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## Original Article

# Surgical Treatment of Bartholin's Gland Abscess: Is Word Catheter Superior to Marsupialization?

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**ABSTRACT** **Study Objective:** Bartholin's gland abscess may occur in up to 2% of the women. Surgical drainage using the Word catheter application or marsupialization is the treatment of choice in the management of Bartholin's gland abscess. We aimed to compare the abscess recurrence rates between these 2 surgical methods.

**Design:** A retrospective cohort database study.

**Setting:** A university-affiliated, high-volume teaching hospital in southern Israel.

**Patients:** All women who were surgically treated for Bartholin's gland abscess.

**Interventions:** Different clinical and postoperative characteristics were retrieved from the patients' records. A univariate analysis was conducted, and  $p < .05$  was considered significant.

**Measurements and Main Results:** During the study period, 321 women were admitted to our center with Bartholin's gland abscess and were managed surgically. Of these, 215 (67%) were treated using the Word catheter and 106 (33%) by drainage and marsupialization. No differences were found in clinical and microbiologic features between the study groups. In addition, recurrence rates as well as recurrent admissions did not differ significantly. Postoperative complications were similar between the groups.

**Conclusion:** Our study reassures that both the Word catheter application and marsupialization are appropriate and safe when treating Bartholin's gland abscess. *Journal of Minimally Invasive Gynecology* (2021) 28, 1211–1215. © 2021 AAGL. All rights reserved.

**Keywords:** Cultures; Surgical management; Word catheter application

Bartholin's glands become active toward puberty and secrete mucus that lubricates the vagina. The glands are located in the posterior aspect of the labia minora. The glands' ducts are thin and liable to obstruction at the introitus. Distal obstruction of the duct can cause secretions to accumulate and form a cyst. In cases that involve inflammation or infection, an abscess is formed [1]. A woman's lifetime risk for Bartholin's gland abscess is approximately 2% [2] and is usually attributed to opportunistic bacteria and

occasionally to sexually transmitted pathogens [3]. Several risk factors for Bartholin cysts and abscesses have been reported, and a previous abscess is a known risk factor for recurrence [2].

When an abscess becomes mature, the preferred treatment is opening and drainage. Antimicrobial treatment is considered complementary to drainage in cases of systemic symptoms, or it may be administered as first-line treatment when the abscess is not mature, or the woman is not eligible for drainage [3]. The most common modes of drainage [4] are marsupialization and the Word catheter application. The Word catheter is a device with a balloon at its end that is inserted into the abscess immediately after drainage and left in place for several days to weeks to allow for effective drainage of the secretions and induce re-epithelization of the duct. This procedure can be performed in an outpatient setting. Expulsion of the catheter before completion of the re-epithelization is associated with increased recurrence

The authors declare that they have no conflict of interest.

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[5]. Marsupialization involves a longer procedure than the Word catheter application, and it is performed in the operating room [6]. The reported complications of both surgical procedures include hematoma, infection, scarring, and dyspareunia [7]. Burning with either silver nitrate [8] or laser [9] are additional treatment options that are used less frequently. Complete excision of the cyst is performed in cases of recurrence or if malignancy is suspected [10].

To date, there are no clear guidelines for choosing the mode of drainage, and the choice is usually guided by the preferences of the surgeon and the patient, as well as the local policy at the medical center concerned. A few studies have assessed recurrence after the Word catheter application vs marsupialization and demonstrated contradictory results [3–6]. Given the knowledge gap, we aimed to contribute to the literature by presenting our experience with the complications and recurrence rates after surgical treatment for Bartholin's gland abscess.

## Materials and Methods

We conducted a retrospective cohort study at the Soroka University Medical Center (SUMC), which serves more than 70% of the residents in southern Israel. All women aged 18 to 90 years who suffered from Bartholin's gland abscess between the years 2009 and 2016 and were treated by means of the Word catheter application or marsupialization were included in the study. Women managed expectantly, women drained by other means, women who were operated on during pregnancy, and those in whom pathologic tests revealed cancer were excluded from the study. In case there was more than 1 event during that study period (assuming a full recovery in between the events), we included each event and its associated complications separately.

The surgical management of Bartholin's gland abscess at the SUMC occurs in an inpatient setting. Surgical management is chosen according to each surgeon's personal preference, either by the Word catheter application or marsupialization. All surgeons use the common practice when executing their preferred surgical drainage, and all drained abscesses are cultured. In cases of accompanying systemic signs, antibiotics may be added to the surgical treatment. During the study period, all patients were subject to uniform preoperative and postoperative care. Follow-up was usually done 2 to 3 weeks after the surgical procedure in an outpatient setting. In cases where the Word catheter had not been expelled spontaneously, it was removed during the ambulatory follow-up visit by the primary caregiver. Patients who returned to the hospital after the drainage underwent a full re-evaluation, including physical examination and laboratory workup. In cases of recurrent abscess, drainage was performed.

