

Management of Borderline Ovarian Tumours: Tertiary Centre Experience from Turkey

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ABSTRACT

This study aimed to analyse the management protocols, surgical approaches, and outcomes of the women with Borderline ovarian tumours (BOT) at Ankara Etlik Zubeyde Hanım Women's Health Training and Research Hospital, Ankara, Turkey. One hundred and seventy-seven patients diagnosed with serous and mucinous BOT were enrolled in the study. Demographic, clinical, and pathological data were reviewed retrospectively from the medical records. The patients were divided into two groups according to surgical interventions: Laparoscopy group (n=50) and Laparotomy group (n=127). Treatment was conservative in 107 (60.5%) patients. Mean age at diagnosis (48.69 ± 12.52 vs. 41.1 ± 11.66 years, $p < 0.001$), tumour size (84.13 ± 51.85 mm vs. 67.1 ± 34.78 mm, $p = 0.013$), and number of postmenopausal patients ($n = 55$ vs. 9 , $p = 0.002$) were significantly higher in the Laparotomy group. There were no significant differences in the rates of intraoperative cyst rupture (22% vs. 18%, $p = 0.120$) and recurrence (2.25% vs. 5.05%, $p = 0.760$). There was no difference between radical vs. conservative surgery and laparotomy vs. laparoscopy in terms of recurrences. In appropriate cases, the conservative treatment and laparoscopy may be preferred.

Key Words: Borderline ovarian tumour, Laparoscopy, Laparotomy.

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Borderline ovarian tumours (BOT) account for 10-15% of epithelial ovarian neoplasms, and 1/3 of cases with BOT are under 40 years old. Among tumours discovered incidentally, about 23% of patients are asymptomatic at the time of diagnosis. Early diagnosis and intervention to BOT are critical as they affect younger women (about 10 years earlier than malignant tumours) and may have a more favourable prognosis. Conservative treatment in BOT is a very important issue as it often affects younger women who want to preserve their fertility. There are many single-centric studies examining the clinical features and treatment protocols of BOT.¹⁻³ Using this information of the literature, this study aimed to analyse the treatment protocols, surgical approaches, and outcomes of women with BOT.

One hundred and seventy-seven patients diagnosed with BOT and treated at the Department of Oncology, Ankara Etlik Zubeyde Hanım Women's Health Training and Research Hospital, Ankara, Turkey, between the years 2014 and 2021 were included in the study.

Demographic and clinical data, including age at diagnosis, body mass index (BMI), parity, menopausal status, and preoperative CA125 level were reviewed from patients' medical records. Patients' files and database of hospital were searched. The study included women who were found to have adnexal masses by ultrasound or other imaging studies, were referred to the clinic and underwent surgery with a diagnosis of BOT. Blood samples, including CA-125 levels, were collected one week prior to the surgery for preoperative preparation. The samples were analysed according to the World Health Organisation (WHO) guidelines for the international classification of ovarian tumours. Federation of Gynaecology and Obstetrics (FIGO) classification was used for tumour staging. Patients with malignant ovarian tumours, pregnancy, and inadequate medical records were excluded from the study. Surgical procedures initially performed included laparoscopy and laparotomy. Depending on the age of the patient, tumour size, and fertility desire, the conservative surgery was performed. Non-conservative treatment included at least one Bilateral salpingo-oophorectomy (BSO) with total abdominal/laparoscopic hysterectomy for serous pathology and appendectomy was performed for mucinous BOTs. Patients were divided into two groups according to the surgical approaches i.e. Laparoscopy group (n=50) and Laparotomy group (n=127). Patients were followed up every 3 months in the first year and every 6 months in the second year.

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Table I: Patient characteristics and comparison of the two surgical approaches.

	n=177	Laparoscopy (n=50)	Laparotomy (n=127)	p-value
Age (mean, year)	46.54±12.72	41.1 ± 11.66	48.69 ± 12.52	<0.001
BMI (mean, kg/m ²)	28.5±4.29	27.61 ± 3.35	28.85 ± 4.58	0.084
Gravidity (range)	(0-8)			
Parity (range)	(0-8)			
Tumour size (mm, mean)	79.32±48.18	67.1 ± 34.78	84.13 ± 51.85	0.013
Menopause (n, %)	64 (36.2)	9 (18)	55 (43.3)	0.002
Bilaterality (n, %)	40 (22.6)	11 (27.5)	29 (22.8)	0.905
CA-125 ≥35 U/ml (n, %)	83 (46.9)	16 (19.28)	67 (80.72)	
Histopathology (n, %)				0.582
Serous tumour	104 (58.8)	31(29.8)	73 (70.2)	
Mucinous tumour	73 (41.2)	19 (26.1)	54 (73.9)	
Recurrence (n, %)	13 (7.3)	4 (2.25)	9 (5.05)	0.760
Recurrence location (n, %)				0.563
Pelvic	11 (6.2)	4 (36.3)	7 (63.6)	
Upper abdomen	2 (1.7)	-	2 (100)	
Surgical approach (n, %)				
Laparoscopy	57 (32.2)	-	-	
Laparotomy	120 (67.8)	-	-	
Treatment modality (n, %)				< 0.001
Conservative treatment	107 (60.5)	49 (45.8)	58 (54.2)	
Non-conservative treatment	70 (39.5)	1 (1.4)	69 (98.6)	
FIGO stage (n, %)				0.325
FIGO 1	146 (82.5)	39(78)	107 (84.2)	
FIGO ≥2	31(17.5)	11(22)	20 (15.8)	

p-value represents independent sample t-test and χ^2 test results.

