



Case report

Plaque excision with the Shah Penile Implant™ and tunica vaginalis graft in Peyronie's disease with erectile dysfunction: A case report

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ARTICLE INFO

Keywords:

Erectile dysfunction
Grafting
Penile implantation
Peyronie's disease
Tunica vaginalis

ABSTRACT

Peyronie's disease (PD) is a condition characterized by the deposition of scar tissue in the tunica albuginea of the penis. Peyronie's disease often causes pain, worsens the quality of erections, a variable degree of penile deformation and shortening, which can cause severe distress for the patient and the partner and impact negatively on self-esteem and quality of life in general. Surgery still represents the gold standard treatment for PD in the chronic phase, and it aims to guarantee a penis straight and rigid enough to allow the patient to resume penetrative sex with confidence. Penile prosthesis implantation should be reserved for patients with refractory erectile dysfunction or in these patients with complex deformities and impaired erections. Herein is reported the case of a 51-year-old male with a large ossified PD plaque and erectile dysfunction who underwent simultaneous plaque excision and grafting and penile implantation surgery with a semirigid penile prosthesis. This was the first case of penile prosthesis implantation for Peyronie's disease in Indonesia.

1. Introduction

It has been known that there is a strong association between Peyronie's disease and erectile dysfunction (ED). The combination of the deformity caused by the loss of elasticity of the tunica albuginea and the worsening of the quality of erections can render penetrative sex challenging or impossible, impacting the relationship with the partner [1,2]. Penile deformity and a degree of shortening were commonly found [3,4]. The management of PD could be divided into a conservative approach or surgical approach. Surgery represents the gold standard treatment for PD with penile length, degree and characteristics of the curvature, and preoperative quality of erections should be considered [5–8]. Plaque incision and grafting should be offered only to patients with adequate erections preoperatively [8].

Herein we report the first case of simultaneous plaque excision and grafting and penile prostheses implantation in a patient with PD and refractory ED in Indonesia. The Shah Penile Implant™, a safe, effective, yet low-cost option with very satisfactory results, was used in this case. This implant is a unique semirigid device, as it provides great rigidity and sufficient concealment [9,10].

2. Case presentation

We report a case of a 41-year-old male, in compliance with SCARE Guidelines [11], a 51-year-old male presented with severe shortening of his penis and refractory erectile dysfunction. The patient could not achieve a sufficient erection to penetrate during sexual intercourse with an Erection Hard Scale (EHS) and International Index of Erectile Function (IIEF) score, respectively, of 2 and 5. His medical history was relevant for uncontrolled diabetes mellitus with oral medication.

Physical examination of the penis revealed a large, indurated dorsal plaque extending from the base of the penis to the coronal sulcus. Laboratory examination revealed only high fasting glucose at 137 and an HbA1c of 6.6. The patient underwent Magnetic Resonance Imaging (MRI) of the pelvis and penis with contrast, which confirmed the presence of a large dorsal plaque compatible with PD (Fig. 1).

After obtaining adequate consent from the patient, he was scheduled to undergo penile length restoration with simultaneous plaque excision and grafting and malleable penile prosthesis implantation by a urologist from Cipto Mangunkusumo Hospital (Fig. 2).

The patient was placed in a supine position, and the surgical field was prepped with povidone-iodine and chlorhexidine solution for 10 min. The penile length was measured at 6.5 cm from the base of the

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<https://doi.org/10.1016/j.ijscr.2022.106976>

Received 23 January 2022; Received in revised form 15 March 2022; Accepted 24 March 2022

Available online 5 April 2022

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penis to the coronal sulcus. A circumcoronal incision was made on the penis along the old circumcision scar, and the penile skin was degloved to expose Buck's fascia completely down to the base of the penis. Buck's fascia was completely elevated through 2 para-urethral incisions exposing the underlying tunica albuginea. Following the artificial erection test, a curvature of 90 degrees was found. The plaque was identified and completely excised (Fig. 3).

The tunica vaginalis of the testicles was harvested after the testicles were exposed through the same subcoronal incision, as the penile skin had been degloved down to the base of the penis. Dilatation of the corpora was then carried out uneventfully, and the surgical field was irrigated with antibiotic solution (vancomycin 500 mg and gentamycin

80 mg). A Shah 13-mm semirigid cylinder was inserted in each corpus cavernosus, and the tunica albuginea was then repaired with the tunica vaginalis graft. Buck's fascia was then reapproximated, and the dartos and skin incision was repaired in layers.

After surgery, the final measurement of penile length was 7.5 cm from the base to the coronal sulcus, and the postoperative period was uneventful. Postoperative artificial erection test showed that no curvature was found.

