



Sexual Medicine

Penile Length Alterations Following Penile Prosthesis Surgery

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Abstract

Objective: Determine the impact of penile prosthetic surgery on penile length.

Methods: Stretched flaccid penile length was measured in men undergoing first-time penile implant surgery. Measurements were done before implantation and at 1 and 6 mo postoperatively. Patients were evaluated by the International Index of Erectile Function (IIEF) preoperatively and the IIEF and Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) at 6 mo postoperatively. Patients also provided subjective assessment of penile changes at 6 mo postoperatively. Preoperative and postoperative IIEF and EDITS scores were compared as were the patients who complained of penile length loss with those who did not.

Results: Of the 56 patients, 50% were diabetic and 28.5% had previous radical prostatectomy; 78% of the implants were three-piece (Alpha-1, Mentor) and 22% were two-piece (Ambicor, American Medical Service). There were no statistically significant differences in penile length after the surgery compared to preoperative measurements. Forty of 56 patients (72%) reported a decrease in penile length, 10 of 50 (19%) reported no change, and 6 of 56 (9%) had a slight increase. Subjective penile length loss was more common in patients who had undergone radical prostatectomy before prosthesis implantation (32%). No statistical difference in EF domain scores occurred between patients who complained of penile length loss and those who did not; however, men complaining of length loss had lower IIEF satisfaction domain and EDITS scores.

Conclusion: Penile prostheses do not have a negative impact on measured stretched flaccid penile length. Treatment satisfaction scores do not depend on subjective penile length loss.

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1. Introduction

Penile implant surgery is a well-recognised and accepted treatment strategy for men with erectile dysfunction (ED) refractory to pharmacotherapy [1–7]. Satisfaction rates cited for this approach are high, generally >90% [3]. Patient satisfaction is a multifactorial issue and may be affected by penile length. One of great myths surrounding penile prosthesis surgery is that it lengthens the penis. Indeed, some clinicians suggest that penile implants may shorten the penis [3]. Although many patients undergoing penile prosthetic surgery desire increased penile length, clinicians must guard against unrealistic expectations. With the exception of the Ultrex device (American Medical Service [AMS], Minneapolis, MN), which is an expanding device, there are no data on penile length changes following penile prosthetic surgery [8–10]. This investigation was designed to define the impact of these devices on penile length.

2. Patients and methods

2.1. Study population

The study population included men undergoing first-time inflatable penile implant surgery. Patients had the penile length measured serially at the beginning of the operation prior to device implantation (stretched flaccid length), and at 1 and 6 mo postoperatively. Length was measured from the pubic bone to meatus along the dorsum of the shaft. Patients having an implant for Peyronie's disease were excluded from this analysis.

2.2. Questionnaire assessment

Patients completed the International Index of Erectile Function (IIEF) preoperatively and the IIEF and Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) questionnaires at 6 mo postoperatively. Patients were also asked to offer a subjective assessment of penile length changes at 6 mo after surgery. The IIEF is a validated instrument to assess erectile function, libido, and satisfaction after sexual relations [11]. The EDITS is a validated instrument to determine patient

satisfaction in response to treatments. EDITS is an 11-item inventory with the score presented on a 100-point scale [12].

The erectile function (EF) domain of the IIEF is based on six questions, questions 1–5 and 15 with a range 1–5 with a maximum score of 30. The severity of ED is graded according to the following scores: no ED, ≥ 26 ; mild ED, 22–25; mild to moderate ED, 17–21; moderate ED, 11–16; and severe ED, ≤ 10 . The satisfaction domain of the IIEF includes four questions, which are questions 7, 8, 13, and 14 with a maximum score of 20. Questions are scored with a range of 0–5 for questions 7 and 8, and 1–5 for questions 1–5. The lower the score, the more negative the response. Question 7 addresses how often sexual intercourse is satisfactory when attempted. Question 8 addresses the enjoyment of sexual intercourse. Question 13 elicits the level of satisfaction with overall sex life. Question 14 addresses the level of satisfaction of the sexual relationship with the partner of the patient.

2.3. Statistical analysis

Preoperative and postoperative IIEF and EDITS scores were averaged and compared by using the Student *t* test. The χ^2 analysis was used to make a comparison between the patients complaining of penile length and those who did not. All data were presented as the mean \pm standard deviation (SD) with $p \leq 0.05$ considered statistically significant.

3. Results

Fifty-six patients, with a mean age of 62 ± 12 yr, were enrolled. Patient demographics are listed in Table 1. Forty patients (71%) admitted to believing they experienced loss of penile length, and 16 did not. Six of 56 patients (9%) claimed to have experienced a slight gain in penile length. Fifty percent of the patients were diabetic and >25% had previously undergone radical prostatectomy surgery. The only demographic factor that differed between those patients complaining of length loss and those who did not was that the former were more likely to have had radical prostatectomy surgery ($p = 0.03$). Seventy-eight percent of implants were three-piece (Alpha-1, Mentor Urology, Santa Barbara, CA) and 22% were two-piece (Ambicor, AMS) devices. There was no statistically significant

Table 1 – Demographic findings in patients and comparison between the groups with and without complaint of subjective length loss

