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ORIGINAL ARTICLE

Simple posterior vestibuloplasty for central introital dyspareunia

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Abstract The aim of this study is the evaluation of a simple surgical widening plasty of the posterior vestibulum for central introital dyspareunia. This study takes place in gynecological infectious diseases clinic in secondary and tertiary care centers. The subjects are one hundred forty-five consecutive patients with introital pain during or when attempting sexual intercourse. One-digit examination of the posterior hymenal rim of the vulva elicits the specific pain and clinical examination reveals nothing abnormal or only focal redness on the central posterior vestibulum. This condition should be clearly differentiated from the focal-provoked vestibulodynia, although mixed forms are frequent. A questionnaire was composed to assess the level of pain experienced during intercourse and of satisfaction of their sexual life in general at 1 to 3 years after the intervention. After a mean of 3 years, 90% of the patients were very satisfied with the improvement of the sexual health due to the intervention. Eighty percent had less pain during intercourse. The proportion of patients forced to interrupt sexual intercourse because of pain dropped from 64% to 26% ($p<0.0001$). The number of women only having infrequent intercourse (once a month or less) decreased more than fourfold and the mean number of occasions that sexual intercourse took place increased by 27% after the intervention. Simple surgical widening plasty of the posterior vestibulum without excision of tissue led to a significant improvement of the sex life of at least 80% of a group of women with primary and secondary central introital dyspareunia of any cause. Correct and specific diagnosis is crucial prior to any intervention.

Keywords Vulvar vestibulitis syndrome · Focal vulvodynia · Dyspareunia · Sexual dysfunction · Vestibuloplasty · Hymen · Painful intercourse

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Background

Painful sexual intercourse can be due to deep uterine pain (e.g., pelvic inflammatory disease, endometriosis), vaginal pain (burning upon friction, usually caused by vaginitis), and introital pain (upon intromission of penis, finger, or device). Introital dyspareunia can have several causes. Classical reasons are a congenitally narrow or imperforate hymen, infections like candidiasis, genital herpes, and large or surinfected genital condylomata, or abnormal healing after previous surgery or trauma. After exclusion of these, two distinct clinical entities have to be differentiated as main reasons for idiopathic introital pain in the majority of women.

One, the most widely discussed in the current literature, is “focal provoked vestibulodynia”. Focal provoked vestibulodynia (formerly also called: vulvar pain syndrome [1], vulvar vestibulitis syndrome [2–4], focal vulvitis [5], erythematous vulvitis [6], vulvar hyperesthesia syndrome [7], and idiopathic vulvodynia [8]) reveals typical focal zones in the lateral vestibulum that are extremely painful upon touch [9]. Typically, but not in every case, sharply demarcated dark red areas can be visualized at the 5 and 7 o'clock areas of the vestibule (overlaying the orifice of

Bartholin's glands), but in severe cases, hypersensitive areas even extend to the 1 and 11 o'clock areas, adjacent to the urethral meatus. Due to these specific findings, we speculated that the etio-pathogenesis of focal provoked vestibulodynia may be related to the outlet of the underlying glandular ducts (Bartholin and Skene's glands) that may express higher sensitivity than the surrounding ectodermal tissue because of their mesodermal origin [10]. Chronic inflammation [11], latent human papillomavirus infection [12], psychosexual dysfunction [12], and hormonal factors [13] resulted in a wide variety of treatment proposals such as interferon injections [14], antiviral therapy [15], psychotherapy [16], laser therapy [11, 17], and electromyography biofeedback of the pelvic muscles [18]. Treatment of this condition is enigmatic. Mostly conservative treatment like medical therapy, physiotherapy, behavioral therapy, etc. are tried, but if unsuccessful, surgical excision of large parts of the vestibulum have been performed with success in some [19–26], and high failure rates in other studies [27]. Former studies of surgical techniques not involving excision of tissue were also not entirely successful [28–30].

The other main type of idiopathic introital dyspareunia is located at the 6 o'clock region of the introital area. This condition is recognized by stiff rim on the posterior vestibulum at 6 o'clock (hymenal remnant), and has to be clearly distinguished from the laterally situated, "focal provoked vestibulodynia" as described above. This central form of introital dyspareunia causes excruciating pain when surpassing the posterior hymenal rim from inside out and from outside in with an examining finger, and may be accompanied with a tender redness of the fossa navicularis in front of it. In order to differentiate this condition from "focal provoked vestibulodynia", we refer to this condition as "central introital dyspareunia" in the present contribution. Central introital dyspareunia may be primary (present since first sexual encounter) or acquired (secondary), and consists of a mechanical limitation of widening of the posterior entrance of the vagina due to decreased elasticity or increased fibrosis. Typically the condition is linked with later sexual debut [31]

In some patients, both pathological conditions co-exist in the introital area, consequently necessitating combinations of treatments. In the present contribution, we tested whether a simple non-excisional widening plasty is a valuable primary treatment option for central introital dyspareunia.

