

# Sustainable long-term results on postoperative sexual activity after radical prostatectomy when a clinical sexologist is included in the sexual rehabilitation process. A retrospective study on 7 years postoperative outcome

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**Introduction** The aim of this study was to perform a retrospective evaluation of long-term sustainability of a postoperative combined penile and sexual rehabilitation program involving a clinical sexologist (CS) for preoperative fully potent men undergoing daVinci robotic radical prostatectomy (dVRP) regardless of whether preservation of the neurovascular bundles was performed or not.

**Material and methods** The study included 79 preoperatively potent and sexually active patients (aged 45–74 years, mean 61) that had undergone a dVRP due to localized prostate cancer and during the 1<sup>st</sup> postoperative year participated in a combined penile and sexual rehabilitation program involving a CS. The subjects were followed up with the same interview and questionnaires at approximately 1, 3 and 7 years postoperatively. The interview and questionnaires addressed erectile function (EF), erectile dysfunction (ED) treatment, frequency of penetrating sexual activity, patient's perceptions of sexual life (LISAT-8).

**Results** One year postoperatively, 84% of patients were sexually active with penetrating sex, 15% with unassisted normal erections. 45% found their postoperative sexual life satisfactory (LISAT-8, question #6). Three years postoperatively, 76 patients were evaluable, 73% were sexually active with penetrating sex, 19% with unassisted normal erections. Furthermore, 56% of patients found their postoperative sexual life to be satisfactory. Seven years postoperatively, 74 patients were evaluable, 74% were sexually active with penetrating sex, 44% with unassisted normal erections. A total of 59% of patients found their postoperative sexual life to be satisfactory. The reasons for not having penetrating sex were diverse.

**Conclusions** Involvement of a CS in a postoperative combined penile and sexual rehabilitation program appears to improve the possibility of an acceptable sexual life and function one year after surgery. These results appear to be sustainable in the long-term.

**Key Words:** prostate cancer ↔ radical prostatectomy ↔ postoperative sexual function  
↔ sexual rehabilitation ↔ long-term follow-up

## INTRODUCTION

Prostate cancer is the most common cancer among Swedish men [1]. Around 10 000 cases are diagnosed yearly and over 50% of these men will receive curative treatment either with radiation or surgery [1].

The surgical treatment, radical prostatectomy (RP), is often associated with erectile dysfunction (ED). This is caused by surgical trauma to the neurovascular bundles (NVB) that mediate the normal spontaneous erectile response [2, 3]. Attempts may be made at the time of surgery to preserve these bundles

