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Office-based management of Bartholin cysts and abscesses: a comparison of three surgical methods

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ABSTRACT

Aim: In the present study, we aimed to compare the effectiveness of incision + drainage alone, marsupialization, and incision + drainage followed by silver nitrate application for the office management of Bartholin cysts/abscesses.

Material and Method: A total of 128 women who presented to our clinic, diagnosed with Bartholin cysts/abscesses and underwent Bartholin gland sparing office-based surgery were included in this retrospective study. Patients' demographic data, laterality and size of the cyst, surgical method performed, operational time, presence of recurrence, and treatment method of recurrent cysts/abscesses were recorded. Patients were divided into three group according to the operation they have undergone as incision + drainage alone, incision + drainage followed by silver nitrate, marsupialization.

Results: The mean cyst diameter was found as 3.00±1.05 cm. Eighteen (14.1%) patients developed recurrence. Of all patients, 37.5% underwent incision + drainage alone, 8.6% incision + drainage followed by silver nitrate application and 62.5% marsupialization. The mean operational time was significantly longer in the marsupialization group compared to incision + drainage alone and incision + drainage followed by silver nitrate groups (both, $p<0.001$). None of the patients in the marsupialization group developed recurrence, while recurrence was observed in 35.1% of the patients in the incision + drainage and 45.5% of the patients in the incision drainage + silver nitrate group.

Conclusion: Marsupialization technique was superior over the other techniques in terms of recurrence. However, operational time was longer with this technique and no definitive conclusion could be drawn.

Keywords: Bartholin cyst, abscess, infusion, drainage, marsupialization

INTRODUCTION

Bartholin cysts/abscesses are a benign obstruction of the Bartholin glands that are located in the lower right and left portions of the vaginal introitus. These are relatively frequent pathologies of the vulva and vagina that may cause discharge, pain and dyspareunia (1). A Bartholin abscess usually occurs after onset of puberty and decreases in incidence following menopause (2). It is generally unilateral and asymptomatic, and most of these abscesses are detected incidentally with imaging investigations or at a physical exam. However, when symptomatic, these abscesses may cause dyspareunia, urinary irritation, vague pelvic pain and restrictions in daily activities. Symptomatic Bartholin cysts/abscesses account for approximately 2% of gynecologic visits each year (3).

The physical exam often reveals asymmetry inferior to the vulva. In general, Bartholin cysts/abscesses do not require laboratory and imaging studies. However, biopsy and wound cultures may be performed during incision and drainage of the abscess, especially when malignancy is suspected (4). Differential diagnosis may include vaginal prolapse, endometriosis, perineal leiomyoma, fibroma, hematoma, folliculitis and other cysts of the vulva (5).

Bartholin abscesses can be treated with several medical or surgical methods at office settings. Office management of these abscesses is determined by the patient's age, cyst size, and history of recurrence (6). When medication fails or upon patient's request, several minor surgical techniques are applied to treat Bartholin cysts/abscesses. Commonly performed office-based minor surgical techniques include incision+drainage alone, alcohol sclerotherapy, Jacobi ring fistulization, marsupialization, needle aspiration, incision+drainage + silver nitrate, and Word catheter fistulization (7). Each of these techniques has its own advantages and disadvantages, and none of them has been proven superior in terms of healing time

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and recurrence. Incision + drainage alone and needle aspiration techniques are relatively simple procedures that can be performed in a short time, but have a higher rate of recurrence (8, 9). Alcohol sclerotherapy shows a faster healing time, but it is associated with the risk of developing hyperemia, hematoma, tissue necrosis and scarring (10). Marsupialization is associated with a lower risk of recurrence, while it takes longer time to perform and is more costly (11). Silver nitrate therapy has a shorter treatment time, although it is associated with scarring, vulvar burning, labial edema and hematoma (12). There is no consensus in the literature on which of these methods is superior over the others in treatment of Bartholin cysts/abscesses. In the present study, we aimed to compare the effectiveness of incision + drainage alone, marsupialization, and incision + drainage followed by silver nitrate application for the office management of Bartholin cysts/abscess.

