



# Clinical manifestations and management of hospitalized women with bartholin versus non-bartholin vulvar abscess

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**Keywords:** Bartholin abscess; Vulvar abscess; Word catheter; Marsupialization

**Abbreviations:** MRSA: Methicillin-Resistant Staphylococcus Aureus

## Introduction

Vulvar abscess is a common gynecologic problem that may potentially result in severe illness [1]. It usually develops in hair follicles, sweat and sebaceous glands and in the Bartholin gland. The loose areolar tissue in the subcutaneous layers and the connection of the vulvar fascia with the groin and anterior abdominal wall can facilitate the spread of infection and abscess formation in the vulvar area [2]. The lifelong risk of developing a

## Abstract

**Objective:** To examine and compare the clinical manifestations and management of hospitalized women with Bartholin and non-Bartholin vulvar abscesses.

**Methods:** This was a retrospective study of all women diagnosed and hospitalized for vulvar abscesses at a large tertiary medical center in the years 2004 and 2013.

**Results:** During the study period, 294 women were admitted because of vulvar abscess. Of these, 267 (90.8%) were diagnosed with Bartholin gland abscess, and only 27 (9.2%) with other vulvar abscesses. No statistically significant between-group differences were found in age, parity, number of episodes or contraception methods. A significant between-group difference was found in the clinical expression and treatment administered. A positive bacterial culture was found in 57.7% of the Bartholin abscess group compared to only 33.3% of the non-Bartholin abscess group ( $p=0.015$ ). *Escherichia coli* was the single most common pathogen cultured from Bartholin abscesses (59/267, 22.2%) while streptococcus was predominantly the most prevalent in the non-Bartholin abscesses (26/27, 96.3%).

**Conclusion:** We demonstrated that Bartholin gland abscesses and vulvar abscesses are two separate entities, with different clinical characteristics and different modes of treatment.

Bartholin cyst or abscess is approximately 2% [2]. On examination, the abscess appears as a warm, tender, soft or fluctuant mass in the lower medial labia major or lower vestibular area. It can sometimes be surrounded by cellulitis and lymphangitis and may expand into the upper labia [2].

Clinically, symptoms of vulvar abscess develop over the course of several days and may persist until the abscess is drained. Patients typically report a painful vulvar mass, fullness

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or pressure, pain with walking, sitting, or during sexual intercourse [3]. Pain beyond local tenderness is less typical of vulvar abscess. In contrast, in Bartholin abscess, patients usually present with acute severe pain and swelling that they are unable to walk, sit, or have sexual intercourse.

Controversy exists regarding the exact origin of vulvar abscesses. While most authors hold the notion that vulvar abscesses originate in the vulvar skin or subcutaneous tissues above the fascia [1,4], some postulate that anterior expansion of Bartholin's gland duct cyst should probably be considered as the most frequent diagnosis for vulvar cysts located between the urethra and the fourchette [5].

Many women with vulvar abscesses have no apparent risk factors. However, obesity, poor hygiene, shaving or waxing of pubic hair, diabetes, acquired immunodeficiency syndrome, and pregnancy are thought to be implicated [1,2,6].

Data are limited on vulvar abscesses in general, and the incidence of the different pathogens causing these lesions. The purpose of this study was to evaluate patient characteristics, clinical manifestations and microbiology of hospitalized women with acute Bartholin abscess in comparison with women with acute non-Bartholin vulvar abscess in order to shed some more light on whether these entities are different or are different manifestations of the same pathology.

## Methods

### Study population

We conducted a retrospective study. The study group included all women hospitalized at our large tertiary medical center because of acute Bartholin gland or other vulvar abscess during the years 2004 and 2013. There were no exclusion criteria. The study was approved by the local Institutional Review Board.

### Data collection

The decision for hospitalization was based on clinical symptoms such as severe pain, fever, swelling, redness and cellulitis, or no response to oral antibiotic treatment.

The diagnosis of Bartholin's abscess was based upon characteristic clinical findings. Most women presented with severe pain and swelling. On examination, the abscess appeared as a warm, tender, soft or fluctuant mass in the lower medial major labia or lower vestibular area. We did not use special swabs or polymerase chain reaction for *Neisseria gonorrhoea* and *Chlamydia trachomatis*. Mixed cultures were defined as more than one pathogen in pus culture.

Data on demographic parameters, age, clinical manifestations, diagnosis, mode of treatment, pus culture, blood test results, duration of stay and discharge were retrieved from the departmental computerized health records.

### Statistical analysis

Statistical analysis was performed with the SPSS software, version 20.0. (Chicago, IL). Data were analyzed using descriptive statistics. Statistical significance was calculated using the Chi square test for categorical variables and the Student's t test for continuous variables. A p value of <0.05 was considered statistically significant.

## Results

During the study period, 294 women were included in our

study. Of these, 267 (90.8%) were diagnosed with a Bartholin abscess, and 27 (9.2%) with another (non-Bartholin) vulvar abscess.