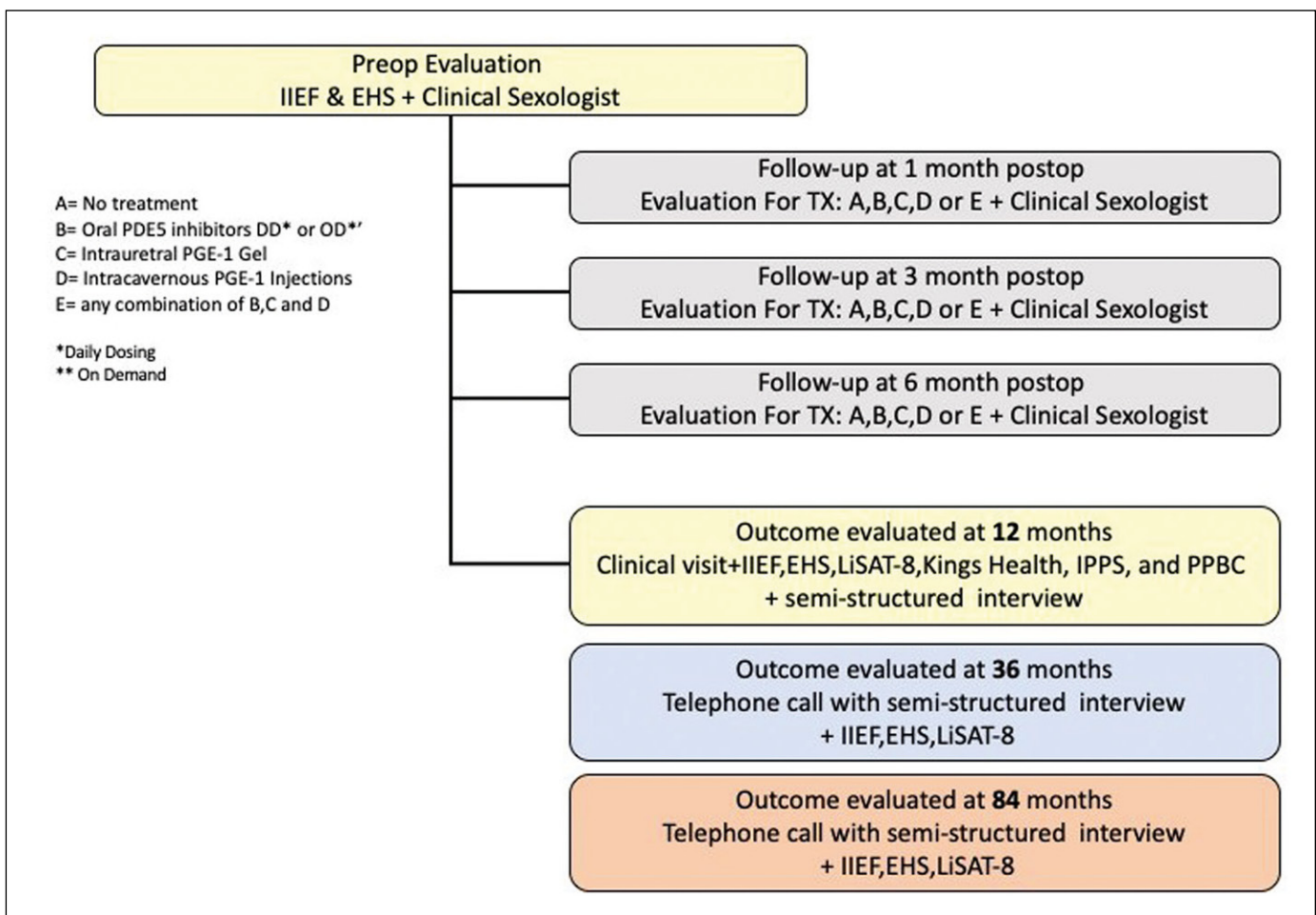
in order to reduce the risk of postoperative ED. Important factors for the postoperative outcome are the patient's age, the preoperative erectile function (EF), the possibility of preservation of the NVB, and the experience of the surgeon. Loss of erection or various degrees of ED, despite such attempts, still remain the most common side effects of the operation [3, 4].

It has been clearly established that the ability to have a satisfactory erection and sexual function plays a significant role in the overall quality of life (QoL) not only for the patient but also for their partner [5, 6]. Rehabilitation is important for successful management of an ailment (e.g. in orthopedics and after neurovascular trauma), hence sexual rehabilitation after prostate cancer surgery should be a part of the treatment protocol.

A questionable approach to address the problem is a so-called 'penile rehabilitation' program, focused on restoring the EF alone [7, 8]. This is done with pharmaceutical therapy, (oral PDE-5 inhibitors, intraurethral PGE-1 gel or intracavernous PGE-1 injection), mechanical devices (vacuum pumps),

surgery (penile implants) or combinations of these modalities [9, 10]. However, restoring the EF alone is not an optimal approach to solve all the sexual problems associated with ED [11]. As many as 60% of patients will discontinue their ED treatment within 2 years even if it is pharmacologically successful [12–15]. Hence, sexual rehabilitation after radical prostatectomy should not be focused on penile function alone, but rather aim to establish satisfactory postoperative sexual activity regardless of whether there is residual spontaneous EF or not. A more holistic rehabilitation process, that also includes other side effects of the surgery such as loss of ejaculate, penile shortening, change of orgasmic feeling, alterations in body image, stress incontinence, disturbances in partner relationships and various types of anxiety [16, 17, 18], should be included to optimize the rehabilitation effort.

