

Dorsal Phalloplasty to Preserve Penis Length after Penile Prosthesis Implantation

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الرأب الظهري للقضيب للحفاظ على طول القضيب عند زرع البدلة

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ABSTRACT: Objectives: Following penile prosthesis implantation (PPI), patients may complain of a decrease in visible penis length. A dorsal phalloplasty defines the penopubic junction by tacking pubic skin to the *pubis*, revealing the base of the penis. This study aimed to evaluate the efficacy of a dorsal phalloplasty in increasing the visible penis length following PPI. **Methods:** An inflatable penile prosthesis was implanted in 13 patients with severe erectile dysfunction (ED) at the Kamal Shaer Hospital, Cairo, Egypt, from January 2013 to May 2014. During the surgery, nonabsorbable tacking sutures were used to pin the pubic skin to the *pubis* through the same penoscrotal incision. Intraoperative penis length was measured before and after the dorsal phalloplasty. Overall patient satisfaction was measured on a 5-point rating scale and patients were requested to subjectively compare their postoperative penis length with memories of their penis length before the onset of ED. **Results:** Intraoperatively, the dorsal phalloplasty increased the visible length of the erect penis by an average of 25.6%. The average length before and after tacking was 10.2 ± 2.9 cm and 13.7 ± 2.8 cm, respectively ($P < 0.002$). Postoperatively, seven patients (53.8%) reported a longer penis, five patients (38.5%) reported no change in length and one patient (7.7%) reported a slightly shorter penis. The mean overall patient satisfaction score was 4.9 ± 0.3 . None of the patients developed postoperative complications. **Conclusion:** A dorsal phalloplasty during PPI is an effective method of increasing visible penis length, therefore minimising the impression of a shorter penis after implantation.

Keywords: Penile Implantation; Penile Prosthesis; Pubis; Erectile Dysfunction; Egypt.

المخلص: الهدف: يشتكي المرضى بعد زراعة بدلة القضيب من انخفاض الطول الظاهري للقضيب. الرأب الظهري للقضيب يحدد الفاصل ما بين العضو والعانة بتثبيت جلد العانة لعظام الحوض لإظهار قاعدة القضيب. يهدف هذا البحث لتقييم كفاءة الرأب الظهري في زيادة طول القضيب عند زرع البدلة. **الطريقة:** تم زرع بدلات قابلة للنفخ للقضيب لعدد 13 مريضاً يعانون من ضعف في الانتصاب وذلك في مستشفى كمال شعير، في القاهرة بمصر، في الفترة من يناير 2013 إلى مايو 2014. خلال الجراحة، تم استخدام خيط جراحي غير قابل للامتصاص لتثبيت جلد العانة إلى عظام الحوض من فتح جراحي ما بين قاعدة القضيب و كيس الصفن. تم قياس طول القضيب أثناء العملية قبل وبعد الرأب الظهري. تم تقييم رضی المرضى عن الطول بعد الجراحة حسب مقياس رأى ذو 5 درجات، وكذلك رأيهم في طول القضيب مقارنة بما كان قبل حدوث ضعف الانتصاب. **النتائج:** أثناء الجراحة، زاد الرأب الظهري من الطول الظاهري للقضيب بنسبة 25.6% في المتوسط. كان متوسط الطول قبل وبعد جراحة تثبيت جلد العانة إلى عظام الحوض 10.2 ± 2.9 سم و 13.7 ± 2.8 سم على التوالي ($P < 0.002$). بعد الجراحة، ذكر سبعة مرضى (53.8%) بأن القضيب أصبح أطول، وأقر خمس (38.5%) بأن الطول لم يتغير، بينما أشار مريض واحد (7.7%) إلى قصر بسيط للقضيب. كان المتوسط العام للرضى هو 4.9 ± 0.3 . لم يشتكي أي من المرضى من مضاعفات ما بعد الجراحة. **الخلاصة:** الرأب الظهري للقضيب أثناء زرع البدلة هو وسيلة فعالة لزيادة الطول الظاهري للقضيب وبذلك ينخفض إنطباع قصر القضيب بعد زرع البدلة.

