: To determine the frequency of uterine involvement in patients with borderline ovarian tumors (BOT) and to evaluate the recurrence risk and survival after hysterectomy.

Materials and methods: In two French hospitals: A tertiary referral centre (University hospital centre of Tours, France) and the Alliance community hospital of Tours (France), we reviewed data of consecutive women undergoing surgery for presumed stage I BOT between January 1997 and December 2012. Patients were divided into two groups: patients treated with fertility sparing surgery (group 1) and those treated with radical surgery (group 2).

Results: A total of 135 patients were evaluated. 35 had fertility sparing surgery, 81 had radical surgery with hysterectomy and 19 had previous hysterectomy for other reasons. There were more recurrent borderline ovarian disease and more ovarian invasive disease developed in group 1 ($p = 0.02$, $p = 0.04$, respectively). Hysterectomy affected favorably borderline disease-free survival, OR = 0.09 95%CI (0.005–0.69), $p = 0.04$, but perceived benefits may be related to bilateral salpingo-oophorectomy and not hysterectomy directly.

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1. Introduction

Taylor was the first to describe Borderline ovarian tumors (BOT) in 1929 [1]. BOT used to be considered as precursors of epithelial ovarian cancer but are nowadays recognized as a distinct entity with an intermediate behavior between benign cystadenomas and frank carcinomas [2,3]. Histologically, they are defined by atypical epithelial proliferation without destructive stromal invasion and account for about 15% of all ovarian epithelial tumors [4,5]. They are now recognized as atypical proliferative (borderline) ovarian tumors. They usually occur among young women of childbearing age with an overall 10-year survival rate of 90% [6]. These patients often wish to maintain fertility and several studies have evaluated conservative treatment (with unilateral salpingo-oophorectomy or cystectomy) for both early- and advanced-stage BOT in order to allow future pregnancies [7,8]. The current surgical management of patients who do not wish further pregnancies includes hysterectomy, bilateral salpingo-oophorectomy, peritoneal washing, omentectomy and peritoneal biopsies, appendectomy being recommended only for women with mucinous BOT [9,10].

Hysterectomy has been a routine component of the radical management of BOT, but its relevance is less clear in this setting. It has not proven its efficiency for disease control. The most advocated reason is the possible uterine involvement, which can only be detected by histological analysis of the uterus. In such cases, hysterectomy could improve the accuracy of staging by identifying the serosal uterine implants and could therefore have a potential favorable effect on survival.

1.1. This is a logical explanation but is it true?

The aim of this study was to evaluate the frequency of uterine involvement among women with BOT and to compare the recurrence rate and survival between patients managed conservatively (cystectomy or unilateral salpingo-oophorectomy) and those with radical management (bilateral salpingo-oophorectomy, omentectomy) with hysterectomy.

2. Materials and methods

Women referred for BOT at the tertiary oncological referral center of Tours and the Alliance community hospital of Tours (France) were prospectively entered into a multidisciplinary team meeting register between January 1997 and December 2012. With the authorization of the institutional review board we retrospectively reviewed this prospective database in accordance with guidelines for human subjects research. Individual records of all patients were reviewed and analyzed. Variables included patient demographics, preexisting comorbidities. Patients were divided into two groups according to whether they underwent conservative surgery or not: group 1 included patients treated with fertility sparing surgery (cystectomy or unilateral salpingo-oophorectomy). Conservative treatment was defined as a procedure with preservation of the uterus and at least a portion of one ovary. Group 2 included patients treated with radical surgery (hysterectomy, bilateral salpingo-oophorectomy, omentectomy).

Patients and tumor characteristics, surgical procedures, post-operative courses and outcomes were analyzed.

Histological slides and reports of all patients were reviewed by two expert pathologists (FA and LJ) with homogeneous histological criteria. Microinvasion was defined as small foci of stromal invasion characterized by single cells, glands, or small clusters or nests of epithelial cells within the stroma, or a small foci of confluent glandular or cribriform growth within the stroma. The lesion must be smaller than 5 mm (<10 mm²) and can be multiple. Cases of

greater stromal invasion were considered as invasive carcinomas which was an exclusion criterion. Intraepithelial carcinoma was defined as an increased proportion? marked overgrowth of atypical epithelial cells showing stratification in excess of three layers, cribriform intraglandular proliferations, or fingerlike projections of solid cellular masses without connective tissue support, associated to marked nuclear atypia.

2.1. The tumor staging was performed, as recommended, by the international federation of gynecology and obstetrics (FIGO) 2009 [11]

Patients were followed by clinical examination, routine imaging surveillance procedures were not performed. Recurrences were identified and recorded. Follow-up information was obtained from hospital records, primary physicians and in some cases from patients or their families.

Data were analyzed using R2.13.1 (<http://www.cran.r-project.org/>). For numeric data, results are reported as mean and median values \pm standard deviation (SD). The Fischer exact and χ^2 chi-square tests were used to compare categorical values. Student tests were used for continuous values. A p value of <0.05 was taken to indicate significance and all statistical tests were two-sided. For the survival analysis, data on surviving patients without disease recurrence or progression were censored on the date of their last follow-up examination. Survival curves were generated (in months) using the method of Kaplan–Meier, based on the interval from the date of diagnosis to the date of last contact or death from any cause. The log-rank test was used to compare differences between survival curves.

3. Results

Of the 135 women included during the study period, with histologically confirmed BOT diagnosis, 35 (25.9%) patients underwent fertility sparing surgery (group 1), and 81 had radical surgery including hysterectomy. Nineteen patients had had a prior hysterectomy for other reasons and were thus considered apart. Patient demographic characteristics are presented in Table 1, surgery and pathologic characteristics are presented in Table 2.

As expected, the mean age of group 1 patients was significantly lower than the mean age of group 2 patients ($p < 0.0001$). Group 2 patients were significantly more likely to have higher parity ($p < 0.0001$). The groups did not significantly differ in terms of other demographic characteristics.

Bilateral BOT concerned five patients in group 1 and 13 in group 2. The mean radiological ovarian size for patients of group 1 was 12.9 cm (4–30) versus 11.6 cm (3–30) in group 2. Ascites was noted for 4 and 12 patients in group 1 and 2 respectively.

Patients of group 1 were treated surgically as follows: cystectomy, unilateral oophorectomy or unilateral salpingo-oophorectomy without hysterectomy.

3.1. Patients of group 2 had unilateral salpingo-oophorectomy, bilateral salpingo-oophorectomy with total hysterectomy

The mean follow-up for group 1 patients was 66.5 months (range 1–224 months), six patients (17.1%) developed recurrences of which three patients had BOT recurrences at 6 months, 4 and 10 years after initial surgery and three patients had invasive ovarian tumors respectively 5 years, 13 years and 17 years after BOT conservative surgery. The patient who had BOT recurrence at 6 months was first treated for voluminous bilateral BOT with preoperative unilateral ovarian rupture, she had first undergone a unilateral salpingo-oophorectomy and contralateral cystectomy. No other

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