MATERIAL AND METHODS

The study was carried out with the permission of Liv Hospital Ethics Committee (Date: 01.10.2021, Decision No: 2021/002). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

A total of 128 women who presented to our clinic with the complaints of pain, dyspareunia, discharge and restricted movements, diagnosed with Bartholin cysts/abscesses and underwent Bartholin gland sparing office-based surgery between 2018 and 2021 were included in this retrospective study. Symptomatic patients who had a cyst/abscess with the longest axis ≤ 5 cm were enrolled. Patients who previously received treatment for Bartholin cysts/abscesses in an outer center, those with a longest cyst axis >5 cm, patients who received medical therapy alone, and those with missing data were excluded from the study.

Study data were obtained via the hospital information system and patient files, and retrospectively analyzed. Patients' age, body mass index (BMI), complaints at the time of admission, laterality and size of the cyst, sexual activity status, history of pregnancy, delivery mode, surgical method performed, operational time, presence of recurrence, and treatment method of recurrent cysts/abscesses were recorded. Recurrence was evaluated 12 months after the initial treatment during control visits. Patients were divided into three groups according to the operation they have undergone as incision + drainage alone (Group ID), marsupialization (Group M), and incision + drainage followed by silver nitrate (Group IDSN), and the study data were compared between the groups.

Surgical Technique

All procedures were performed by the same team under local anesthesia with the patients in the lithotomy position. In the Group ID, after cleaning the surgical site with antiseptic iodine, local anesthesia was applied with 2% lidocaine superior to the hymen ring, and the drainage of the cyst was then provided through an incision of 3-5 mm. In the Group IDSN first, the same procedure with Group ID was performed for the drainage and a 0.5x0.5 cm silver nitrate (AgNO3) patch was applied on the cyst wall through the incision for ablation. In the group M, an incision was made in the area where the cyst protruded to the vestibule out of the hymen ring. The cyst wall was everted and approximated to the edge of the vestibular mucosa with interrupted absorbable sutures (3-0 Vicryl) using a fine needle. Patients were called one week later to clean the necrotic tissues.

Statistical Analysis

Data obtained in this study was statistically analyzed using IBM SPSS Statistics version 26.0 (SPSS, Statistical Package for Social Sciences, IBM Inc., Armonk, NY, USA) software. Categorical variables were expressed with frequencies (number, percentage) and numerical variables with descriptive statistics (mean ± standard deviation). Normality of the numerical data was analyzed using Kolmogorov-Smirnov test and the variables were found to have a normal distribution. Therefore, parametric statistical methods were used in the analysis.

Differences between two groups were analyzed with the Independent sample t test, while the differences between more than two groups were evaluated with the One Way Variance Analysis (ANOVA). In the case of difference with ANOVA, Tukey multiple comparison test was used to determine the group, which created the difference. Correlations between two numerical variables were evaluated with Pearson's correlation analysis and the correlations between two categorical variables with Chi-square test. $p<0.05$ values were considered statistically significant.

RESULTS

A total of 128 women with Bartholin cysts/abscesses were included in the study. The mean age of the patients was 36.91±8.41 years. The mean BMI value was calculated as 24.68±3.22 Kg/m². The mean operational time was measured as 29.38±15.83 minutes. Bartholin cysts/abscesses were at the right side in 61 (47.7%), at the left side in 63 (49.2%) and bilateral in 4 (3.1%) patients. The mean cyst diameter was found as 3.00±1.05 cm. Eighteen (14.1%) patients developed recurrence. A total of 102 (79.69%) women had a history of pregnancy, while 26

(20.31%) women were nulligravida. The number of sexually active women was 105 (82.00%). Demographic and clinical features of the patients are given in **Table 1**.

The most common complaints during admission was a palpable mass (89.8%) followed by pain (78.9%), dyspareunia (59.4%), discharge (25%), while 19.5% of the patients were asymptomatic. Of all patients, 48 (37.5%) underwent incision + drainage alone (Group ID), 11 (8.6%) incision + drainage followed by silver nitrate application (Group IDSN) and 80 (62.5%) marsupialization (Group M).