الكلمات المفتاحية: زرع القضيب؛ بدلة القضيب؛ العانة؛ الضعف الجنسي؛ مصر.

ADVANCES IN KNOWLEDGE

- Combining a penile prosthesis implantation (PPI) with a dorsal phalloplasty can minimise the possibility of perceived shorter penis length and improve postoperative patient satisfaction rates.

APPLICATION TO PATIENT CARE

- Surgeons should consider performing a dorsal phalloplasty in combination with a PPI as the procedure was found to significantly increase the visible length of the penis and resulted in high patient satisfaction scores.
- Combining these procedures allows both surgeries to be performed without an increase in the postoperative complication rate or the need for a secondary incision.

PENILE PROSTHESIS IMPLANTATION (PPI) results in high long-term patient satisfaction rates in comparison to non-surgical treat-

ments.¹⁻⁴ However, some patients may complain of a decrease in penis length following PPI; Wang *et al.* reported a mean penile shortening of

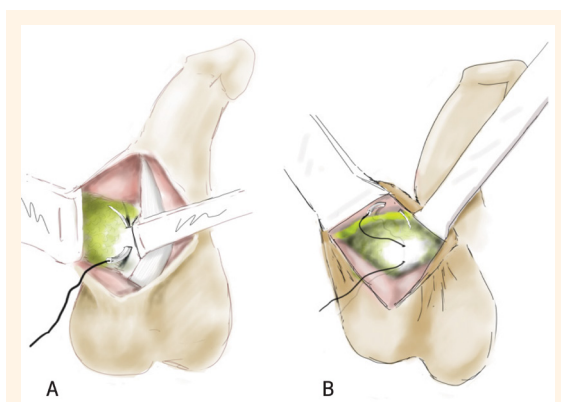


Figure 1: Illustration of a dorsal phalloplasty to increase visible penis length after a penile prosthesis implantation showing the placement of the (A) pubic and (B) peno-pubic junction arms of the tacking suture.

0.74 ± 0.15 cm following PPI while Salem *et al.* found that PPI resulted in a decrease in erect penis length of 9.5%.^{3,4} When comparing postoperative and preoperative impressions of penis length after PPI, 72% of patients reported a decrease in penis length, 19% reported no change and 9% reported a slight increase in length.² This study aimed to describe and evaluate the use of a new minimally invasive procedure—a dorsal phalloplasty—in increasing the visible length of the penis. During this procedure, the penopubic junction (PPJ) is defined by tacking the pubic skin to the *pubis*, revealing the base of the penis and increasing the visible length of the penis from the pubic skin surface to the *glans*.

Methods

This study included 13 male patients with severe refractory erectile dysfunction (ED) who underwent a combined PPI and dorsal phalloplasty at the Kamal Shaeer Hospital, Cairo, Egypt, between January 2013 and May 2014. Before surgery, each patient was stood before a mirror and the PPJ was pressed down

to mimic the effects of the dorsal phalloplasty. If the patient decided that the procedure would improve their visible penis length and agreed to undergo the combined surgery, they were included in the study. Patients presenting with scarred corporal bodies following neglected priapism, extrusions of infected prostheses or severe Peyronie's disease requiring intraoperative incisions and grafts were excluded.

The combined PPI and dorsal phalloplasty procedure was performed under general anaesthesia via a penoscrotal incision. The dartos muscle was split open until the *tunica albuginea* of the *corpora cavernosa*. The penis was retracted to one side and the space lateral to the base of the penis was bluntly dissected down to the *pubis*. The undersurface of the pubic skin in the midline was approximated to the *pubis* and a large needle was passed through the periosteum into the undersurface of the pubic skin, tacking in an adequate bulk of subcutaneous tissue and dermis at the PPJ using a tacking suture made of braided polyester (Trubond™ polyester sutures, Sutures India Private Ltd., Bangalore, Karnataka, India) [Figure 1]. Without pulling down or tethering the skin of the penis, the optimum location for the placement of the tacking suture on the undersurface of the pubic skin was determined by palpating several potential points around the base of the stretched penis and choosing the point that revealed the penis the most. To avoid puncturing the implant components, a corporotomy was performed and a three-piece girth-expanding inflatable prosthesis (Titan® OTR, Coloplast Group, Minneapolis, Minnesota, USA) was inserted after the tacking sutures had been placed. The tacking suture was subsequently tied, defining the PPJ and anchoring it to the *pubis*, revealing the base of the penis. Intraoperatively, visible penis length from the pubic skin surface to the *glans* was measured with the prosthesis inflated both before and after tying the tacking suture [Figure 2]. Following the completion