Both the urethral catheter and wound dressing were removed three days after the procedure; since the surgical wound was in good condition, and the patient was able to urinate spontaneously, he was discharged home on a week course of oral antibiotics and told not to have



Fig. 1. MRI of the pelvis and penis.

sexual intercourse for the next six weeks. Postoperative time was uneventful, and the patient was able to resume sexual intercourse after six weeks. Subsequent follow-up evaluations on the outcomes of the patients' and their partners' satisfaction concerning the Shah penile prosthesis implantation at 3, 6, and 12 months were performed through telephonic interviews using the International Index of Erectile Function (IIEF) questionnaire. The postoperative IIEF rates were 43, 52, and 54 at the third, sixth, and twelfth months.

3. Clinical discussion

There is no cure for PD, and the main goals of surgery are to render the penis functionally straight and guarantee the rigidity necessary to resume sexual activity with confidence. A penile prosthesis is the solution of choice in patients where medical therapy is ineffective, poorly tolerated, or contraindicated. In those with complex deformity and a degree of ED, plaque incision and grafting would make ED worse [12].

There are two types of prostheses commonly used in PD patients: inflatable prostheses (IPP) and malleable (semirigid) prostheses (MPP). The American Urological Association (AUA) guideline recommends the implantation of an IPP over an MPP in PD patients with ED. [13] However, satisfactory results can be achieved after implantation of an MPP in carefully selected patients and therefore, the choice of implant should be taken based on the unique characteristics of each patient and based on patients' preference [14–16].

Based on its source, a graft can be classified into autologous (dermis,

vein, tunica albuginea, tunica vaginalis, temporalis fascia, rectus fascia, buccal mucosa), allograft (cadaveric pericardium, fascia lata, dura mater, and dermis), xenograft (porcine small intestinal submucosa, bovine pericardium, porcine dermis) and synthetic (Gore-Tex, Dacron) [8,12].

Each type of graft has its own characteristics, which offers certain advantages and disadvantages. Autografts, allografts and xenografts provide the best results as they are associated with a low risk of infection. However, autografts do not represent the first graft choice as they are associated with donor site morbidity and require the additional operating time necessary for the harvesting and the preparation of the graft. Synthetic grafts instead may pose a higher risk of infection and trigger inflammation reaction and therefore should never be used for tunica albuginea defect cover, especially in case of simultaneous penile prosthesis implantation [17].

Autologous tunica vaginalis, in this case, offered several advantages over other grafts. In particular, tunica vaginalis could be easily harvested without the need for an additional skin incision and its associated morbidity and represents an excellent graft solution thanks to its thickness and elasticity [18]. Other potential advantages include the absence of rejection reaction and minimal-to-none postoperative infection compared to cadaveric graft [19]. Moreover, the tunica vaginalis material is abundant in quantity, which is essential for a large defect. However, it should be noted that tunica vaginalis graft without vascular flaps is not as good as fibrous tissue (e.g. pericardium graft) in traction resistance, resulting in graft contracture and needing to be replaced