A previous study [19] reported on the positive outcome of a combined penile and sexual medicine rehabilitation program, including a clinical sexologist (CS) into the rehabilitation process, with the aim



**Figure 1.** Flowchart of the rehabilitation program and follow-up regime.

**Table 1.** Distribution and use of erectile dysfunction (ED) medication among patients having penetrating sexual activity at 1, 3 and 7 years after daVinci radical prostatectomy

	1 year postoperatively (11–17 months m = 13) N = 79	3 years postoperatively (25–39 months m = 35) N = 76	7 years postoperatively (85–99 months m = 91) N = 74	Increase or decrease compared to 1 year postoperatively
Sexually active with penetrating sex (all)	84% (n = 66)	76% (n = 58)	74% (n = 55)	NS
Sexually active with normal erection without medication or support	15% (10/66)	19% (11/58)	29% (16/55) or 44% (24/55)*	NS or *(increase) P ≤0.5
Sexually active with oral ED medication	32% (21/66)	50% (29/58)	11% (6/55)	Decrease P ≤0.5
Sexually active with intraurethral or intracavernous injection ED treatment	53% (35/66)	38% (18/58)	45% (25/55)	NS
Need for additional sessions with the clinical sexologist outside the program to achieve penetrating sexual activity	18% (14/79)	13% (10/76)	1% (1/74)	Decrease P ≤0.5
Average number of additional sessions	3.2 (1–7)	4.7 (1–10)	3 (3)	

ED – erectile dysfunction; NS – not significant

of restoring a good sexual life postoperatively for all men that were preoperatively fully potent, regardless of whether the NVB was preserved or not (Figure 1). This study did not address if these patients would discontinue their sexual activity over time as patients with ED treatment alone do.

The aim of the present study was to evaluate if a combined penile and sexual rehabilitation program yields sustainable long-term results in regards to sexual activity, knowing that up to 60% of patients with ED will discontinue their ED treatment within 2 years even if it is pharmacologically successful.

## MATERIAL AND METHODS

The study group consisted of 79 patients, which is equal to 94% of all of the preoperatively potent (IIEF-5 >21) and sexually active men (aged 45–74 years, mean 61), who in 2009 underwent da Vinci robot radical prostatectomy (dVRP) performed for localized prostate cancer (tumor stage; T1c, T2, pT3, PSA <10 and Gleason score <8) with or without preservation of the neurovascular bundles. These 79 patients all participated, during their first postoperative year, in a combined penile and sexual rehabilitation program (Figure 1).

In this retrospective quality control study, the study group was followed up on three occasions, after one, three and seven years after the surgery, with an evaluation of the postoperative sexual function as a part of the established follow-up protocol at the clinic. Data was collected from existing medical files. At one year postoperatively, data was recorded at a clinic visit, and at 3 and 7 years with a structured telephone interview and questionnaires. The telephone interview covered areas such as relapse of disease,

additional cancer treatment, incontinence, marital status, need for additional counselling after the first postoperative year, current sexual function and activity, use and type of medication or devices to assist the EF. Finally, an evaluation of how the patients found their current postoperative sexual life to be as compared to prior to their surgical treatment was performed. In addition to the telephone interview the subjects also completed the LISAT-8 quality of life questionnaire, SHIM-5 (short version of the International Index of Erectile Function – IIEF) and the Erection Hardness Score (EHS) [20–23]. The same structured questions and questionnaires were used at all occasions (1, 3 and 7 years).

## Statistics

Due to the small sample sizes, Fisher exact test was used for all statistical calculations.

## Ethics

This is a retrospective quality assurance review, which does not contain any identifying information and was conducted on data gathered from already diagnosed and managed patients who will not be affected by the study. Furthermore, as all patients are anonymous and this study does not require informed consent, a formal ethical approval is not mandatory and, thus, was not applied for. The study follows the principles of the Declaration of Helsinki.