The study's primary outcome was the comparison of abscess recurrence between the 2 methods. Demographics and obstetric history were retrieved from SUMC's computerized patient records, and a comparison was made between the women who were managed by the Word

catheter application and those who were managed by marsupialization. In addition, various clinical parameters with regard to surgical drainage were collected, including the side on which the abscess had formed, fever, laboratory test results (white blood cell count and culture), recurrent referral to the emergency room, hospitalization, and postoperative complications.

Data were analyzed using SPSS v.23 (IBM Corp., Armonk, NY). The comparison was done using numerous univariate tests. Parameters displaying a normal distribution were analyzed using mean and standard deviation. Parameters displaying a non-normal distribution were analyzed using median and interquartile range. Categorical variables were analyzed using percentage. The *t* test and Mann-Whitney test were used for continuous variables in accordance with their distribution. The chi-square/Fisher exact test were used for categorical variables. The *p* value for statistical significance was set at  $\leq .05$ .

The study was approved by the institutional review board (in accordance with the declaration of Helsinki; approval number: 0300-16-SOR). In accordance with the Ministry of Health regulations, the institutional ethics committee did not require written informed consent because the data were obtained anonymously from medical records, with no direct participation of the patients.

## Results

During the study period, 321 women were managed surgically for Bartholin's gland abscess at the SUMC. Of these, 215 (67%) were treated by the Word catheter application and the remaining 106 (33%) by marsupialization.

Demographic and clinical characteristics of the patients are presented in Table 1. No differences were noted with regard to age, ethnicity, parity, and gravidity between the groups. When examining the presentation and different clinical parameters of the current infection, no significant differences were noticed between the groups. In both groups, the abscesses were mostly left-sided and were not accompanied by significant leukocytosis. The rates of antibiotic use as well as positive culture results were comparable between those managed by the Word catheter application and those managed by marsupialization (36.8% vs 33.0%,  $p = .27$  and 55.7% vs 53.2%,  $p = .52$ , respectively).

The distribution of bacteria that were recovered from those who had positive cultures is presented in Table 2. The most common pathogen that was isolated in both groups was *Escherichia coli* (43.5% in the Word catheter application group vs 32.2% in the marsupialization group,  $p = .15$ ). The distributions of *Streptococcus pneumoniae* in the 2 groups were comparable (3.4% vs 1.7%,  $p = .06$ ).

No differences were noted in the recurrence rates of the abscess after the different surgical modalities nor in the rate of recurrent referral to the emergency room (18.1% vs 14.1%,  $p = .40$ ) and recurrent hospitalizations (9.8% vs 11.3%,  $p = .62$ ) after treatment. In addition, no differences

**Table 1**

Baseline and clinical characteristics of patients who were handled by the Word catheter application vs marsupialization

Variable		Word catheter application, N = 215	Marsupialization, N = 106	p value
Age, yrs (mean $\pm$ SD)		30.90 $\pm$ 11.09	32.08 $\pm$ 10.55	.35
Ethnicity, n (%)	Jewish	88 (83.0)	158 (73.5)	.16
	Bedouins	17 (16.0)	54 (25.1)	
	Other	1 (0.9)	3 (1.4)	
Gravidity (median, mode)		(1, 0)	(1, 0)	.17
Parity (median, mode)		(1, 0)	(0, 0)	.07
LMP, d (mean $\pm$ SD)		14.15 $\pm$ 12.25	16.13 $\pm$ 13.22	.19
Side, n (%)	Left	64 (60.4)	129 (59.7)	.70
	Right	41 (38.7)	82 (38.0)	
	Unknown	1 (0.9)	5 (2.3)	
Fever, n (%)		6 (5.9)	19 (8.8)	.34
WBC (mean $\pm$ SD)		11.76 $\pm$ 3.94	11.01 $\pm$ 3.96	.15
Antibiotics use, n (%)		39 (36.8)	71 (33.0)	.27
Culture, n (%)	Negative	34 (32.1)	81 (37.5)	.52
	Positive	59 (55.7)	115 (53.2)	
	Not taken	13 (12.3)	20 (9.3)	

SD = standard deviation; LMP = last menstrual period; WBC = white blood cells.

**Table 2**

Bacteria recovered from Bartholin's gland abscess in cases of positive culture in patients who were managed surgically with the Word application vs marsupialization, n (%)

Bacteria	Sub-type	Word catheter application, N = 115	Marsupialization, N = 59	p value
Gram-negative bacilli	<i>Escherichia coli</i>	50 (43.5)	19 (32.2)	.15
	<i>Klebsiella</i>	4 (3.5)	1 (1.7)	.45
Gram-positive cocci	<i>Staphylococcus aureus</i>	10 (8.7)	5 (8.5)	.96
	<i>Streptococcus pneumoniae</i>	3 (2.6)	6 (10.2)	.06
	<i>Streptococcus agalactiae</i>	10 (8.7)	6 (10.2)	.478
	<i>Enterococcus</i>	7 (6.1)	7 (11.9)	.24
Candida		3 (2.6)	1 (1.7)	.58
Anaerobic bacteria		22 (19.1)	6 (10.2)	.13
Other		6 (5.2)	8 (13.4)	.06

