

Feasibility and Satisfaction With the Word Catheter in Treatment of Bartholin's Cyst and Abscess

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Abstract. *Background/Aim:* The Word catheter is a silicone device with a balloon system that may be inserted into a Bartholin's cyst or abscess in order to provide drainage and epithelization. The aim of this study was to evaluate the Word catheter as a therapy for Bartholin's cyst and abscess. Both patient and physician satisfaction, as well as the feasibility in an outpatient setting, were examined. *Patients and Methods:* A total of 51 women with a Bartholin's cyst or abscess were given the option of Word catheter insertion in an outpatient setting between August 2013 and March 2018. Both the patients and the consulting physicians were asked to complete two questionnaires, before, during and after treatment, with a view to evaluating the overall pain level, any discomfort symptoms and sexual activity, as well as satisfaction levels. *Results:* The insertion procedure seemed to constitute a short yet quite painful procedure. In most cases, the consulting physicians and the patients were content with the results. Nevertheless, dislodgement of the catheter or abscess recurrence were common. The removal of the Word catheter seemed to be short, painless, and uncomplicated. Most patients experienced pain and discomfort after catheter placement over the first days, with the symptoms fading over time. Sexual intercourse appeared to be negatively influenced. *Conclusion:* The Word catheter

was frequently well tolerated for the treatment of Bartholin's cysts and abscesses, with few non-serious side-effects, however, it did interfere with sexual health. Nonetheless, it may not be possible to make general recommendations based on this exploratory study.

The Bartholin glands, which are homologs of the male bulbourethral glands, are located at the 4 and 8 o'clock positions of the labia minora on either side (1, 2). They drain through ducts that are 2.0 to 2.5 cm long. The impalpable glands are typically pea-sized and rarely larger than 1 cm (2). The Bartholin glands secrete vaginal-lubricating mucus during arousal and intercourse (2, 3). Bartholin duct cysts and gland abscesses occur in 2% of all female patients (1, 4). When the ducts leaving the Bartholin glands are blocked, cysts and, when infected, abscesses can form inside the gland. In sexually active women, ductal obstruction due to friction during sexual intercourse is a common cause of Bartholin duct cysts and gland abscesses (2). Cysts do not always precede abscesses, which occur three times more frequently (1, 3, 5). Abscesses are typically caused by opportunistic single- or multi-microbial organisms, with *Staphylococcus aureus* and *Escherichia coli* being the most common (5-8). In a small number of cases, sexually transmitted infections are responsible (1, 2, 6). The size and depth of the cyst or abscess influence its clinical presentation. Symptoms, such as dyspareunia, vulvar pain, or pain while standing or sitting may accompany unilateral, medially protruding vulvar swelling. Patients with an abscess may also exhibit fever (7, 9, 10). The cyst's size, symptoms, patient's age, and history of recurrence play a role in determining the appropriate management (5). Small surgical procedures and excisions may be necessary for larger cysts and abscesses in women under the age of 40 years who are asymptomatic (1, 5, 9, 11, 12).

The Word catheter, which Buford Word first described in 1968 (13), is widely used in the United States and Europe (14). This catheter is a 5.5-cm-long, 15-French silicone

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Table I. *Questionnaire used as a pain diary.*

Pat. Barcode	
Please complete the form daily in the first week, then once a week thereafter. Important: Please bring the form with you to the final outpatient check-up	
Day 1	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 2	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 3	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 4	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 5	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 6	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 7	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	
Day 14	
The catheter causes me pain	Not at all – a little – partially – painful – very painful
Pain from 0 (not at all) to 10 (maximum)	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
I perceive the catheter as a foreign body	No – a little – partially – yes – very much
The catheter causes a feeling of pressure	No – a little – partially – yes – very much
Do you take painkillers? If yes, which ones and how often:	

Table I. *Continued*

Table II. Questionnaire for physician's evaluation.