## RESULTS

At the visit one year after surgery (11–17 months, mean 13 months), 66 patients (84%) were regularly

sexually active with penetrating sex. Ten of the sixty-six patients filthy-eight patients (15%) reported return of completely normal erections and half of the remaining, 21 patients (32%), were active using oral PDE-5 inhibitors alone. The remaining 35 patients used either intraurethral or intracavernous PGE-1 for their sexual activity (Table 1). Almost all the bilateral nerve sparing (BLNS) patients (34/36) were sexually active, using either no medication, oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. Among the unilateral nerve sparing (UNLS) patient group, two-thirds (24/34) were sexually active using either oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. In the non-nerve-sparing (NonNS) group, eight of nine patients were sexually active, all using intracavernous PGE-1 therapy (Table 1). The reasons for not having penetrating sexual activity at 1 year postoperatively were: lack of interest from patient or partner (n = 5), loss of partner (n = 2), lack of efficacy or side effects of treatment (n = 4), urinary incontinence (n = 1) and unknown (n = 1). Fourteen (18%) of the patients and their partners needed on average 3 (1–7) additional counselling visits with the sexologist during the 1st year after the surgery. On the LISAT-8 questionnaire, for question #6 (sexual life), almost half of the patients (49%) reported a rather satisfactory or satisfactory score, 18% very satisfactory sexual life and 35% unsatisfactory scoring (ranging from very to rather unsatisfactory sexual life). In regards to the patients' perception of the quality of their sexual life at 1 year postoperatively as compared to prior to surgery, 62% found it acceptable, 17% equal, none better and 21% worthless (Table 2). The frequency of penetrating sexual activity at the same time, was more than 2 times/week in 8% of patients, 1–2 times/week in 33%, 1–2 times/month in 36% and less than 1 time/month in 18%. In 5% percent of patients the data was missing (Table 3).

The first telephone interview was performed at 25–39 (mean 35) months after surgery. The mean age at follow-up was 64 years (47–77). Three patients were lost during the follow-up period. Fifty-eight patients (73%) were regularly sexually active with penetrating sexual activity. Eleven of the 58 patients (19%) reported return of completely normal erections and half of the remaining, 29 patients (50%), were active using oral PDE-5 inhibitors alone. The remaining 18 (38%) patients used either intraurethral or intracavernous PGE-1 for their sexual activity (Table 1). Almost all the BLNS (32/34) were sexually active, using either no medication, oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. Among the UNLS, the majority (24/33) were

**Table 2.** Postoperative sexually active patients' perception of their sexual quality after daVinci radical prostatectomy

LISAT-8 sexual life (Question #6) at 1, 3 and 7 years postoperatively			
	1 year postoperatively	3 years postoperatively	7 years postoperatively
Very unsatisfactory	11% (7/66)	14% (8/58)	0% (0/55)
Unsatisfactory	14% (9/66)	5% (3/58)	11% (6/55)
Rather unsatisfactory	26% (17/66)	17% (10/58)	15% (8/55)
Rather satisfactory	28% (19/66)	31% (18/58)	33% (18/55)
Satisfactory	17% (11/66)	17% (10/58)	16% (9/55)
Very satisfactory	0% (0/66)	7% (4/58)	9% (5/55)
Data missing	4% (3/66)	9% (5/58)	16% (9/55)
Patients' perception of sexual life at 1, 3 and 7 years postoperatively as compared to prior to surgery			
	1 year postoperatively	3 years postoperatively	7 years postoperatively
Worthless	21% (14/66)	10% (6/58)	2% (1/55)
Acceptable	62% (41/66)	68% (40/58)	52% (29/55)
Equal	17% (11/66)	17% (10/58)	24% (13/55)
Better	0% (0/66)	5% (3/58)	18% (10/55)
Data missing	0% (0/66)	0% (0/58)	4% (2/55)

**Table 3.** Frequency of penetrating sex among sexually active men at 1, 3 and 7 years after daVinci radical prostatectomy

