Shaee’s Punch Technique: Transcorporeal Peyronie’s Plaque Surgery and Penile Prosthesis Implantation

Osama Shaee, MD, PhD,1 Islam Fathy Soliman Abdelrahman, MD, FRCS,1 Mohamed Mansour, MD,2 and Kamal Shaee, MD1

ABSTRACT

Background: Penile prosthesis implantation in cases of severe Peyronie’s disease may require plaque excision/incision and grafting, which may require mobilization of the neurovascular bundle or urethra, posing the risks of penile hyposensitivity or urethral injury, and is time-consuming, possibly increasing infection risk.

Aim: Evaluating transcorporeal debulking of Peyronie’s plaques by “Shaee’s punch technique.”

Methods: Penile prosthesis implantation and punch technique (PPI-Punch) was performed for 26 patients. After corporotomy and dilatation, Peyronie’s plaques were punched out from within the corpora cavernosa using the punch forceps, and then a penile prosthesis was implanted. Comparison to a matching retrospective group of 18 patients operated upon by plaque excision-grafting and penile prosthesis implantation was performed.

Outcomes: The study outcomes were straightness of the erect penis, complication, satisfaction with length on a 5-point scale, the International Index of Erectile Function-5, and the Erectile Dysfunction Inventory of Treatment Satisfaction questionnaire.

Results: Average preoperative curvature angle was 58.1 ± 11.7 in the Punch group and 58 ± 14.8 in the excision-grafting group, p=0.99. After surgery, all patients had a straight penis. No tunical perforations, urethral injuries, or extrusions were noted. Average additional operative time for Punch technique ranged from 5 to 10 minutes (7.3 ± 1.7), in contrast to the excision-grafting group where plaque surgery duration was 50.8 minutes ± 11.1, an 85% difference, p < 0.0001. Septal plaques in the latter group could not be removed. In the PPI-Punch group, penile sensitivity was preserved in all patients, compared with the excision-grafting group, with 7 of 18 patients reporting hyposthesia of the glans. Infection occurred in 1 of 26 patients in the PPI-Punch group, compared with 2 of 18 patients in the excision/grafting group. Satisfaction with length on a 5-point scale was 3.8 ± 0.9 in the punch group, versus 3.1 ± 1.1 in the excision-grafting group, p=0.009.

Clinical Implications: The proposed technique is minimally invasive and prompt, possibly decreasing the known complications of plaque surgery and PPI including sensory loss.

Strengths & Limitations: One limitation is the inability to accurately measure preoperative erect length in patients with erectile dysfunction with poor response to intracavernous injections.

Conclusion: Shaee’s punch technique is a minimally invasive procedure for transcorporeal excavation of Peyronie’s plaques before penile prosthesis implantation, omitting the need for mobilization of the neurovascular bundle or spongiosum, and hence, there is low or no risk for nerve or urethral injury and brief plaque surgery time. Shaee O, Soliman Abdelrahman IF, Mansour M, et al. Shaee’s Punch Technique: Transcorporeal Peyronie’s Plaque Surgery and Penile Prosthesis Implantation. J Sex Med 2020;17:1395–1399.

Copyright © 2020, International Society for Sexual Medicine. Published by Elsevier Inc. All rights reserved.

Key Words: Penile Prosthesis; Penile Implant; Peyronie’s Plaque; Peyronie’s Disease; Plaque Incision; Plaque Excision; Punch Technique; Transcorporeal; Intracavernous
INTRODUCTION

The combination of severe erectile dysfunction (ED) and severe Peyronie’s disease indicates — in many cases — penile prosthesis implantation (PPI). However, the procedure is far from straightforward, and requires special expertise and equipment to restore rigidity by PPI and straightness/length by the adjuvant measures for addressing the Peyronie’s plaques.

Adjuvant measures range from the modeling technique pioneered by Wilson et al1 up to plaque excision and grafting.2 In between exists an armamentarium of adjuvant procedures, including mere plication to restore straightness,3 plaque incision,4 and implantation along with multiple relaxing tunica albuginea incisions and grafting with a self-adhesive collagen-fibrin fleece (penile implant in combination with the Sealing technique).5 PPI and tunica albuginea incision without grafting has also been reported.