SPSS v.26 software (SPSS Inc., Chicago, IL, USA) was used for statistical analysis. Normality of the data was determined visually by histograms and probability plots, and by skewness and kurtosis values. Mean \pm standard deviation or median (minimum-maximum) was used for descriptive statistics and number of cases (n) and (%) for categorical variables. For the comparison of quantitative variables, the t-test for independent samples was used. For the comparison of categorical variables, the χ^2 test and Fisher's exact test were used. Significance was assumed at a confidence interval (CI) of 95% and a p-value of <0.05.

Table I shows the general characteristics of the patients and comparison of the two surgical approaches. The rates of intraoperative rupture, recurrence, and DFS were similar between the groups ($p > 0.05$). Conservative surgery was performed in 107 (60.4%) patients. While laparoscopic surgery was observed more frequently in patients undergoing conservative surgery, laparotomy was observed more frequently in patients undergoing radical surgery. The number of postmenopausal patients was higher in the radical surgery group than in the conservative surgery group (41 vs. 23, $p < 0.001$). Mean age at diagnosis (52.74 ± 10.47 vs. 42.49 ± 12.47 years, $p < 0.001$) and BMI (29.38 ± 5.26 vs. 27.93 ± 3.43 kg/m²) were significantly higher in the radical surgery group. The recurrence rate was also not significantly different. The surgical approaches (laparoscopy vs. laparotomy), differed significantly only in terms of tumour size (67.85 ± 34.73 vs. 93.36 ± 53.84 mm, $p = 0.004$).

Cystectomy was performed in 12 patients, all of whom were under 40 years of age. Adnexectomy only was performed in 85 (48.02%) patients. A hysterectomy was performed in

39.54% of patients ($n = 70$). Peritoneal cytology was performed in 165 (93.2%), omentectomy in 141 (79.6%), and at least one biopsy in 150 (84.7%) patients.

Recurrence occurred in 13 patients, and the recurrence rate was 0.7% ($n = 13$). The mean DFS was 47.9 (12 - 84) months. The median follow-up time for recurrence was 30.07 (15 - 46), and invasive implants were detected in 3 (23%) patients ($n = 3/13$). There were statistically no significant differences in recurrence rates between the conservative and radical treatment groups (6.5% vs. 8.6%, $p = 0.769$). The overall survival rate was 100% for all patients.

BOT occurs most frequently in younger women who have not yet completed their fertility. Removal of BOT is the main treatment option for the patient. In appropriate cases, the conservative surgery of BOT, aimed at preserving fertility, is an alternative to radical surgery. Laparoscopy is increasingly chosen for the surgical treatment of patients with BOT and ovarian cancer, and all surgical staging procedures can be performed laparoscopically.⁴

Most studies have reported that the age at onset of BOT ranges from 28-62 years and that 60-70% of patients are postmenopausal at the time of diagnosis. In this study, the mean age at diagnosis was 46.54 ± 12.72 years. This was comparable to the literature. However, the rate of postmenopausal patients in this study was lower than in other studies (36.2% versus 60 - 70%).¹⁻³

There were studies which evaluated the correlation between elevated CA-125 level vs. serous and mucinous BOT.^{5,6} In this study, there was no difference in increased CA-125 level between serous and mucinous BOT patients. There was also

no difference when Stage I and II patients were compared. There are many studies in the literature that compare the surgical approaches of BOT. In the treatment of ovarian tumour, laparoscopic surgery has superiority over laparotomy. Laparoscopic surgery is a feasible, safe, and precise alternative over laparotomy. It had been found that the recurrence rate of fertility preserving surgery for BOT is similar, laparoscopically or laparotomically.¹⁻³ In this study, laparoscopic procedures were observed more frequently in patients undergoing the conservative surgery, while laparotomy was observed mainly in patients undergoing the radical surgery. Although in Laparotomy group, the mean age at diagnosis, tumour size, and menopausal status were significantly higher than in Laparoscopy group, the groups were similar in terms of intraoperative rupture, recurrence rate, DFS, and stage of tumour.

The retrospective design and collection of data from the medical records were the possible limitations of this study. Another limitation was the small number of patients. The evaluation and follow-up of patients in a single institute and the examination of histopathological samples by an experienced pathologist were strengths of this study. As it reflected the real data, this retrospective study made an important contribution to the literature.

In this study, there was no difference between radical vs. conservative surgery and laparotomy vs. laparoscopy in terms of recurrences. In appropriate cases, the conservative treatment and laparoscopy may be preferred.

ETHICAL APPROVAL:

The study design was approved by the institutional research ethics committee (Approval No. 23/06/2022-08/29).

PATIENTS' CONSENT:

Written informed consent were obtained from participants for using the data.

COMPETING INTEREST:

No competing interest was declared by the authors.

AUTHORS' CONTRIBUTION:

CK: Conceptualisation, methodology, draft preparation, and visualisation.

BK: Methodology, formal analysis, and draft preparation.

TKT, OY: Investigation.

YEU: Supervision.

VK: Conceptualisation, methodology, writing, reviewing and editing.

All authors approved the final version of the manuscript to be published.

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