	1 year postoperatively (baseline)	3 years postoperatively	7 years postoperatively
<1 time per month	18% (12/66)	17% (10/58)	20% (11/55)
1–2 times per month	36% (24/66)	38% (22/58)	53% (29/55)
1–2 times per week	33% (22/66)	38% (22/58)	20% (11/55)
>2 times per week	8% (5/66)	5% (3/58)	2% (1/55)
Data missing	5% (3/66)	2% (1/58)	5% (3/55)

sexually active, using either oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. In the NonNS group six of nine were sexually active 3 years after surgery, all using intracavernous PGE-1 therapy (Table 1). The reasons for not having penetrating sexual activity 3 years postoperatively were: lack of interest from patient or partner (n = 4), loss of partner (n = 2), lack of efficacy or side effects of treatment (n = 1), treatment too expensive (n = 1) and tumor progression (n = 1). Ten (13%) of the patients and their partners needed on average 5 (1–10) additional counselling visits to the sexologist between one and three years after the surgery. On the LISAT-8 questionnaire, question #6 (sexual life), almost half of the patients (48%) reported a rather satisfactory or satisfactory score, 7% re-

ported a very satisfactory sexual life and 19% gave an unsatisfactory score (ranging from very to rather unsatisfactory sexual life). In the patients' perception of the quality of their sexual life at 3 years postoperatively as compared to prior to surgery, 68% found it acceptable, 17% equal, 5% better and 10% worthless (Table 2). The frequency of penetrating sexual activity at the same time, was more than 2 times/week in 5%, 1–2 times/week in 38%, 1–2 times/month in 38% and less than 1 time/month in 17%. In 2% the data was missing (Table 3).

The second telephone interview was performed at 85–99 (mean 91) months after surgery. The mean age at follow-up was 69 years (52–82). Seventy-four patients completed the second survey, an additional 2 patients were lost to follow-up, (one died of a non-related prostate cancer disease). Fifty-five (74%) were regularly sexually active with penetrating sexual activity seven years after surgery. Twenty-four patients (44%) reported return of normal erections, but 8 of them still used oral PDE-5 inhibitors to enhance their sexual performance. Of the remaining, only 6 patients (11%), were active using oral PDE-5 inhibitors alone. The remaining 25 used either intraurethral or intracavernous PGE-1 for their sexual activity (Table 1). Almost all the BLNS (30/32) were sexually active, using either no medication, oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. Among the UNLS, the majority (26/33) were sexually active, using either no medication, oral PDE-5 inhibitors, intraurethral PGE-1 or intracavernous PGE-1 therapy. In the NonNS group, 5 of 9 patients were sexually active 7 years after surgery, all using intracavernous PGE-1 therapy. The reasons for not having penetrating sexual activity 7 years postoperatively were: lack of interest from patient or partner ( $n = 2$ ), loss of partner ( $n = 1$ ), side effects of treatment ( $n = 3$ ), prostate cancer progression and treatment ( $n = 3$ ), other concomitant disease ( $n = 6$ ). One patient and his partner needed 3 additional visits to the sexologist between 3 and 7 years after the surgery. On the LISAT-8 questionnaire, question # 6 (sexual life), almost half of the sexually active patients (49%) reported a rather satisfactory or satisfactory score, 9% very satisfactory sexual life, 26% gave an unsatisfactory score (ranging from unsatisfactory to rather unsatisfactory sexual life) and in 16% data was missing. In the patients' perception of the quality of their sexual life at 7 years postoperatively as compared to prior to surgery, 40% found it acceptable, 22% equal, 18% better and 2% worthless (Table 2). The frequency of penetrating sexual at the same time was; more than 2 times/week in 2%, 1–2 times/week in 24%, 1–2 times/month in 54% and less than

1 time/month in 22% (Table 3). Over the observation time, overall, there was a change in the marital status in 8% ( $n = 6$ ). Three patients became widowers and 2 singles got married. In one case, there was a divorce and the patient claimed that it was due to a dysfunctional sexual relationship after the surgical treatment.

## DISCUSSION

Overall there is very little in the literature on long-term results in the modern era of penile rehabilitation after radical prostatectomy. To our knowledge no data has been reported on long-term results on sexual function after a 'combined penile and sexual' rehabilitation program. The majority of 'penile' rehabilitation studies present results at one year after surgery and on patients that underwent a bilateral nerve sparing (BLNS) procedure at the time of surgery [24–27]. The data presented is predominantly focused on how many preoperatively fully potent men have residual sufficient EF (with or without oral PDE-5 inhibitors) postoperatively [24–27]. There is long-term data present on improvement over time to recovery of intercourse in pre-operatively potent men after BLNS surgery [28].