CASE REPORT FORM			
Pat. Barcode	Date:		
Age	Height		Weight
Smoking	No	Yes	Pack-years
Diabetes mellitus	No	Yes	
Prior Bartholin's cyst or abscess	No	Yes	How often
Day 0: Study inclusion/Word Catheter position – Date:			
Initial assessment			
Pain (Pain-Score 0-10):	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Diameter of the cyst (clinical estimation in cm):			
Already perforated?	No	Yes	
Bleeding	No	Yes	
Questionnaire/Diary received	No	Yes	
Insertion of Word catheter			
Uncomplicated	No	Yes	
Difficulty level of insertion	Not at all – a little – medium – difficult – very difficult		
Problems (Free text)			
Anesthesia	No – Spray – Injection – other:		
Pain during insertion	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Length of the procedure (in min)			
Satisfaction level			
Physician	Not at all – a little – medium – satisfied – very satisfied		
Patient	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		
Pain after the insertion	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Day 28: Catheter removal – Date:			
Final evaluation			
Pain (Pain-Score 0-10):	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Word catheter still <i>in situ</i>	Yes	No, Loss on day:	
Recurrence signs	Yes	No	
Questionnaire/Diary collected	Yes	No	
Removal of Word catheter			
Uncomplicated	Yes	No	
Difficulty level of removal	Not at all – a little – medium – hard – very hard		
Problems (Free text)			
Pain upon removal	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Length of the procedure (in min)			
Satisfaction level			
Physician	Not at all – a little – medium – satisfied – very satisfied		
Patient	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		
Pain after the removal	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Unplanned hospital admission – Date:			
Reason for the visit (Free text):			
Pain (Pain-Score 0-10):	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Word catheter still <i>in situ</i>	Yes	No, Loss on day:	
		Placement of a new catheter	
		Marsupialization	
Recurrence signs	No	Yes	
		Placement of a new catheter	
		Marsupialization	

Table II. Continued

Table II. *Continued*

Reduction of catheter-volume	No	Yes	
Exclusion from the study	No	Yes, Reason:	
Questionnaire/Diary collected	Yes	No	
Removal of the Word catheter			
Uncomplicated	Yes	No	
Difficulty level of removal	Not at all – a little – medium – hard – very hard		
Problems (Free text)			
Pain upon removal	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
Length of the procedure (in min)			
Satisfaction level			
Physician	Not at all – a little – medium – satisfied – very satisfied		
Patient	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		
Pain after the removal	0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10		
<hr/>			
Check-up after 6 months – Call-Date:			
Recurrence	No	Yes - When:	- Treatment method:
Satisfaction level	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		
<hr/>			
Check-up after 12 months – Call-Date:			
Recurrence	No	Yes - When:	- Treatment method:
Satisfaction level	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		
<hr/>			
Check-up after 24 months – Call-Date:			
Recurrence	No	Yes - When:	- Treatment method:
Satisfaction level	Not at all – a little – medium – satisfied – very satisfied		
Probability of undertaking the same procedure in the case of recurrence	Very low – low – medium – high – very high		
Probability of suggestion to other patients	Very low – low – medium – high – very high		

from the incision site. Another was also excluded from the study as the patient was not compliant during Word catheter placement after abscess incision. The remaining 49 women [mean age=43.8 (range=19-76) years] provided their consent to participate in the study and constitute the study population for this research. The mean body mass index of the included patients was 21.6 kg/m², eight patients were smokers, while no patient was diagnosed with diabetes. At the initial presentation, none of the patients had any clinical evidence of secondary genital infections. Nineteen patients reported they had suffered from empyema at least once in their life before. The lesions had a median diameter of 3.8 (range=2-8) cm. The insertion of the catheter was only complicated in five cases (11%) due to factors, such as deep localization or size of the abscess, incision length, bleeding from the incision site, or pain during the placement procedure, which were the most common reasons.

Using a VAS, women mostly assessed the procedure as a short but still moderately painful, with a mean pain score of 4.9 (range=0-10). In the majority of cases (88%), both the consulting physician and the patients expressed satisfaction with the procedure outcome. On a scale ranging from 1 (low) to 5 (high), only 2% of patients rated it as 1, 9% as 3, 27% as 4, and 61% as 5. Patients also reported high satisfaction levels, with 88.9% giving a satisfaction score of 4 or 5 on a scale from 1 to 5. Additionally, they generally recommended this alternative treatment to other patients, with only 2% giving it a score of 1, 6.7% a score of 3, 40% a score of 4, and 51% a score of 5.

On day 28, a total of 24 patients presented again at our Department for the removal of the Word catheter. Only 14 cases had not lost the Word catheter during the follow-up time period, while abscess recurrence was observed only in one patient. The removal of the Word catheter was