Patients and methods

One hundred forty-five women with introital dyspareunia were seen over a 5-year period at the vulvovaginitis clinic of Gasthuisberg University Hospital in Leuven and the Regional Hospital Heilig Hart Tienen, Belgium.

Women diagnosed with central introital dyspareunia complained of painful intromission of the penis, tampon, finger or a sex tool, without overt pain or redness in the lateral parts of the vestibulum. Sometimes the pain reduced somewhat when intercourse was continued after intromission, but in many women severe burning returned after intercourse, to last for up to 24 h. Often symptoms were progressive, leading to complete inability to have intercourse, as any attempt to enter the vaginal canal had to be inevitably interrupted due to unbearable pain. All women who responded positively to pain mimicked by gentle touching of the posterior vulvar vestibulum (also called commissura posterior, or posterior "fourchette") with one finger, at or just proximally to the hymenal remnants, were invited to be included in the study. When a lubricated finger was slid towards the vaginal lumen, excruciating pain was noted at the moment the hymenal border was crossed. When the sore area was avoided, the finger was slid gently back and forth in the vagina to test whether this caused friction pain (vaginal dyspareunia), and palpated the cervix and adnexae to exclude deep or cervical dyspareunia. Those experiencing vaginal friction pain in the absence of introital pain or deep pain on touching the cervix were excluded from the study.

Patients with clinically apparent herpes genitalis, genital warts, trichomoniasis, or candidiasis were excluded from participation.

The patients were invited to undergo a minor surgical intervention under local anesthesia with 5 ml 1% xylocaine with 1/10,000 adrenaline (Fig. 1a) and signed an informed consent explaining the surgical technique and possible disadvantages. With the posterior commissura held under tension, a craniocaudal incision of about 4 cm was made in the mucosa and underlying muscle (Fig. 1b). Care was taken not to damage the deeper levator ani and anal sphincter muscles and at the same time ensure that the incision reached well over the hymenal border, up to 2 cm up the in the mucosa of the vaginal canal, including the underlying musculosa. The muscular zone underneath the mucosa was left unsutured, and hemostasis by ligation was sporadically done if a deep artery had been transected. One side-to-side vicryl 3.00 suture reinforced the tip of the mucosal incision (Fig. 1c). The mucosa was than attached to the skin, without traction, by 10 to 12 separate vicryl 3.00 stitches (Fig. 1d). No tissue was resected. Any sutures that had not already been fallen out were removed at postoperative day 10.

At 1 to 5 years after the intervention (mean of 3.2 years), a questionnaire about the quality of their sexual life was sent to all patients. The questionnaire and the protocol were approved by the ethical committee of the Heilig Hart Hospital.

Chi square or Fisher T was used for statistical comparison for dichotomous variables, and Student's t or Welch's equation for continuous variables.