Table 1. Demographic and clinical features of the patients with Bartholin cysts/abscesses

	Mean	± SD
Age (year)	36.91	8.41
BMI (Kg/m²)	24.68	3.22
Operational time (minutes)	29.38	15.83
	Number	**%**
Laterality		
Right	61	47.7
Left	63	49.2
Bilateral	4	3.1
Cyst size		
1-2 cm	44	34.4
2.1-3 cm	37	28.9
3.1-5 cm	47	36.7
Sexual Activity		
Yes	105	82.0
No	23	18.0
Vaginal delivery		
Yes	73	57.0
No	55	43.0
C/S		
Yes	38	29.7
No	90	70.3
Recurrence		
Yes	18	14.1
No	110	85.9

C/S: cesarean section; BMI: Body Mass Index; SD: standard deviation

Study parameters were compared between the three groups. The mean age was found as 37.15±8.09 years in Group M, 37.16±9.54 years in Group ID and 34.36±6.90 years in Group IDSN. There was no statistically significant difference between the groups in terms of age (p=0.579). The mean BMI value was statistically significantly higher in Group ID compared to Group M (25.57±3.07 vs 24.06±3.15) (p=0.015). The mean operational time was measured as 37.13±10.34 minutes in Group M, 13.57±5.42 minutes in Group ID and 26.18±8.00 in Group IDSN. Accordingly, the mean operational time was significantly longer in Group M compared to Group ID and Group IDSN (both, p<0.001). In addition, the mean operational time was significantly lower in Group ID compared to Group IDSN (p<0.001) (**Figure 1**). No statistically significant difference was observed between the three groups in terms of the other parameters. Comparison of the demographic and clinical features between the groups are shown in **Table 2.**

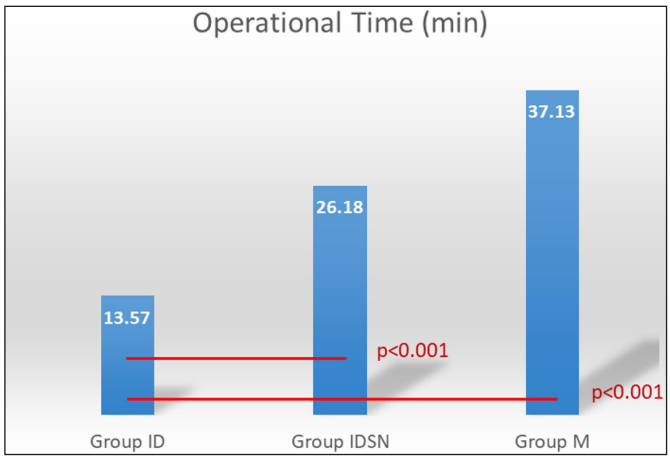

Figure 1. Operational duration according to the groups

Table 2. Comparison of the demographic and clinical parameters according to the groups

	Group M	Group ID	Group IDSN	F	p
	Mean±SD	Mean±SD	Mean±SD		
Age (years)	37.15±8.09	37.16±9.54	34.36±6.90	0.549	0.579
BMI (Kg/m²)	24.06±3.15	25.57±3.07	26.19±3.31	4.230	0.015
Operational Time (minutes)	37.13±10.34	13.57±5.42	26.18±8.00	87.333	<0.001
	n (%)	n (%)	n (%)	X2	p
Normal delivery				4.557	0.102
Yes	49 (61.3)	21 (56.8)	3 (27.3)		
No	31 (38.8)	16 (43.2)	8 (72.7)		
C/S				0.035	0.983
Yes	24 (30.0)	11 (29.7)	3 (27.3)		
No	56 (70.0)	26 (70.3)	8 (72.7)		
Recurrence				36.656	<0.001
Yes	0 (0.0)	13 (35.1)	5 (45.5)		
No	80 (100.0)	24 (64.9)	6 (54.5)		

Group M: Group marsupializaton, Group ID:Group incision drainage Group IDSN: Group incision drainage plus silver nitrate; C/S: cesarean section; BMI: Body Mass Index; SD: standard deviation.

As seen in **Table 2**, 13 (35.1%) patients in Group ID and 5 (45.5%) patients in Group IDSN developed recurrence, while none of the patients in Group M developed recurrence of Bartholin cysts/abscesses. The rate of recurrence was found to be statistically significantly lower in Group M than the other groups. Group ID and Group IDSN were not compared for recurrence because of the small number of patients in Group IDSN.