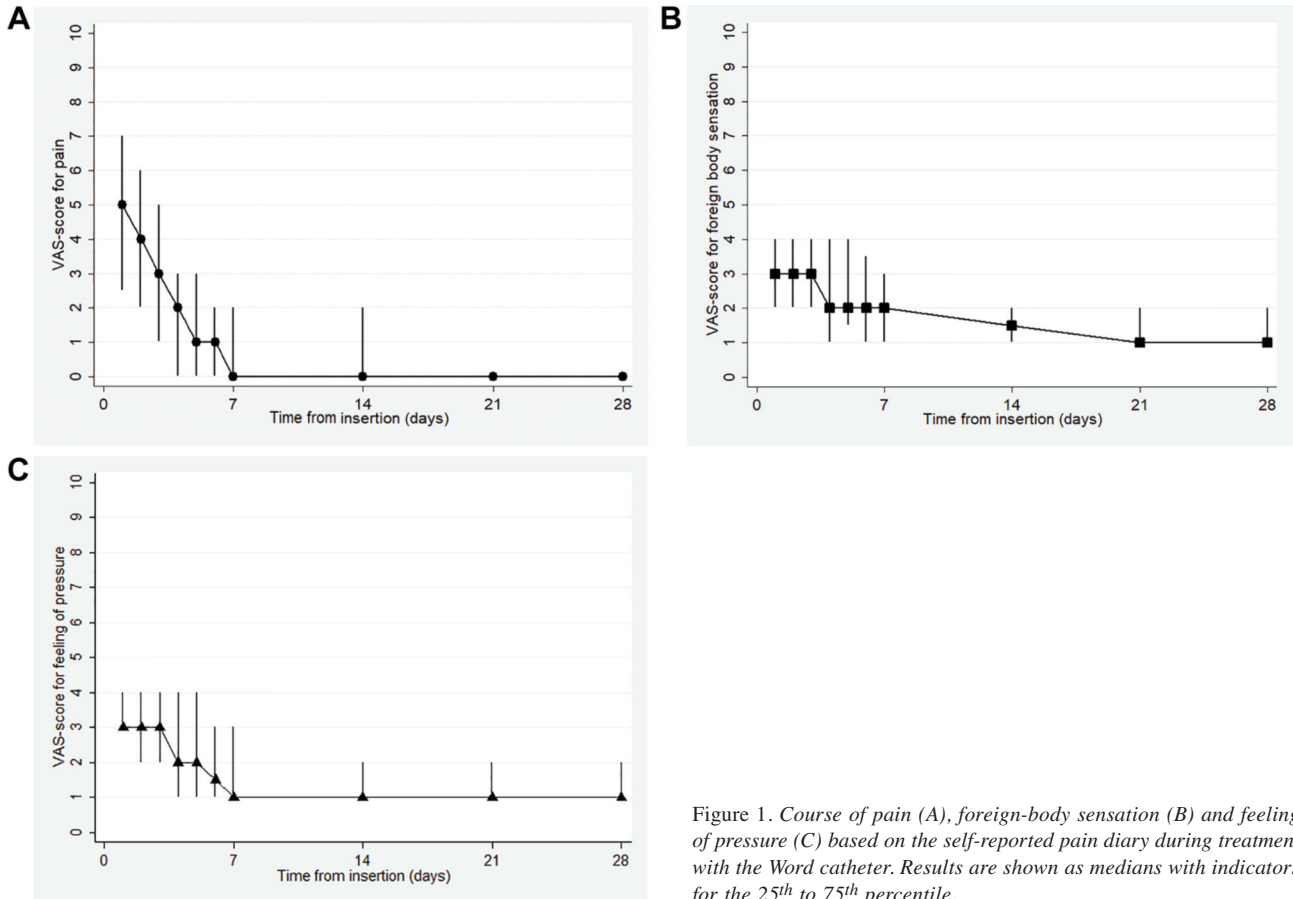


Figure 1. Course of pain (A), foreign-body sensation (B) and feeling of pressure (C) based on the self-reported pain diary during treatment with the Word catheter. Results are shown as medians with indicators for the 25th to 75th percentile.

characterized as a short, painless, and uncomplicated procedure by all patients.

Figure 1 illustrates the progression of the pain scores over 28 days. Figure 2 displays the analgesic needs of the affected women during the treatment period. The median pain score at initial presentation prior to catheter insertion was 7 (range=1-10). Upon catheter placement, pain levels decreased from a median of 5 (range=0-10) on the first day after treatment to 0 (range=0-9) on day 7, and this median score remained at 0 until day 28 (Figure 1A). As for the sensation of a ‘foreign body,’ the median discomfort score was 3 (range=1-5) on day 1 and decreased to 1.5 from day 14 onwards (Figure 1B). The same trend applied to the ‘feeling of pressure’, with a median score of 3 on day 1, decreasing to a median score of 1 from day 7 onwards (Figure 1C).

Out of 32 patients, nine reported having engaged in sexual intercourse during the 1-month observation period. Of these sexually active patients, seven (and/or their partners) reported that the Word negatively influenced their sexual experience.

Discussion

The present study examined the feasibility and satisfaction levels of patients and their consulting physicians in terms of Word catheter placement as an alternative treatment method for Bartholin’s cysts and abscesses. The insertion procedure seems to have constituted a short yet quite painful procedure. In most cases, both the consulting physicians and the treated women were content with the procedure results. However, it is not uncommon for women to inadvertently dislodge the Word catheter before the planned removal or experiencing recurrence of an abscess. The removal of the Word catheter seems to have been a short, painless, and uncomplicated procedure. The majority of patients mostly experienced pain and discomfort for the first few days after catheter placement, with the symptoms fading over the course of time, alongside the necessity for pain medication. Sexual intercourse seems to have been negatively influenced by the presence of the Word catheter.