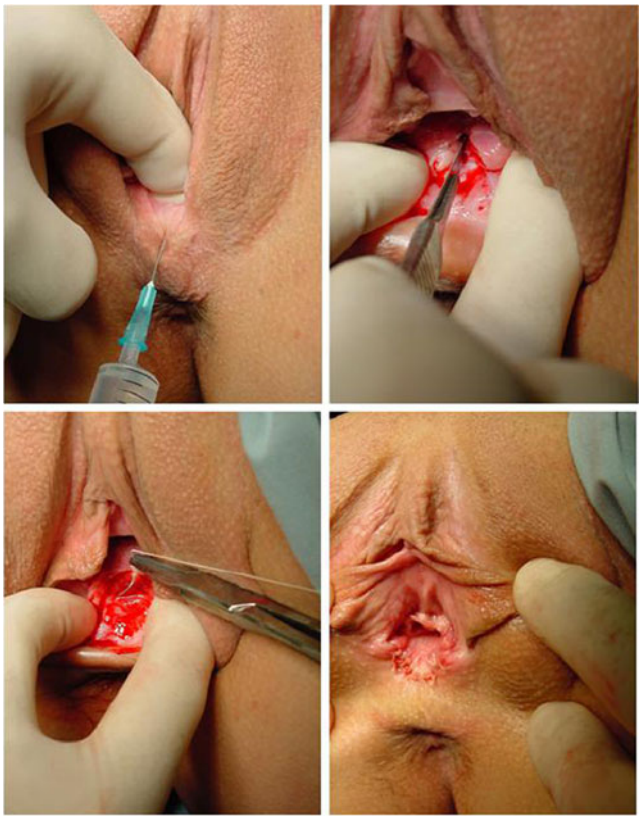

Fig. 1 Description of the surgical widening plasty of the vulvar vestibulum. **a** injection of 5 ml 1% xylocaine at the vulvar vestibulum. **b** Longitudinal incision of the mucosa and underlying muscle over a length of 4 cm and depth of about 1.5 cm. **c** Approaching the mucosa and skin horizontally with individual Vicryl 3:00 sutures, leaving the underlying musculosa unsutured. **d** End result

Findings

Full demographic description of the population has been published elsewhere [24]. The mean age of the patients was 32.1±13.0 years. Data were returned and fully analyzable in 101 women, 88 (87%) of whom were suffering from dyspareunia for more than 3 months and 35% for more than 1 year (Table 1).

Of the 89 women answering the questions about their sexual wellbeing both before and after the intervention, 45 (51%) responded that they were suffering from painful intercourse since the first sexual contact they ever had (primary dyspareunia). Of the 44 women with secondary dyspareunia (49%), 15 (15%) had first experienced pain after a delivery, 7 (8%) after a genital infection, and 4 (4.5%) after a gynecological operation. The majority of the patients experienced a genital infection in the past (Table 1).

Subsequent to the surgical intervention, 66% of the respondents suffered postoperative pain, bleeding, or difficulty in sitting or working during the first week, 39/89 (44%) had some complaints lasting for 2 weeks and 10% had some discomfort for as long as 6 weeks.

Before the intervention, 20% had intercourse only once a month or less. After the intervention, this proportion decreased to 5.3% (OR 0.23, CL^{95} 0.06–0.83, $p=0.02$, Table 2). Of the 60 women that tried intercourse and answered both questions before and after the intervention, the mean number of occasions of intercourse per year increased from 59 before the intervention to 76 thereafter ($p=0.06$). Interruption of intercourse because of pain decreased from 74% to 36% (OR 0.2, CL^{95} 0.09–0.43, $p<0.0001$), and the number of women who did never have to quit intercourse rose from 26% to 64% (OR 5.5, CL^{95} 2.3–11.2, $p<0.0001$, Fig. 2). The biggest improvement was seen among those who had to interrupt intercourse very frequently: OR 0.14 (CL^{95} 0.06–0.35, $p<0.0001$).

When pain was compared before and after the intervention, 78% responded that there was less pain, 19% that it remained similar, and 3% that it had worsened. The overall level of satisfaction was assessed on a scale from 0 to 10 (Fig. 3): 88.3% were very satisfied, 11.7% moderately satisfied, and none were dissatisfied.

Seven patients had a second intervention because the problem of dyspareunia had not been solved. Most of these patients had been warned that full solution of their problem might not be achievable in one single intervention due to anatomical restrictions. Further questioning by telephone revealed that at least five of seven had improved and were satisfied after the second intervention.

Discussion

Although numerous techniques and methods are described in the literature, in general, the treatment of dyspareunia rarely leads to satisfactory results. With a simple technique, we cured four of five women with central introital dyspareunia, a frequent problem that outnumbers all other causes of dyspareunia. All patients underwent the same surgical procedure, whatever other unknown underlying causative factor could have been present.

This study has obvious disadvantages. First of all it misses a “randomized, blinded, controlled” set-up. However, after 20 years of experience with care for these patients, and after continuous improvement of the surgical technique we did not consider it ethical to submit our patients to a trial where a beneficial simple surgical procedure is compared with repetitive medical treatments (or a “sham” operation), as most of our patients had already been trying a myriad of medical treatments already. Even composition of a “control group”, e.g., women followed up for the condition without receiving the surgical intervention, would have been difficult to accomplish, as women are suffering from this condition for

Table 1 Characteristics of 101 women with central introital dyspareunia who filled out and returned the questionnaire