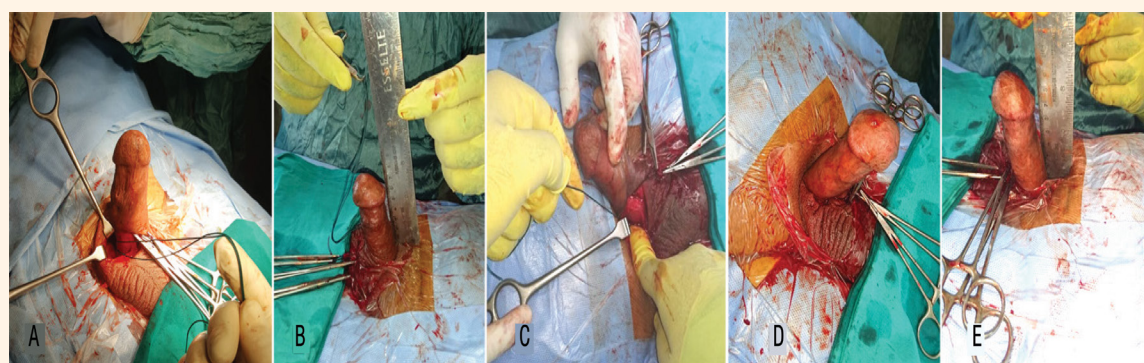


Figure 2: Photographs showing the surgical procedure of a dorsal phalloplasty to increase penis length during penile prosthesis implantation. Initially, the (A) tacking suture was placed and the (B) pre-tacking visible penile length recorded. Following this, the (C) tacking suture was tied, the (D) penopubic junction defined and the (E) visible penis length measured again.

Table 1: Visible penis length before and after a dorsal phalloplasty postoperative impression of length and patient satisfaction scores among male patients with severe erectile dysfunction (N = 13)

Patient age in years	Visible penis length in cm		Postoperative patient satisfaction	
	Before dorsal phalloplasty	After dorsal phalloplasty	Impression of length	Satisfaction score*
62	9.5	12.0	Longer	5
59	10.6	12.2	Longer	5
52	14.0	17.3	Same	5
55	7.2	12.2	Longer	5
57	9.0	15.0	Shorter	5
54	8.0	12.2	Same	5
52	13.0	16.8	Same	5
48	11.0	15.1	Same	5
55	13.0	14.8	Longer	5
70	7.0	11.3	Same	4
60	7.0	11.3	Longer	5
66	15.4	18.5	Longer	5
52	7.5	9.0	Longer	5

*Satisfaction was self-assessed by patients using a 5-point rating scale, with a score of 1 indicating severe dissatisfaction and 5 indicating high satisfaction.

of the procedure, the penoscrotal incision was closed in layers.

Postoperatively, the patients were discharged on the same day and allowed to resume intercourse 45 days after the surgery. Each patient was followed-up for between 12–18 months (mean: 15.4 ± 1.3 months) via quarterly phone interviews and clinical examinations. Patients were requested to rate their overall satisfaction with visible penile length on a 5-point scale, with a score of 1 indicating severe dissatisfaction and 5 indicating high satisfaction. At their final follow-up appointment, they were also asked to subjectively assess their postoperative visible penile length in comparison to their memory of their erect penis length before the onset of ED. The development of any postoperative complications was documented.

Statistical analysis was performed using an Excel spreadsheet, Version 2010 (Microsoft Inc., Redmond, Washington, USA) and the Statistical Package for the Social Sciences (SPSS), Version 19 (IBM Corp., Chicago, Illinois, USA). Results were expressed as means and standard deviations or frequencies and percentages, as appropriate. Means were compared using the paired sample t-test and continuous numerical values were assessed using the Student's t-test. A *P* value of <0.050 was considered statistically significant.