DISCUSSION

Office management of Bartholin cysts/abscesses can be performed using both medical and minor surgical methods. The main goal of minor surgical procedures is to provide the best treatment outcomes and to increase patients' quality of life by sparing Bartholin glands that are critical structures in the female anatomy with providing lubrication of the vagina for sexual functioning. However, no ideal surgical option could be determined so far among several methods including incision+drainage, silver nitrat fustulization, marsupialization, Word catheter, alcohol sclerotherapy and newer laser techniques (13).

In the present study, we aimed to investigate the effectiveness of incision+drainage, incision+drainage with silver nitrate and marsupialization in 128 women. The risk of developing Bartholin cysts/abscesses increases after 30 years of old (7). In our study, the mean age was found as 36.91±8.41 years. Krissi et al. (14) reported the mean age as 33.5±12.1 years in patients diagnosed with acute Bartholin abscess. Riche et al. (15) reported the mean age as 36.00±11.8 years. In this respect, our finding was in the range reported in the literature.

The preferred office-based minor surgical treatment method varies among countries and healthcare centers, and is determined by the patient's age, cyst size, symptoms, patient's preference and the surgeon's discrete (6). In a survey study among surgeons from French university hospitals, the most commonly used method was reported as incision drainage by 87% and marsupialization by 13%. The participants stated that incision drainage is a simpler technique with shorter operational time, but the rates of complications and recurrence with this technique are yet to be clearly determined (16).

In our study, incision drainage was performed in 37.5%, incision drainage + silver nitrate in 8.6% and marsupialization in 62.5% of the patients. The most important result of the present study was the significant differences between the three techniques in terms of recurrence rates. In the present study, none of the patients in the marsupialization group developed recurrence, while the rate of recurrence was found as 45.5% in the incision drainage + silver nitrate group and 35.1% in the incision drainage group. However, the incision drainage + silver nitrate group included only 11 patients, making interpretation of this result difficult. In a prospective randomized controlled study, Ozdegirmenci et al. performed incision drainage + silver nitrate in 76 and marsupialization in 83 patients. The authors found similar recurrence rates between the two techniques and concluded that silver nitrate application is as effective as marsupialization (17). Kroase et al. reported the recurrence rate as 10.3% with marsupialization and 12.2% with Word catheter method after one years of the primary treatment (11). Mungan et al. found no recurrence in their patients with silver nitrate at the end of a 2-year follow-up period (18). Cho et al. and Haider et al. also found no recurrence in their patients with marsupialization as in our study (1, 19). In their cohort study with 320 patients treated with either Word catheter or marsupialization for Bartholin cysts/abscesses, Rotem et al. reported that 54 patients presented to the emergency department due to recurrence, but no correlation could be find with the recurrence and surgical technique (20).

Recurrence rates following different ofis-based minor surgical techniques used for the treatment of Bartholin cysts/abscesses vary widely among the studies. However, as mentioned above, a significant portion of the studies found similar recurrence rates between the techniques used. We strongly suggest that recurrence following treatment of these cysts/abscesses may be resulted from several factors other than the technique used for the treatment. In our study, marsupialization was the most successful technique for this purpose with the lowest rate of recurrence, but it is well-known that this method takes a longer time to perform and is more expensive compared to the others, indicating the need for further more comprehensive prospective randomized controlled studies to draw more definitive conclusions.

Study Limitations

The most important limitation of this study is its retrospective and single-center design. In addition, other postoperative complications such as hematoma, pain and dyspareunia could not be studied. Furthermore, the small number of patients in the incision drainage + silver nitrate group, made the comparison of recurrence rates with this technique difficult. The strength of this study was the relatively high total number of patients.

CONCLUSION

In terms of recurrence rates, marsupialization technique is superior over incision drainage alone and incision drainage plus silver nitrate methods in the treatment of Bartholin cysts/abscesses. However, operational time is longer with this technique and its long-term complications are not clear. Further comprehensive

studies with a larger series of patients are needed to provide contribution to the literature for establishing a consensus about which surgical method is the best choice for treatment of these cysts/abscesses.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Liv Hospital Ethics Committee (Date: 01.10.2021, Decision No: 2021/002).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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