Mean age at diagnosis for women with a Bartholin abscess was  $33.5 \pm 12.1$  years and for non-Bartholin vulvar abscesses,  $35.2 \pm 13.2$  years ( $p=0.51$ ). No statistical significant differences found in terms parity, contraception methods, smoking and marital status between the groups. The demographic characteristics of the patients are presented in Table 1.

The clinical characteristics are shown in Table 2. Comparing the Bartholin and non-Bartholin abscess groups, we found a significant difference in the clinical expression and treatment administered. While non-Bartholin abscess tended to manifest as a painful, swollen and erythematous lesion (18.5% vs. 4.5%,  $p=0.003$ ), Bartholin abscess was more prevalent when only swelling of the labia was present (30.3% vs. 7.4%,  $p=0.01$ ). In most women with a Bartholin abscess, marsupialization was performed (80.9% vs. 25.9%,  $p<0.001$ ), while most of the women with a non-Bartholin abscess underwent simple incision and drainage (74.1% vs. 19.1%,  $p<0.001$ ).

A positive bacterial culture was found in 57.7% of the Bartholin abscess group compared with only 33.3% of cultures from the non-Bartholin abscess group ( $p=0.015$ ). The mean hospitalization time was similar between the groups ( $1.4 \pm 0.8$  vs.  $1.5 \pm 0.2$ ,  $p<0.45$ ).

## Discussion

The vulvar skin is colonized with organisms commonly found on the skin, vagina and rectum. Many vulvar abscesses are mixed polymicrobial infections. Methicillin-Resistant *Staphylococcus Aureus* (MRSA) was found to be the most common organism [1,3,7].

The Bartholin glands have narrow ducts that are prone to be obstructed at their opening. Distal blockage of the duct may result in the retention of secretions with consequent formation of a cyst or abscess [3,8,9]. Cultures of Bartholin abscesses also usually show mixed polymicrobial infection [10], although *Escherichia coli* was found to be the most common pathogen in one study [9].

Incision and drainage is the treatment of choice for large Bartholin and non-Bartholin abscesses, with a slight variation in procedure. In a vulvar abscess, the abscess cavity is packed while in Bartholin abscess, placement of a Word catheter or marsupialization are performed [11,12].

The major finding in our study was a significant difference in the clinical manifestation and the treatment given to hospitalized women with acute Bartholin abscess compared with acute non-Bartholin vulvar abscess. This highlights the fact that although there is an anatomical proximity between them, these are two different entities.

Bartholin and non-Bartholin vulvar abscesses tend to manifest in similar populations in terms of demographic characteristics. This population consists of young women aged 30 to 40 years, with at least one child, using no long term contraception. Indeed we found no significant difference between the groups. Our findings are in accordance with previous studies with regard to age [3,9]. However, with regard to parity, there was discordance among studies. In our study parity was  $1.3 \pm 1.5$  and  $1.9 \pm 2.3$  for the Bartholin and non-Bartholin abscess groups, re-

spectively. Likewise, in the study of Kessous et al. [9] the parity was reported to be  $1.5 \pm 1.9$ . In contrast, Bhide et al. [3] reported over 60% of patients being nulliparous.

We found a significant difference in clinical manifestations between Bartholin and non-Bartholin vulvar abscesses. Whereas non-Bartholin vulvar abscess tended to manifest as a painful, swollen and erythematous lesion, Bartholin abscess was more prevalent with swelling of the major labia as a single sign. These characteristics reflect the pathophysiology standing at the basis of these two separate entities. A Bartholin abscess may form in the gland if the Bartholin cyst becomes infected. Induration usually is present around the gland, and walking, sitting, or sexual intercourse may result in vulvar pain [4]. While a non-Bartholin vulvar abscesses represents anterior extensions of a Bartholin abscess, or infected sebaceous cysts and folliculitis that create vulvar abscesses. These entities are therefore supposedly more prevalent in sexually active women than in young children or post-menopausal women.

In a systematic review by Wechter et al. [13] seven different treatments for Bartholin duct cysts or abscesses were identified. Definitive drainage of vulvar abscesses involves Word catheter placement for 4-6 weeks or marsupialization for re-creation of the ductal orifice permitting continuous drainage [14,15]. While other studies reported a 13% failure rate for this procedure [16], newer data are controversial. While some studies indicate that there is no recurrence after marsupialization [13,14], others noted a recurrence rate of 4% to 17% at 6 months when treated with a Word catheter [13,17] and 2% to 25% rate after surgical marsupialization [17,18].

In our study, marsupialization was performed in most women with a Bartholin abscess (80.9% vs 25.9%,  $p < 0.001$ ), while most of the women with a non-Bartholin vulvar abscess underwent simple incision and drainage (74.1% vs 19.1%,  $p < 0.001$ ). None of the patients in either group was re-admitted postoperatively.