This study was approved by the ethics committee of the Department of Andrology at the Faculty of Medicine of Cairo University. Participants were assured of the confidentiality of their data. All patients provided informed written consent before their inclusion in the study.

Results

The mean age of the patients was 57.1 ± 6.2 years old. Intraoperatively, the dorsal phalloplasty resulted in an average increase of 25.6% in the visible length of the erect penis. Before tacking, the average length of the visible penis was 10.2 ± 2.9 cm in comparison to an average length of 13.7 ± 2.8 cm after tacking (*P* <0.002). Postoperatively, seven patients (53.8%) reported a longer penis, five patients (38.5%) reported no change in penis length and one patient (7.7%) reported a slightly shorter penis at their final follow-up in comparison with recalled erect length before the onset of ED [Table 1]. The mean overall satisfaction score was 4.9 ± 0.3. None of the patients reported any infections, extrusions, prosthesis malfunctions or persistent penile pain lasting more than two months after the surgery. Moreover, none of the patients reported experiencing any pain at the tacking suture sites, instability of the erect penis during intercourse or a decrease in their perception of penis length over the duration of the follow-up period.

Discussion

Patient dissatisfaction with penis length following PPI can be addressed in various ways, including pre- and postoperative counselling, implantation of length-expanding prostheses and adjuvant pre-, intra- or postoperative augmentation techniques.⁵ Previous studies have evaluated the efficacy of several months of penile traction before implantation as a method of increasing postoperative penis length.^{6,7} Suspensory ligament release, with or without V-Y skin plasty, may also potentially increase post-implantation penis length.⁷ Another option is a suprapubic lipectomy, which can reveal a buried penis among patients with an overhanging fat pad.⁸ Ventral phalloplasties may also enhance patient satisfaction via removal of the penoscrotal web, thereby revealing the ventral aspect of the penis hidden within the scrotal sac.^{9,10} A combination of various post-implantation augmentation techniques have also been previously reported to enhance patient satisfaction.⁵

In the current study, a combined dorsal phalloplasty and PPI procedure was found to significantly increase intraoperative penis length and enhance

postoperative patient satisfaction, without an increase in morbidity. A dorsal phalloplasty reveals the length of the penis hidden within the suprapubic fat pad; moreover, tacking the pubic skin at the PPJ is a relatively simple procedure, allowing both surgeries to be performed through the same incision and during the same session. As such, other augmentation techniques requiring a secondary incision or a second surgical session are unnecessary. Furthermore, a dorsal phalloplasty circumvents the possible complications of other length enhancement procedures, such as wound dehiscence, infections, oedema or a downward erection angle.^{6,7,11,12} Although a dorsal phalloplasty can be combined with other techniques for further length gain, these techniques cannot correct an ill-defined PPJ on their own.^{6,13} In comparison to memories of their penis length before ED onset, more patients in the current study perceived their post-implantation erect length to be longer (53.8% versus 9%) or the same (38.5% versus 19%) and fewer patients perceived their length to be shorter (7.7% versus 72%) following PPI with dorsal phalloplasty compared to patients in a previous study who underwent PPI without dorsal phalloplasty, respectively.²

This study is subject to certain limitations. There is a theoretical possibility that the tacking sutures may loosen over subsequent years and that patients may lose visible penis length accordingly. As a result, further studies with longer follow-up periods are required to determine the sustainability of length gain from a dorsal phalloplasty. In addition, patients were asked to subjectively assess their impression of penis length gain by comparing their postoperative penis length with memories of their penis length before onset of ED, which may have resulted in inaccurate recollections of previous penis length.

Conclusion

A dorsal phalloplasty is a minimally invasive surgical technique which involves defining the PPJ using tacking sutures. The findings of this study indicate that it is an effective method for revealing the penis and increasing the visible penile length following PPI, minimising impression of a shorter penis and increasing postoperative patient satisfaction.

ACKNOWLEDGMENTS

The data of some of the patients included in this study were presented among those of a larger cohort at

the 19th Congress of the European Society for Sexual Medicine on 2–4 February 2017 in Nice, France. An abstract of this presentation will be published in the *Journal of Sexual Medicine* at a later date.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

No funding was received for this study.

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