Although all the aforementioned techniques may restore straightness, only plaque surgery (incision/excision) can possibly restore length. Yet plaque surgery requires mobilization of the neurovascular bundle (NVB) or urethra, depending on the site of the plaques. This poses the risks of penile hyposensitivity or urethral injury and is time consuming. Extended surgical time possibly influences the infection rate. Grafting per se may further increase infection rate.

Plaque debulking from within the corpora cavernosa can be an effective alternative to plaque incision/excision from without. Transcorporeal plaque surgery obviates the need for NVB or urethral mobilization and may obviate the need for grafting. In this work, we introduce “Shaeer’s punch technique.” This is a minimally invasive technique for plaque debulking from within the corpora cavernosa, thereby restoring straightness and length. This approach is relatively prompt and poses low or no risk of urethral or nerve injury.

MATERIALS AND METHODS

PPI along with plaque surgery adopting the punch technique (PPI-Punch) was performed for 26 patients. All patients had severe ED, refractory to medical treatment, and severe deformity on account of stable Peyronie’s disease. The full ED workup was performed including penile ultrasound and color duplex with intracavernous injection of 15 µg alprostadil, redosing when required to achieve the best quality erection. Scanning was performed using a linear 7.5-MHz probe. Bilateral peak-systolic velocity (PSV) and end-diastolic velocity (EDV) were recorded at timed 5-minute intervals. Resistivity index, artery diameter, and wall thickness were also evaluated. Arteriogenic ED was diagnosed if the highest PSV was $<30$ and veno-occlusive dysfunction if the lowest EDV was $>5$ cm/s. Non-vasculogenic ED was diagnosed when the grade of rigidity was suboptimal, though PSV and EDV being within normal. Plaque size and site were evaluated by ultrasonography. Deformity was evaluated in artificial erection, supplemented with saline injection and basal compression if needed.

Diabetic control was performed for patients with diabetes. Ethical approval and written informed consent were obtained. A minimum of 12-month duration for Peyronie’s disease was a prerequisite for surgery, denoting plaque maturation.

Surgery was performed through a subcoronal degloving incision in 12 cases and a penoscrotal incision in 14. Intraoperative, the degree and direction of deviation and point of maximum curvature were reidentified in the erect state, induced by saline injection and basal compression (Figure 1). After corporotomy and dilatation,
the plaque at the point of maximum curvature was punched-out using the punch forceps, followed by subsequent smaller plaques. Punch forceps is a reusable metal instrument widely used to punch out bony vertebral protrusions in neurosurgery (Kerrison Punch; Am Aesculap, Germany). It has a blunt tip and a cutting zone controlled by a hand grip (Figure 2). Sizes of the punch forceps range from 1 to 5 mm. We used an upward-cutting 5-mm punch forceps in the present study.

The plaque was secured between the thumb and index of the non-dominant hand. The punch forceps was advanced closed (no cutting elements exposed), until the plaque. The cutting zone was opened adjacent to the plaque by loosening the hand grip. The plaque was dipped into the cutting zone by the non-dominant hand (Figure 3, Figure 4), and the grip was squeezed to punch-out part of the plaque (Figure 3). The forceps were withdrawn, and the punched-out fibrous tissue was picked out of the cutting zone (Figure 5). The process was repeated until all plaques were cleared out, as confirmed by palpation. The extent of excavation for septal plaques was controlled by palpating what remains of the plaque. It is therefore unlikely that the tunica albuginea is perforated. And if this happens, the resultant tissue loss is minimal because every punch excavates fibrous tissue that measured 3 mm × 3 mm, approximately, if the largest punch forceps is used. When punching out a septal plaque adjacent to the urethra, the spongiosum harboring a catheter was secured between 2 fingers (Figure 4), and punching was performed in the horizontal plane below and away from the urethra. For other ventral or dorsal plaques, the tunica albuginea can easily be visualized from without and extent of resection controlled, particularly with a degloving incision. We advise that the surgeon palpates the tip of the punch forceps under the normal tunica (without a plaque) to get a sense of when to stop punching at the site of the plaque.