To date, only three relevant studies have been published on the exclusive role of the Word catheter in the therapy of

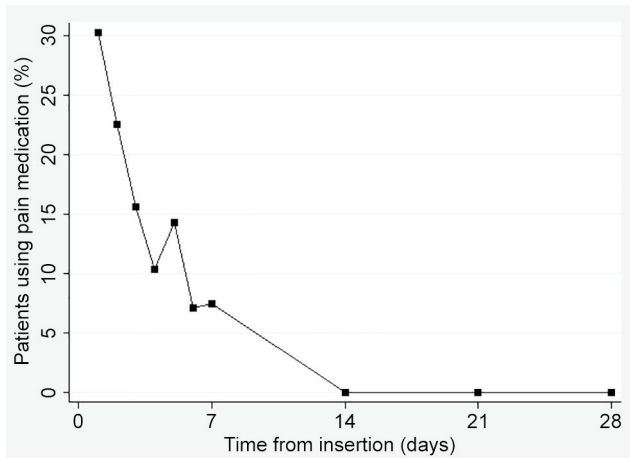


Figure 2. Percentage of patients using pain medication with the Word catheter in situ.

Bartholin's cysts and abscesses. Reif *et al.* assessed the quality of life and sexual activity during treatment of Bartholin cysts and abscesses with the Word catheter. They concluded that the Word catheter is well tolerated for the treatment of Bartholin's cysts and abscesses, with few not serious side-effects and little impingement on the patient's sexual activity (15). In their second publication, the Austrian study group emphasized that the Word catheter represents an easy to handle, cost-effective outpatient procedure with low short-term recurrence rates. The treatment costs were found to be seven times lower than those for marsupialization (4). Similarly, Haider *et al.* inserted a Word catheter in a total of 35 patients, 27 of whom retained their catheter for 4 weeks. Abscess resolution occurred in almost all cases and no woman reported significant discomfort at day 7. A total of 24 patients said that if they suffered a recurrence, they would have another Word catheter inserted again. Three women had intercourse within the second week of catheter insertion and did not face any discomfort (14).

Several studies have additionally compared the efficacy of Word catheters *versus* marsupialization in the treatment of Bartholin cysts or abscesses. In a retrospective cohort study, Karsbük *et al.* concluded that the Word catheter group had higher recurrence rates and dissatisfaction levels, with the only advantage being its shorter operation time (16). On the contrary, Rotem *et al.* conducted a retrospective cohort database study and reported no differences in clinical and microbiological features, recurrence rates, recurrent admissions or postoperative complications between patients treated with Word catheters and those receiving marsupialization (17). Kroese *et al.* initiated a multicenter, open-label, randomized controlled trial and highlighted that in women with an abscess or cyst of the Bartholin gland, treatment with Word catheter and marsupialization resulted in comparable recurrence rates

(18). Boama *et al.* even noted that in comparison with marsupialization under general anesthetic, the mean clinical time saved from admission to insertion of Word catheter as an office procedure was 15 h and 40 min, while the mean clinical time saved from admission to discharge was at least 1 day. Notably, very few minor complications and no major complications were observed in the Word catheter group (19).

Illingworth *et al.* conducted a systematic review of the literature to evaluate various treatment modalities for Bartholin's cyst or abscess. They suggested that when comparing marsupialization with incision, drainage and insertion of a Word catheter, the recurrence rates were similar between the studied groups. Unfortunately, there was limited reporting on secondary outcomes including hematoma, infectious morbidity, and persistent dyspareunia (20).

Our data are consistent with internationally published data on patients' quality of life following Word catheter insertion for Bartholin's cyst or abscess. Even though our study included a patient collective consisting of a total of 51 women, no control or marsupialization group was available for data analysis, which would have allowed for randomization of the study population. Furthermore, different physicians with varying experience levels performed the procedures, leading to a high inter-examiner variability in terms of catheter placement evaluation by the consulting gynecologist. It is worth noting that most patients were not reached in the long-term follow-up for questionnaire completion (*i.e.* they were lost to follow-up).

Conclusion

All in all, the results show that the Word catheter is frequently well tolerated for the treatment of Bartholin's cysts and abscesses, with few non-serious side-effects, but it does interfere with sexual health. However, it may not be possible to make general recommendations based on this exploratory study. Further large-scale, randomized-controlled studies are still required in order to reach safe and reproducible results.

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Conflicts of Interest

The Authors declare no conflicts of interest.

Authors' Contributions

I.P.: Writing—original draft preparation; J.E., J.P., S.K.: investigation (data collection); S.K.: conceptualization, investigation, and writing; G.L.: statistical analysis; T.H., J.E., S.K.: review, editing, formal analysis and supervision. All Authors have read and agreed to the published version of the article.

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