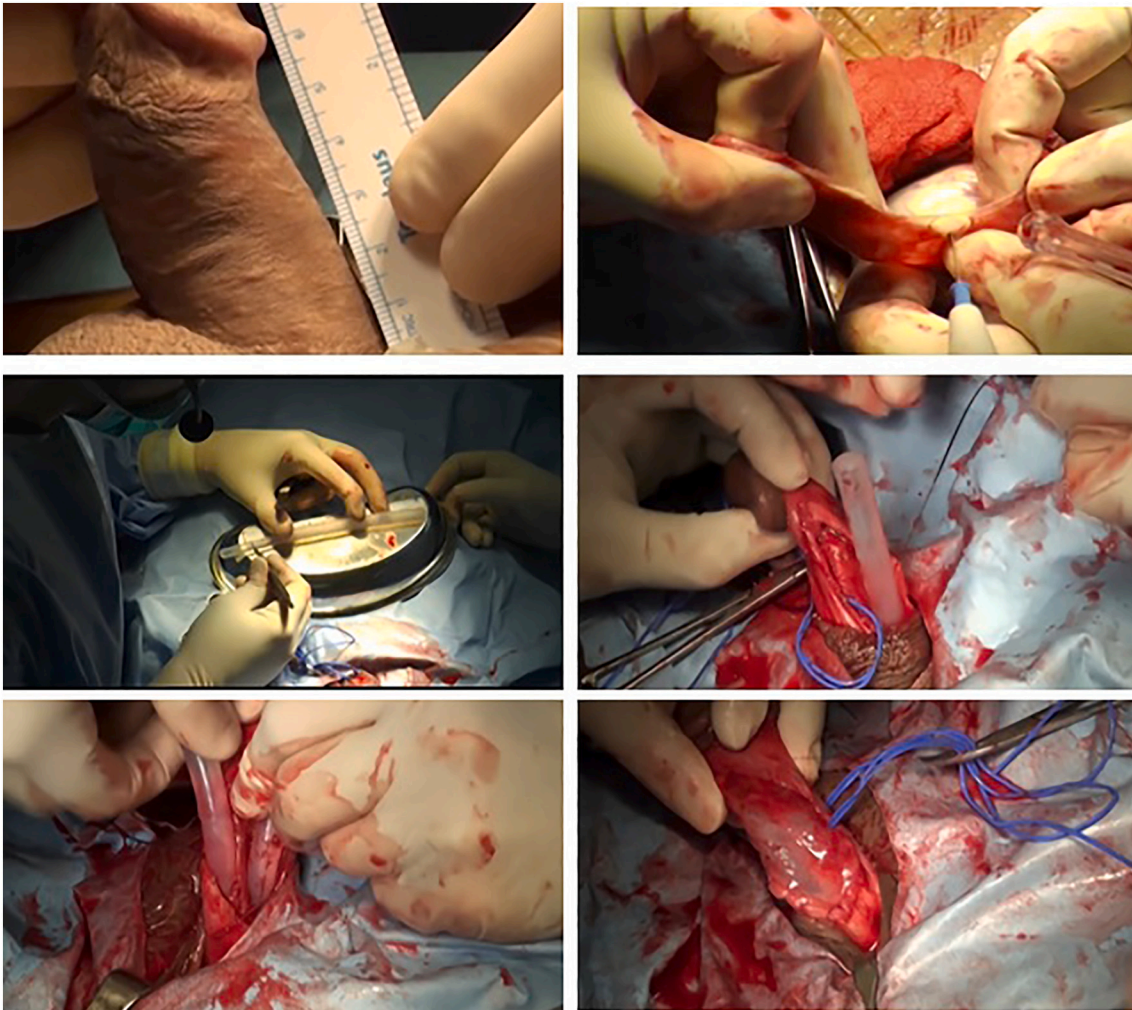


Fig. 2. Graft preparation and prosthesis placement.



Fig. 3. The excised dorsal plaque.

[17].

The Shah Penile implant, in particular, offers excellent results at only a fraction cost of a commercially available penile prosthesis. A study showed that 84% of patients were highly satisfied with Shah SPP with a mean EDITS score of 95. This was comparable with a Coloplast prosthesis by an Egyptian study, which showed EDITS score above 90. This implant should be a good solution with minimal complications for patients with Peyronie's disease to patients in developing countries where the prosthesis is not covered by insurance [9].

Subsequent follow-up evaluations at 3 and 6 months on the outcomes showed excellent results in the International Index of Erectile Function (IIEF) questionnaire. The postoperative IIEF rates were 52 and 54 in the third and sixth months, respectively. Erectile function score, sexual desire score, orgasmic function score, and overall satisfaction score all showed significant improvement.

This was the first case of simultaneous plaque excision, grafting and penile implantation in Indonesia for Peyronie's disease treatment, and the penile prosthesis used was the semirigid type, with tunica vaginalis

as a graft. In addition, the recovery of the patient was excellent; thus, this procedure can be reproduced in the future (Fig. 4).

4. Conclusion

Penile implantation surgery with a semirigid penile prosthesis can be used as a treatment modality in PD co-existent with erectile dysfunction. Tunica vaginalis represents a good graft option, as it can be harvested through the same incision with no additional morbidity and has favourable characteristics in terms of thickness and elasticity.

Consent of the patient

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.



Fig. 4. Post-operative results.

Sources of funding

No received funding.

Ethical approval

This study is exempted from obtaining ethical approval from our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Data availability

The datasets generated during and/or analyzed during the current study are available on demand.

Author contribution

Widi Atmoko: Conceptualization, Methodology, Writing Original-Draft, Investigation, Resources.

Jody Felizio: Writing Original-Draft, Investigation.

Ponco Birowo: Supervision, Methodology, Validation, Writing-Review and editing, Resources.

Nur Rasyid: Supervision, Methodology, Validation, Writing-Review and editing, Resources.

Akmal Taher: Supervision, Methodology, Validation, Writing-Review and editing, Resources.

Giulio Garaffa: Writing-Review and editing, Resources.

Research registration

Not applicable.

Guarantor

Widi Atmoko, MD.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

The authors report no declarations of interest.

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