After excavation of the plaques, PPI proceeded as usual. 19 patients received a 3-piece inflatable implant, and 7 received a malleable implant (based on cost considerations). Residual deformity and length were evaluated in the erect state. In case of residual deformity, if any, modeling over the inflated implant would be performed, depending on the extent of deformity (Figure 6). Video of the technique is available at the Video Journal of Prosthetic Urology https://www.vjpu-issm.info/videos/peer-reviewed/1-penile-prosthesis-malleable-inflatable-penile-prosthesis-ipp/item/162-punch-technique-for-trans-corporal-excision-of-peyronie-s-plaques-upon-penile-prosthesis-implantation.

Patients were discharged the same day and instructed to commence coital activity after 45 days. Straightness of the erect penis and complication were recorded over a follow-up period that ranged from 12 to 16 months (14 ± 2 months). Satisfaction with length was evaluated over a 5-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied). Outcome was further evaluated by the International Index of Erectile Function-5 (IIEF) and the Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) questionnaire at the final follow-up. Comparison with a matching retrospective group of 18 patients operated on by plaque excision-grafting and PPI was performed. Cases adequately corrected by modeling were excluded. The follow-up duration of the excision-grafting group was 12 to 20 months (15.2 ± 2.4).

RESULTS
Preoperative Data
Among the 26 patients in the PPI-punch group, 17 were diabetic. 8 patients were diagnosed with arteriogenic ED, 14 with veno-occlusive dysfunction and 4 with non-vasculogenic ED. All demonstrated poor response to intracavernous injection. Preoperative evaluation of deformity required saline injection along with basal compression. Peyronie’s plaques were demonstrated by ultrasonography, with calcification in 11 of 26 patients. The sites of maximum plaque formation were dorsal and dorsolateral in 18 of 26 patients and ventral and septal in 8 of 26 patients. Deviation ranged from 40 to 80°, with an average of 58.1 ± 11.7. Direction of curvature was dorsal in 11 patients, dorsolateral in 7 patients, and ventral/ventrolateral in 8 patients. This in contrast to the excision-grafting group where deformity was an average of 58 ± 14.8, P = .99.
Intraoperative Data

After the punch technique, all patients in the PPI-Punch group were clear of Peyronie’s plaques as per palpation. On evaluation of deformity with the implant in the erect state, 3 of 26 patients needed modeling for residual curvature. Eventually, all patients had a straight penis. No tunical perforations, urethral injuries, or extrusions were noted. Average additional operative time for the punch technique ranged from 5 to 10 minutes (7.3 ± 1.7). This in contrast to the excision-grafting group where plaque surgery duration was 50.8 ± 11.1 minutes, an 85% difference, P < .0001. Septal plaques in the latter group could not be removed. Modeling ameliorated curvature in 11 of 18 cases.

Postoperative Data

In the PPI-Punch group, there were no residual or recurrent curvature and urethral complications or extrusions. Penile sensitivity was preserved as per subjective reports. One of 26 patients ended up with implant infection. The implant was extracted with subsequent delayed reimplantation. Mitomycin was applied upon explantation to avoid corporal scarring. Subsequent implantation was not hindered by corporal fibrosis, and the end result was a straight penis.

In the excision-grafting group, no residual curvatures were noted. Of 18, 7 patients reported hyposthesia of the glans, persisting beyond the sixth month. Of 18, 2 patients ended up with infection, 1 managed by immediate salvage, and the other managed by extrusion and delayed reimplantation.

Satisfaction with length on a 5-point scale was 3.8 ± 0.9 in the punch group and 3.1 ± 1.1 in the excision-grafting group, P = .009. This difference could be attributed to the ability to safely remove septal plaques in the punch group.

There were no statistically significant differences between the PPI-Punch group and the excision-grafting group with regards to the IIEF and EDITS. The IIEF scores were 24 ± 4.9 and 22 ± 8.1, respectively, P = .36. The EDITS scores were 92 ± 13.9 and 84.12 ± 22.7, respectively, P = .16.

DISCUSSION

Plaque incision from within the corpora cavernosa was first introduced in 2006 by Bella et al. Intracorporeal plaque incisions were made using a triangle-shaped scalpel designed for endoscopic carpal tunnel release, introduced through an incision lateral to the plaque. The plaque was incised at multiple sites from within, preserving the tunica albuginea. This procedure did not involve PPI. In 23 patients with 30° to 90° curvature, correction of the deformity was successful in all but 2 patients (less than 10° residual curvature), with 80% reporting erections sufficient for coitus.