	Number (percentage)
Obstetrics	
Parous	31/101 (31%)
Episiotomy	17/31[a] (55%)
Tear	7/31[b] (23%)
Previous genital infections	
Candidiasis	56/101 (56%)
Bacterial vaginosis	15/101 (15%)
Genital warts	4/101 (4%)
Herpes genitalis	4/101 (4%)
Other	10/101 (10%)
Introital dyspareunia since first sexual contact (first sexual partner)	45/89 (51%)
Secondary introital pain	44/89 (49%)
Since delivery	15/44 (34%)
Since operation	4/44 (9%)
Since genital infection	7/44 (16%)
Other incident	18/44 (41%)
More than one lifetime partner	37/75 (49%)
Introital pain with all partners	24/37 (65%)
Introital pain with subsequent, but not with first partner	13/37 (35%)
Sought medical advice of self-treatment	63/101 (63%)
Advice to see psychiatrist	16/94 (11%)
Gone to psychiatrist	6/94 (6%)
Duration of dyspareunia before diagnosis	
More than 3 months	88/101 (87%)
More than 1 year	35/101 (35%)

[a]Seven had espisiotomy twice

[b]One had a tear twice

months to years, and have seen so many therapists that they finally expect an active and efficient approach. Furthermore, the likelihood that women would have gone better without the operation seems very remote, given the fact that most patients were suffering for years with progressive symptoms, often finding themselves in a situation where sexual intercourse was barely or not at all possible anymore. Secondly, for some it may come as a surprise that one quarter of the women is able to end the act of intercourse despite they suffer from pain. Indeed, the inclusion criterion was pain at intromissive intercourse of long duration (longer than 6 months). Not all patients with painful intercourse stop the action. Some have only pain at initial intromission of the penis, but experience less pain when intercourse continues, to be followed again by severe burning and pain after intercourse. Also, some suffer until the sexual act is done, more to please their partner than for own pleasure. Finally, one could argue that patients may have a recall bias or may overestimate their current sexual activities. However, one has to reckon that these patients have been submitted to so many therapists before that they rather tend to mistrust yet another "new approach", instead of being overly optimistic, as so many former therapies have created false hopes of miracles going to happen. Also for many patients, it was a giant step to accept the idea of a surgical intervention, and most needed weeks or months to think it over before accepting.

Table 2 Markers of sexual activity before the intervention and at a mean of 3.2 years after the intervention

	Before intervention	After intervention	
Infrequent coitus (less than once a month)	12/60 (20%)	3/56 (5.3%)	OR 4.4 (1.2–16.6) p=0.026
Number of coital encounters per year	59	76	OR 1.36 (0.94–1.99) p=0.06
Sometimes had to interrupt sexual intercourse due to pain	43/53 (74%)	21 (36%)	OR 0.2 (CL 0.09–0.4) p<0.0001
Most of the time have to interrupt sexual intercourse due to pain	31/58 (53%)	8/58 (14%)	OR 0.14 (0.06–0.35) p<0.0001
Never interrupt sexual intercourse due to pain	15/58 (26%)	37/58 (64%)	OR 5.5 (2.3–11.2) p<0.0001

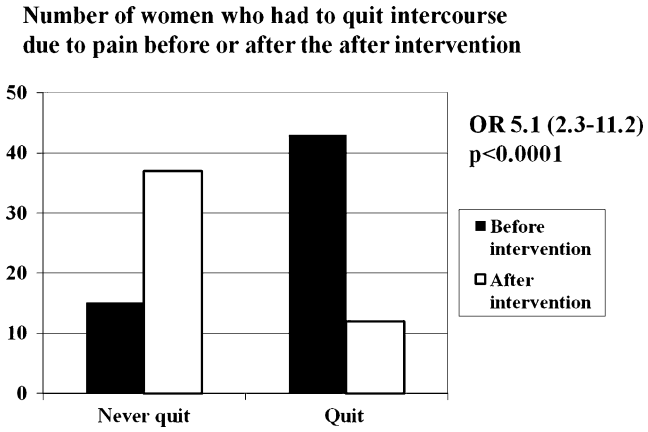

Fig. 2 Improvement of sexual health by assessment the frequency women had to quit the attempt of intercourse before and after the operation

The technique under discussion is based on a simple widening plasty of the posterior vulvar introitus, basically involving vertical transsection of the posterior hymenal remnants and underlying muscular layer, followed by horizontal repair of the mucosa only. Only a minimum of suturing material is required, self-resorbable or to be removed after 10 days. The technique differs from other techniques in that (1) it does not involve resection of tissue, (2) leaves the split underlying muscular layer unsutured, and (3) sutures the wound horizontally, thereby slightly widening the vestibulum.