	Entire group (<i>n</i> = 56)	Subjective length loss group (<i>n</i> = 40)	No subjective length loss group (<i>n</i> = 16)	<i>p</i>
Age	62	60.5	62.8	0.22
3/2-piece	78%/22%	85%/15%	75%/25%	0.182
Hypertension	36%	35%	37.5%	0.16
Hyperlipidaemia	32%	35%	25%	0.085
Diabetes	50%	50%	50%	0.14
Radical prostatectomy	28.5%	32%	19%	0.03

Table 2 – Alterations in penile lengths between the groups with and without subjective length loss at baseline and after surgery

Measured penile length, in.	Entire group (n = 56)	Subjective length loss group (n = 40)	No subjective length loss group (n = 16)	p
Baseline	5.2	5.1	5.3	0.10
1 mo	4.8	5.0	5.2	0.18
6 mo	5.1	5.2	5.3	0.22
p	0.09	0.12	0.17	

Table 3 – Differences in IIEF and EDITS between the groups with and without subjective length loss

6-mo scores	Entire group (n = 56)	Subjective length loss group (n = 40)	No subjective length loss group (n = 16)	p
Δ EF domain score	15.6	16.2	14.5	0.12
Δ satisfaction domain score	4.3	3.5	6.5	0.005
EDITS	62.4	60.8	63.7	0.008

IIEF = International Index of Erectile Function; EDITS = Erectile Dysfunction Index of Treatment Satisfaction.

difference in penile length at baseline and 1 and 6 mo postoperatively (Table 2). A comparison of IIEF scores between the two groups indicated no difference in the mean change in the EF domain score (Table 3). A statistically significant difference existed for the mean change in the satisfaction domain score ($p = 0.005$). On comparison of the EDITS, those complaining of length loss had a lower score ($p = 0.008$).

4. Discussion

Many men believe that the length of the penis is the measure of their masculinity [13]. The implantation of a penile prosthesis is still a gold standard therapy for men with ED who do not respond to pharmacologic agents. Patients often complain of penile length loss after prosthesis surgery. Despite this fact this treatment strategy has the highest reported satisfaction rates for patients and their partners [1–7]. The primary goal of this study was to define the impact of inflatable penile prosthesis surgery on penile length.

The original inflatable penile prosthesis was first introduced by Scott in 1973 [14]. This model improved erection and flaccid appearance of the penis in a more cosmetically acceptable and functional fashion compared to prior implants. Over ensuing years, changes have been successfully incorporated into the multicomponent inflatable penile prosthesis. In 1987, AMS revised the three-piece inflatable implant, which remains to the present time. In 1988, Furlow reported that the Mentor Alpha 1[®] and AMS 700[®] were the most

reliable penile prostheses with the highest rates of satisfaction [3]. The multicomponent inflatable penile prostheses (Ultrex [AMS], CX [AMS], CXM [AMS], Alpha 1 [Mentor]) are currently the most frequent ones implanted [4,5]. Use of Ultrex with the hope of length enhancement has been disappointing because of a relatively high mechanical failure rate [9,10]. Goldstein et al. reported the satisfaction rate of Mentor Alpha 1 penile implants as $\geq 80\%$ [1].

The two-piece inflatable penile prosthesis, the Ambicor AMS, eliminates the need for reservoir replacement in the abdominal region, which may be beneficial in patients in whom reservoir implantation may be difficult or potentially dangerous, such as those who have undergone radical pelvic surgery or have received renal transplants. Levine et al. reported that the patient and partner satisfaction rates with Ambicor were 96.4% and 91.2%, respectively [2].

Patient satisfaction is a complex issue that is related to many factors such as postoperative complications, cosmetic outcome, implant function, and partner acceptability [4]. In our study we found statistically significant differences only in satisfaction assessments between men with and without subjective penile length loss, but not in EF scores. However, despite an absence of measurable penile length changes, the majority of men (71%) complained of subjective length loss. The reason for this is not well defined but may be related to a comparison with their penile length before the onset of ED.

One of the limitations of this study was the failure to evaluate partner satisfaction. According to the previous published studies, partners' satisfaction

rates with prosthesis implantation have been raised to 90% [2]. Masters and Johnson have concluded that size of the male penis has no true physiologic effect on female sexual satisfaction because the vagina adapts to fit the size of the penis [15]. Eisenman reported that not the penile length but the width was more important for women's sexual satisfaction [16].

Despite of the advances in nerve replacement strategies to repair of cavernous nerve injuries and research on the potential benefits of chronic administration of phosphodiesterase type 5 inhibitors [17,18], implantation of penile prosthesis is still the most commonly preferred treatment option for ED after radical prostatectomy. It appears that subjective length loss is more common among penile implant recipients who have a history of radical prostatectomy and most of these patients later complain of loss of penile length. According to the previously published studies, 40–70% of the patients have reduced penile length after radical prostatectomy [19].

It is hoped that these findings will permit clinicians to give patients realistic expectations prior to penile implant surgery. Patients must be informed preoperatively that implants increase the hardness of the shaft of the penis but do not routinely lengthen the penis. Ensuring that the patient has a realistic expectation is essential to avoid postoperative dissatisfaction.

5. Conclusions

The results of our study indicated that the two devices studied have no significant negative impact on measured stretched flaccid penile length. Patient and partner education from the beginning may limit unrealistic expectations after implantation. Patients should be counselled that penile implants may not restore the full length once achieved by natural erections. Treatment satisfaction appears not to be fully dependent on subjective penile length.

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