In 2011, Shaeer introduced transcorporal incision (TCI) of Peyronie’s plaques. Through the corporotomy incisions, the resectoscope or visual urethrotomy is introduced. Plaques can either be incised or resected and excavated, under vision. A penile prosthesis is then implanted. TCI was performed for 16 cases. After implantation, the penis was straight in all cases. Length was restored to variable degrees: the corpora cavernosa showed an average increase in length of 2.5 cm (11.9%) on the right side and 1.9 (9.1%) on the left, compared with pre-TCI measurements.

In 2013, the “scratch technique” was introduced by Perito and Wilson. An infrapubic skin incision is cut. Through the corporotomies, a long nasal speculum is passed into the corpora cavernosa to a point beyond the plaque. The speculum is spread laterally (transversely) to fracture the plaque. A hook-bladed knife is introduced between the blades of the speculum to incise (scratch) the plaque. Sharp Metzenbaum scissors can be used to fracture the plaque further. Modeling technique and postoperative vacuum suction can be used adjuvantly.

The “punch technique” presented herein is another addition to the expanding armamentarium of intracorporeal plaque surgeries. The procedure can be performed through any of the popular PPI incisions: subcoronal degloving, penoscrotal, or infrapubic. The punch forceps is blunt ended, and the cutting area is protected when introduced closed and is directed sideways rather than forwards, hence low risk for perforation. Any plaque can be debulked regardless of its nature (fibrotic or bony) or site (including difficult to handle...
plaques such as septal and deep crural plaques). Excision of septal plaques may restore length. Plaques are punched out; excavated rather than incised or disrupted. The tunica albuginea can thus be almost rid of plaques. There is no need for an extended corporotomy incision. The regular 1–1.5 cm corporotomy required for inflatable implants is more than adequate. Cost effectiveness is in favor of the punch technique considering the lack of need for grafting. In comparison with the classic plaque surgery, operative time is relatively brief, hence lower infection rate, lower morbidity, and lower cost. There is no need for mobilization of the NVB or spongiosum, hence low or no risk for nerve injury or urethral injury. However, this is an initial experience with a new technique. If and when it is reproduced by other surgeons, complications may issue. This is yet to be seen.

Modeling of the penis with the implant inflated can safely correct curvature in many of the milder cases and ameliorate curvature in more severe cases. It is usually performed intraoperatively after implantation. Residual curvature more than 30° is then managed by plication or plaque incision/excision and grafting, with the implant in place. Such adjuvant measures after implantation pose a risk of puncture or a risk for infection because of extended exposure. After grafting, modeling can result in graft separation.

With Shaer’s punch technique, surgery can proceed in the same aforementioned order, starting by modeling and then punching out plaques if needed. However, we propose that the plaques can first be punched out, the prosthesis implanted, residual curvature assessed, and then, modeling performed if there is residual curvature. This approach intends to minimize unnecessary exposure of the implant to room air and manipulation for any extra length of time.

CONCLUSIONS

Shaer’s punch technique is a minimally invasive procedure for transcorporeal excavation of Peyronie’s plaques before PPI. Punch technique can excavate plaques of any nature and at any site, including challenging plaques such as septal plaques. There is no need for mobilization of the NVB or spongiosum, hence low or no risk for nerve or urethral injury and brief plaque surgery time. With further enhancement and testing of emerging techniques for intracorporeal plaque surgery, there may come a time when it replaces conventional plaque surgery.

Corresponding Author: Osama Shaer, MD, PhD, 21 Gaber Ibn Hayan St., Dokki, Cairo, Egypt, 12311 ARE. P.O.Box: 47 Bab El-Louk, 11513, Cairo, Egypt. Tel: (202)37605181; E-mail: dr.osama@alrijal.com

Conflict of Interest: The authors report no conflicts of interest.

Funding: None.

STATEMENT OF AUTHORSHIP

Category 1
(a) Conception and Design
Osama Shaer; Mohamed Mansour

(b) Acquisition of Data
Osama Shaer; Kamal Shaer

(c) Analysis and Interpretation of Data
Islam Fathy Soliman Abdelrahman; Mohamed Mansour

REFERENCES