The technique is performed under local anesthesia and is well tolerated. Still, 44% suffered some postoperative discomfort for more than 2 weeks, implying that adequate pre-operative counseling about possible discomfort on work, planned holidays, and sport activities is imperative and postoperative pain medication must be prescribed. In the long term, in patients who were extremely satisfied, eight out of ten responded their pain had strongly diminished or disappeared. Global satisfaction after 3 years was 90%, and only seven patients underwent a second intervention, causing further improvement in five. Most of these women were told before the first intervention that a second intervention might be necessary because they had a severe constriction precluding total repair in one session.

Less pain on attempting intercourse also resulted in less occasions where sexual intercourse had to be interrupted due to pain. After 3 years, the number of patients having infrequent sex declined fourfold, and the mean number of successful sexual contacts had increased by 27%. These data suggest that women with introital dyspareunia have less sex because they anticipate that intercourse will be painful. Some authors have suggested that patients experiencing painful intercourse and decreased sexual activity or libido suffer "vaginism" or "frigidity" and need psychotherapy [16]. One in five of our patients was sent to a psychiatrist or had admitted of visiting one. We consider it more likely that most of these women simply became hopeless due to unbearable pains when attempting sexual contact, turning sexual activity into a burden decreasing their desire to have or allow sex. Hence, we don't support sending these women to psychotherapists as a first option, but rather try to exactly locate the pain, assess its cause and alleviate it first. Our excellent long-term postoperative satisfaction rates seem to fully support this view.

A separate study on the socio-economic demographics of these patients showed that the severity of the dyspareunia is inversely related to the age of sexual debut [18]. Women with late sexual debute may start with a less flexible tissue, hence increasing the likelihood that when sexual intercourse is attempted, macroscopic or microscopic tearing occur more easily, calling for repetitive healing processes and fibrosis to come in. Once present, increased stiffness is likely to cause more micro-tears, burning pain, and focal redness of the vestibule, starting a vicious cycle causing fear of pain and avoidance behavior. This hypothesis also supports the logic of direct widening surgery of the vestibule, without resection of tissue, to alleviate the primary cause and the vicious circle of difficult intromission, pain, and fibrosis. A similar pathway may be put into action when a woman has intercourse during or after perineal tearing or surgery or vulvovaginitis, increasing the likelihood of fibrotic repair processes to become involved. Also, very often, it is only after detailed questioning that such women with secondary dyspareunia will admit that they indeed experienced a slight introital sensitivity, of which they always thought it was considered to be "normal" and common in all women.

Although many authors refer to the frequent psychosocial peculiarities that have to be taken into account in the management of introital pain or chronic vulvar vestibulodynia [32, 33], others have recently published very promising results of different types of surgical perineo-

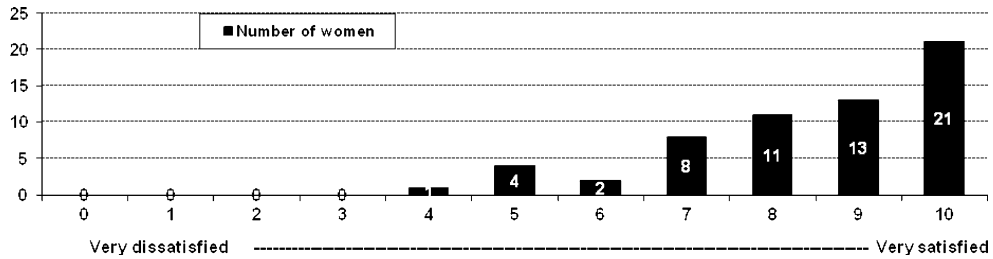

Fig. 3 Patient satisfaction after a mean of 3.2 years after the intervention: 88% were very satisfied score of 7 or above, 12% moderately satisfied (score 4 to 6), and none were dissatisfied (score below 4)

plasty operations, with success rates varying from 61% to 80% [19–29]. However it must be very clear that these papers handle (lateral) focal provoked vulvodynia as an indication, which clearly has to be differentiated from the central introital dyspareunia we discussed in this paper.

Conclusion

In conclusion, for central introital dyspareunia, a simple widening plasty of the posterior hymenal rim under local anesthesia is a treatment of choice, irrespective of the possible underlying pathophysiologic mechanisms.

Declaration of interest Prof. Donders received money to his institution for the development of educational presentations including service on speakers' bureaus and travel/accommodations expenses.

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