**Table 3**

Recurrence and postoperative complications among patients with Bartholin's gland abscess managed surgically with Word catheter vs marsupialization, n (%)

Variable	Word catheter application, N = 215	Marsupialization, N = 106	p value
Recurrent referral to the ER	39 (18.1)	15 (14.2)	.40
Recurrent hospitalization	21 (9.8)	12 (11.3)	.62
Fever after procedure	5 (2.4)	2 (1.9)	.58
Pain	2 (1.0)	0 (0.0)	.45
Bleeding/discharge/itching	4 (1.9)	2 (1.9)	.64
Abscess recurrence	7 (6.7)	13 (6.3)	.83
Catheter removal	3 (1.4)	—	NA

ER = emergency room; NA = not available.

were noted in postoperative presentation of postprocedural pain and bleeding (Table 3).

## Discussion

Bartholin's gland abscess is common among young women and can be associated with disabling pain, resulting in both short- and long-term consequences [7]. In this retrospective study, we compared abscess recurrences after 2 common surgical drainage methods and found no method to be superior.

Similar to previous reports, the patients in both groups were in their reproductive years [6]. The positive culture rates were close to 50%, which is somewhat lower than in previous reports [8,9]; however, they were similar to the rates reported in the study by Kesus et al [3], who demonstrated positive cultures in 60% of the patients.

Traditionally, marsupialization is performed to optimize drainage [10]; yet, given the nature of the incision and suturing, it may result in scarring and dyspareunia. Hence, in recent years, the insertion of the Word catheter has become more popular, given its "minimally invasive" nature and the assumption that a smaller incision may heal better. In addition, the Word catheter application may be performed in an outpatient setting, easing the in-hospital load and costs [6], and perhaps it is associated with a faster recovery than marsupialization. Nonetheless, in many cases the catheter—which should stay in place for 2 to 3 weeks—is expelled earlier, causing suboptimal drainage and recurrence [5]. The possible causes for the early expulsion can be a too-large incision, superficial incision, and perforation of the balloon during filling.

In this study, both methods demonstrated comparable and relatively low abscess recurrence rates (6.7% vs 6.3%,  $p = .83$ ). Our findings are in accordance with a large meta-analysis that was only recently published, in which no surgical method was found superior in terms of recurrence [3]. The only randomized controlled trial that compared these 2 methods was published in 2016 [4]; in this study, 82 patients who were treated by the Word catheter application were compared with 79 patients who were treated by marsupialization. Recurrence requiring drainage was noted in 10 (12.2%) and 8 (10.3%) of the patients, respectively ( $p = .70$ ). In previous studies, the pooled estimated recurrence varied between 0% and 38% [2,6], and whereas some displayed lower recurrence after marsupialization [2], others did not [5]. Our recurrence rates are within the reported range.

Notably, a recent study that examined the risk factors associated with recurrent referral to the emergency room after surgical treatment for Bartholin's gland abscess found that both recurrent referral and recurrent hospitalization were not associated with surgical drainage modality [11].

Apart from recurrence, both procedures may cause discomfort and may be accompanied by bleeding or pain. In addition, both the catheter and the surgical wound after marsupialization may be further infected. In this study,

these short-term complications were examined and were found comparable between the groups, emphasizing the short-term safety of both procedures. Nonetheless, in the present study we did not account for the potential long-term consequences that may be associated with either procedure. Specifically, marsupialization may cause scarring that may in turn lead to dyspareunia [12] and negatively affect the patients' quality of life. These potential complications should be further investigated, and if a difference is found it may guide the preference for 1 method over the other.

Our study has several limitations. This is a retrospective study and, hence, has its associated faults. Our data included patients who were managed in a hospital; as such, milder cases that were handled in an outpatient setting were not included. This may give rise to a potential selection bias; however, we believe that this is a nondifferential one. In addition, we were unable to account for patients with recurrent cases of spontaneous draining who did not return to the hospital. Moreover, we could not account for referrals that were managed in an outpatient setting nor for recurrent abscesses that were managed medically. Data regarding spontaneous expulsion of the Word catheter application were lacking. Hence, we could not account for the difference in the recurrence between those with spontaneous expulsion and those who had retained the Word catheter application. Further studies are needed to address this specific aspect. Finally, our low rate of positive bacterial cultures may be because of different methods of bacterial isolation. In the studied period, methods such as polymerase chain reaction and microbiome were not commonly used. However, if a bias were to occur owing to this reason, it is a nondifferential one; in addition, similar positive culture rates were reported in a similar study [3].

Our study's biggest strength lies in its large sample size. To date, this is the largest study comparing the 2 methods. Given the heterogeneity of our population, our results may be suitable for generalization. In addition, because the SUMC serves more than 70% of the residents in southern Israel, we believe that most of the recurrences were referred to our center, and therefore our study truly represents the recurrence rates in our population.

In conclusion, in our study, both marsupialization and the Word catheter application demonstrated comparable recurrence rates, estimated at 6%. Further studies are needed to account for long-term complications of both methods and to identify risk factors for abscess recurrence.

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