The etiology of Bartholin gland abscesses is known to be polymicrobial. Anaerobes, in particular, the Bacteroides species, have been shown in the past to be commonly isolated from such abscesses [9]. Previous published data regarding the implicated pathogens in Bartholin gland abscesses are relatively scarce. In our study, Escherichia coli was the single most common pathogen cultured from Bartholin abscesses (59/267, 22.2%) while Streptococcus was predominantly the most prevalent in the non-Bartholin abscesses (26/27, 96.3%). Our findings are in agreement with studies by Kessous et al. [9] in 2013 and Tanaka et al. [10] in 2005.

Anaerobic bacteria have been implicated as the most common microorganisms isolated from Bartholin gland abscesses in several studies. In contrast, in vulvar abscesses the microbiology consists primarily of MRSA, enteric gram-negative aerobes, and female lower genital tract anaerobes [1-3,9,10]. Anaerobic bacteria can easily be overlooked or missed unless the specimen is properly collected, identified, and transported to the laboratory, preferably using dedicated anaerobe culture systems. Specimens must then be appropriately processed for anaerobe recovery. In our study, less than 60% of Bartholin abscess cultures and less than a third of the non-Bartholin abscess cultures were positive. This could represent an underestimation of anaerobes compared with studies performed in settings dedicated for anaerobe recovery [19].

Some authors reported sexually transmitted microorganisms such as Neisseria gonorrhoea and Chlamydia trachomatis as the initiating microorganisms in Bartholin abscesses [20,21]. In our study, there were no positive cultures for common sexually transmitted infection pathogens. This is in agreement with other similar reports [9,10].

Our study offers several strengths. Our data included a relatively large sample size that has a major effect on current published data regarding the clinical manifestations and management of Bartholin gland and non-Bartholin vulvar abscess, given the limited existing literature. In addition, data in this study are based on physician-generated reports during the primary diagnosis and treatment of patients, which makes the potential for recall and selection bias less likely.

The main limitation of this study is its retrospective design. Inadequate testing for sexually transmitted disease or initiation of antibiotic treatment prior to testing may have been responsible for some of the negative bacterial cultures. Follow-up data, including future relapses, were not available at the time of the study. In our study, only 57.7% and 33.3% of Bartholin and non-Bartholin abscess cases had positive cultures. However, this is similar to other published data. In a study by Kessous et al. [9], 61.8% of cases had positive cultures. Bhide et al. [3] reported positive cultures in 73.3% of cases. In a previous study by Bleker et al. [20], less than half of the cases had positive cultures. Another limitation of the study is the possibility of underestimation of anaerobic bacteria. These limitations should be addressed in future studies.

In conclusion, Bartholin abscess and non-Bartholin vulvar abscesses are two separate entities, with different anatomy, clinical characteristics and mode of treatment. Additional large population-based studies are required in order to better characterize vulvar Bartholin and non-Bartholin abscesses.

## Tables

**Table 1:** Demographic characteristics of patients with Bartholin and non-Bartholin vulvar abscess

Parameter	Bartholin abscess (n=267)	Non-Bartholin vulvar abscess (n=27)	pvalue
Age	33.5±12.1	35.2±13.2	0.51
Parity	1.3±1.5	1.9±2.3	0.22
Number of episodes	1.1±0.4	1.0±0.2	0.13
Contraception			
OCP	44 (16.5)	2 (7.4)	0.22
IUD	19 (7.1)	0 (0)	0.15

Data are presented as mean±SD or n(%).  
OCP: oral contraceptive pill; IUD: intrauterine device

**Table 2:** Clinical characteristics of patient with Bartholin and non-Bartholin vulvar abscess

Parameter	Bartholin abscess (n=267)	Non-Bartholin vulvar abscess (n=27)	p value
<b>Symptoms</b>			
Pain	152 (56.9)	12 (44.4)	0.21
Pain+swelling	16 (6.0)	4 (14.8)	0.08
Pain+swelling+erythema	12 (4.5)	5 (18.5)	0.003
Swelling	81 (30.3)	2 (7.4)	0.01
Fever	34 (12.7)	4 (14.8)	0.76
Leukocytosis	149 (55.8)	10 (37.0)	0.06
<b>Treatment</b>			
Antimicrobial treatment	202 (75.7)	18 (66.7)	0.31
Incision and drainage	51 (19.1)	20 (74.1)	<0.001
Marsupialization	216 (80.9)	7 (25.9)	<0.001
<b>Positive cultures</b>			
Total bacteria	154 (57.7)	9 (33.3)	0.015
Escherichia coli	59 (22.1)	6 (22.2)	>0.99
Streptococcus	27 (10.1)	26 (96.3)	<0.001
Staphylococcus	10 (3.7)	1 (3.7)	0.99
Klebsiella	15 (5.6)	0 (0)	0.21
Enterococcus	17 (6.4)	0 (0)	0.18
Bacteroides	3 (1.1)	0 (0)	0.58
Citrobacter	4 (1.5)	0 (0)	0.52
Diphtheria	5 (1.9)	0 (0)	0.47
Hemophilus	10 (3.7)	0 (0)	0.31
Proteus	5 (1.9)	0 (0)	0.47
Other	8 (3.0)	2 (7.4)	0.23
Polymicrobial	8 (3.0)	1 (3.7)	0.09

Data are presented as n(%).

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