THE JOURNAL OF
SEXUAL MEDICINE

SURGERY

ORIGINAL RESEARCH

Plication for Severe Peyronie's Deformities Has Similar Long-Term Outcomes to Milder Cases

Rohit S. Reddy, BA, Maxim J. McKibben, MD, Joceline S. Fuchs, MD, Nabeel Shakir, MD, Jeremy Scott, BS, and Allen F. Morey, MD

ABSTRACT

Introduction: Penile plication (PP) for Peyronie's disease (PD) is an established treatment option for mild to moderate curvature, but scant data exist regarding its utility in severe deformities.

Aim: To evaluate long-term outcomes among men undergoing PP for PD, comparing severe to mild/moderate penile deformities.

Methods: We performed a retrospective review of patients who underwent PP for PD between 2009 and 2017. All patients underwent multiple parallel tunical plication without degloving. Severe PD was defined as either curvature ≥60 degrees or biplanar curvature ≥35 degrees. Patient demographics and surgical outcomes were analyzed. A modified PD Questionnaire and International Index of Erectile Function (IIEF)-5 were administered by telephone.

Main Outcome Measure: Long-term patient-reported outcomes were evaluated from a modified survey incorporating the PD Questionnaire and IIEF-5.

Results: Of 327 PP patients, 102 (31%) responded to the telephone survey at a median 59.5 months (interquartile range 28.3−84) since surgery. Patients were equally distributed into severe (n = 51) and mild/moderate (n = 51) groups. Despite a greater mean degree of curvature in severe compared to mild/moderate patients (71.6 degrees vs 37.7 degrees, respectively, $P < .001$), correction of penile curvature was achieved in 91% of patients, with a mean change of 60.7 degrees in severe cases compared to 31.4 degrees in mild/moderate cases ($P < .001$). Equal numbers of patients in severe and mild/moderate groups reported improvement of penile curvature (74.5% vs 74.5%, $P = 1.0$) and sexual function (51.0% vs 49.0%, $P = .84$). PD Questionnaire metrics were likewise similar between severe and mild/moderate patients ($P > .1$), as were rates of subjective penile shortening (62.7% vs 62.7%, $P = 1.0$) and IIEF-5, both pre-operatively (19.5 vs 19.7, $P = .9$) and post-operatively (19.4 vs 17.6, respectively, $P = .15$). On multivariate logistic regression, worsening sexual function was significantly associated with increased age (odds ratio 1.07, $P = .01$) and pre-operative IIEF (odds ratio 1.14, $P = .02$).

Clinical Implications: PP should be considered in PD patients with severe deformities, as outcomes are favorable and comparable to those with milder curvature.

Strength & Limitations: This is a novel study evaluating long-term patient-reported outcomes after PP, comparing patients with severe deformity to those with mild/moderate curvature. The study was limited by retrospective design, relatively low survey response rate (31%), and lack of validated post-operative PD questionnaire.

Conclusion: Long-term patient-reported outcomes of PP for severe PD deformities are comparable to mild/moderate cases, supporting broader application of PP beyond milder deformities. **Reddy RS, McKibben MJ, Fuchs JS, et al. Plication for Severe Peyronie's Deformities Has Similar Long-Term Outcomes to Milder Cases. J Sex Med 2018;XX:XXX−XXX.**

Key Words: Peyronie's Disease; Plication; Patient-reported Outcomes

INTRODUCTION

Peyronie's disease (PD) is an acquired penile deformity that impedes sexual intercourse and has detrimental effects on patient quality of life.[1] While a variety of non-operative treatments for PD have been described, few have been robustly tested and none have been approved for treatment of severe curvature. Only

Received May 25, 2018. Accepted August 14, 2018.

Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX, USA

https://doi.org/10.1016/j.jsxm.2018.08.006

intralesional collagenase clostridium has been Food and Drug Administration—approved and endorsed by the American Urologic Association for patients with mild to moderate deformities.[2,3] Surgical correction remains the gold standard for patients with stable curvature due to high efficacy and low morbidity.[4]

Penile plication (PP) is traditionally recommended for patients with mild to moderate PD curvature,[5,6] whereas plaque incision with grafting is generally reserved for severe or complex deformities. In recent years, several centers have supported an expanded role for PP in patients with severe deformities, reporting good short-term safety and efficacy.[7–11] Though PP is now used in a wider breadth of PD deformities, scant data exist on long-term outcomes in more severe cases.[8] We sought to evaluate long-term patient-reported outcome measures (PROMs) after PP, comparing patients with severe curvature to those with mild/moderate PD deformities in our large single-surgeon experience. We hypothesized that patients with severe deformities would report outcomes comparable to those with milder disease.