It has also been established that the best outcome with regards of postoperative EF are seen after BLNS where 50–90% are functional within 1 year after surgery. Patients with ULNS or NonNS are doing far worse [3, 4].

Currently, in today's clinical practice, fewer of the ideal patients for BLNS procedure (low-risk, low volume cancers) will have surgery. They are instead safely monitored under so called active surveillance without active treatment [29]. This means that a larger proportion of the patients that undergo radical prostatectomy today, will have a procedure with less nerve-sparing intention. The reality of this is that currently more than half of all the preoperatively potent men that undergo a radical prostatectomy will postoperatively have lost their spontaneous EF. In this perspective, it might be more appropriate to focus on how many of the preoperatively potent and sexually active men are postoperatively rehabilitated to an acceptable sexual life, regardless of whether they have a residual spontaneous EF or not. The sample size is small and there is no comparison of outcome with naïve patients without any type of rehabilitation at all. The results from our clinic might reflect the benefit of the individual skills of the clinical sexologist with specific knowledge and insight in the specifics of prostate cancer disease combined with in-depth experience and knowledge of sexual behavior science, something that is extremely

difficult to quantify, and not applicable for all urological facilities.

A disadvantage of this study is the lack of a group of naïve patients without any type of rehabilitation at all to compare with as a control. Age, disease progression and the fact that many patients will discontinue their ED treatment within 2 years, even if it is pharmacologically successful [12, 13, 14], are factors that might negatively affect the long-term results. The return of spontaneous erection over time, coping with and accepting a different sexual life are factors that might improve the long-term outcome [30]. Nevertheless, it appears that increased sexual rehabilitation efforts postoperatively improve a patient's ability to have penetrating sexual activity one year after dVRP, with or without a nerve sparing procedure [19], and the long-term results are sustainable. Stopping sexual activity over time appears to be more related to co-morbidities, aging and change of marital status. It is worth noting that the majority of patients found their sexual life to be at least acceptable at 3 and 7 years after their surgery regardless if they had residual spontaneous erectile function or not. This is in contrast to other studies where up to 40–60% of patients will discontinue their treatment regardless if it is successful or not [12]. The reasons for this are not explored in this study, but might be due to a different study population or the contribution and support of a clinical sexologist.

The frequency of penetrating sexual activity in this study is similar to what has been observed in other studies on treatment for ED [16]. Unfortunately, we have no data on the subject's frequency prior to the treatment and thus no data on whether their altered sexual function had an impact on their sexual activity or not.

An interesting observation is that a substantial proportion of the patients without any postoperatively satisfactory spontaneous function, regardless of procedure performed, continue to have regular penetrating sexual activity at 7 years postoperatively using intracavernous injection therapy (ICT). Further-

more, it appears that over time the return of spontaneous normal erection increases as other studies have reported (Figure 1) [28]. This might explain the observation of a reduction of ICT at 3 years and an increase of oral ED treatment. Noteworthy is also the significant reduction of sexually active subjects using oral ED treatment alone and the increase of sexually active patients using ICT at 7 years postoperatively (Table 1). A plausible explanation might be that patients that initially used ICT for their penetrating activity returned to this treatment when oral ED treatment failed. Whereas patients on oral treatment either improved their function and did not have to use an oral agent anymore or aborted their attempts to have penetrating sexual activity when their treatment failed, not exploring the possibility of ICT.

Two recent studies [31, 32] indicate that patients with localized tumors that are targeted for curative treatment do far better with radiation therapy than surgery with regards of their post treatment long-term sexual function. Based on our observations, adding a CS and focusing on a sexual rehabilitation program using intracavernous injection therapy might be a way to improve the outcome of postoperative sexual well-being for this subgroup of patients.

The efforts of postoperative sexual rehabilitation are resource and time consuming. However, the need for additional counselling support after 3 years is very little to none in our retrospective study (Table 1).

## CONCLUSIONS

The involvement of a clinical sexologist in a postoperative combined penile and sexual rehabilitation program after radical da Vinci robotic prostatectomy appears to have a positive effect on the possibility of an acceptable sexual life and penetrating activity one year after surgery, and these results appear to be sustainable over in the long-term.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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