METHODS

After obtaining institutional review board approval, we conducted a retrospective review of all patients who underwent PP for PD by a single surgeon at our tertiary center between 2009 and 2017. All men presented with persistent painless penile curvature for at least 6 months and were grouped for analysis by severity of deformity as determined by office history and/or intraoperatively after intracorporal alprostadil injection. The severe group included patients with either curvature $\geq$60 degrees or biplanar curvature $\geq$35 degrees, while the mild/moderate group included patients with uniplanar curvature $<$60 degrees or biplanar curvature $<$35 degrees. Patients with an hourglass deformity were excluded from this study. Patients with erectile dysfunction (ED) were liberally prescribed oral phosphodiesterase-5 inhibitors to confirm adequate rigidity for penetration before PP. Those with refractory ED were offered concomitant penile prosthesis with PP and were excluded from this study.

Surgical Technique

After induction of general anesthesia, an artificial erection is induced with intracorporal injection of 20 μg of alprostadil. If poor erectile response is noted, a second 20-μg dose is administered to achieve a sufficient erection for evaluation. Maximum degree of curvature is measured by consensus of the surgical team, and photographs of the erect penis are taken from the lateral and inferior perspectives. Before intracorporeal injection, stretched penile length (SPL) is determined by compressing the suprapubic fat pad and measuring the dorsal distance between the pubic symphysis and the penile tip while on maximal stretch.

Our minimally invasive surgical technique for multiple parallel PP without degloving has been described in previous studies.[7–10,12] PP is performed through a 2— to 3-cm longitudinal incision along the proximal or mid shaft opposite the direction of curvature. After the initial dissection is carried through the Dartos and Buck fascia, Senn retractors are used to further expose the tunica albuginea proximally, distally, and rotationally. Beginning proximally, the tunica albuginea is then repeatedly corrected with short inverting plication sutures of 2-0 Ethibond (Ethicon Inc, Somerville, NJ, USA) spanning a total of 15 to 20 mm, while retracting the incision over areas of greatest convexity. The patient is re-examined during proximal shaft compression after each suture and additional sutures are placed until adequate correction of the deformity is achieved.

The incision is closed in 3 layers; Buck and Dartos fascia are closed in 2 layers using 2-0 and 4-0 Monocryl (Ethicon Inc), and skin is closed in subcuticular fashion with 4-0 Monocryl and Dermabond (Ethicon Inc). Intraoperative photographs and SPL measurements are repeated (Figure 1), and a lightly compressive Coban (3M Company, Maplewood, MN, USA) dressing is applied. A penile ring block is performed using 0.25% bupivacaine. All patients are discharged on the same day and are asked to abstain from sexual activity until the day prior to their follow-up visit in 4 to 6 weeks for wound evaluation, SPL measurement, and assessment of deformity correction and sexual function.

Patient Questionnaire

All patients were contacted by telephone by a non-clinical research assistant who was not part of the surgical team. Willing participants were administered a 15-item questionnaire modified from the PD Questionnaire,[13] the International Index of Erectile Function (IIEF)-5,[14] and the Patient Global Impression of Improvement.[15–17] The questionnaire assessed patient perception of post-operative penile curvature, sexual function, erectile strength, pain with erection or intercourse, sensation, penile length, and presence of bumps or nodules. Level of bother associated with each of these outcomes was also assessed.

Statistical Methods

Perioperative and survey data were compared between the severe and mild/moderate PD groups using the χ^2, Mann-Whitney U, and independent sample t tests for categorical, ordinal, and continuous variables, respectively. Logistic regression analysis was used to identify any variables associated with post-operative sexual function. Parameters meeting a threshold $P < .15$ on univariate analysis were included in a multivariable logistic model of sexual function. Statistical significance was considered at $P < .05$ and reported P values were 2-sided. All analyses were performed with software (SPSS, Version 25.0; IBM Corp, Armonk, NY, USA). Figures 1 and 2 were created with software (GraphPad Prism, Version 7.03; GraphPad Software, La Jolla, CA, USA).

RESULTS

Perioperative Outcomes

Among 327 patients undergoing PP for PD during the study period, 102 (31%) responded to the telephone questionnaire a