

SURGERY

10 Years' Plaque Incision and Vein Grafting for Peyronie's Disease: Does Time Matter?



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ABSTRACT

Introduction: Surgical correction is advocated in patients with stable Peyronie's disease (PD) and severe curvature of the penis. Contemporary series demonstrate favorable outcomes based on relatively short follow-up periods. However, long-term follow-up is rarely reported and there is a paucity of evidence on the influence of patients' age, comorbidities, and natural history on surgical outcomes.

Aims: The present study aims to examine the influence of patient's age, comorbidities, severity of the disease, and natural history of PD on long-term outcomes and satisfaction following plaque incision and vein grafting for PD.

Methods: Patients with follow-up of more than 10 years who underwent plaque incision and grafting (Lue technique) for stable PD were included in the study.

Main Outcome Measures: A combination of prospective and retrospective analysis of patients' histories, anatomical, functional, and surgical parameters, development of PD recurrences, improvements of sexual functions, and overall satisfaction were performed between 1992 and 2014. Multiple logistic regression models were applied to calculate adjusted odds ratios for predictors for development of erectile dysfunction (ED) and PD recurrence.

Results: Thirty patients with a median age of 57.5 years were eligible for inclusion in the study with a mean follow-up of 13.0 years (range 10.0–17.6). Angle of preoperative penile deviation was 40° to 110° (median 90°). On follow-up, 26 men (86.7%) had a straight erect penis. Eleven men (36.7%) developed ED, of whom 2 (6.7%) had other comorbidities contributing to their ED. Twenty-five men (83.3%) were still sexually active with or without medication. The mean percentage improvement in sexual function was 69.0%, with 17 men (56.7%) reporting 100% improvement and 7 (23.3%) reporting no improvement. Perceived penile shortening occurred in 13 patients (43.3%) and 6 patients (20.0%) experienced penile hyposensitivity. PD/plaque recurrence was found in 7 men (23.3%). The mean overall satisfaction with the procedure was 73.0%, with 18 men (60.0%) still 100% satisfied and 6 (20.0%) reporting satisfaction below 50%.

Conclusion: Improvement of sexual function and overall satisfaction remain high at 10 years follow-up and make the technique a safe and effective form of treatment in carefully selected patients.

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Key Words: Peyronie's Disease; Plaque Incision; Grafting; Autologous; Vein; Long-term

INTRODUCTION

Peyronie's disease (PD) is a localized fibrotic healing disorder of the tunica albuginea of the penis. The natural history of PD is characterized by an acute (inflammatory) phase with features of pain, tenderness, and progressive deformity; followed by a chronic quiescent phase with resolution of pain and stabilization of the deformity.

PD can lead to curvature and deformity of the erect penis, causing difficulty in achieving penetration, pain during intercourse, penile shortening, and erectile dysfunction.¹ Surgical correction is the gold standard in severe cases that are stable.^{2,3}

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Surgery for PD can be classified into penile shortening procedures, penile lengthening procedures or penile implant surgery. To correct the curvature of the penis caused by PD, the tunica albuginea can either be shortened on the convex side of the curvature (plication techniques), or lengthened at the level of the contracted (plaque) side by incision/partial excision and grafting. Penile implant surgery is reserved for cases with poor or no erectile function.

Patient selection for surgery is based on the state of the disease, the degree of penile curvature, and presence of erectile dysfunction (ED). The outcomes for all surgical approaches have generally been reported as excellent, although often with limited follow-up of no more than 5 years.^{4–6}

This study reviews more than 20 years of plaque incision and autologous vein grafting as described by Sachse and Lue at a single institute.^{7–9} The present study analyzes the surgical outcome and impact of the natural history of the disease in patients with a follow-up of more than 10 years after reconstructive surgery. PD is a chronic, sometimes self-limiting disease with an unclear etiology to date.¹⁰

AIMS

The present study aims to examine the influence of the patient's age, comorbidities, severity of the disease, and the natural history of PD on long-term outcomes and satisfaction following plaque incision and vein grafting for PD with 10 years follow-up.

METHODS

All patients undergoing surgery for PD from 1992 were prospectively evaluated for preoperative and postoperative anatomical and functional parameters, including history, penile anatomy, sexual function, overall satisfaction, and relevant comorbidities. Between 2011 and 2015, patients were re-evaluated for recurrence and surgical outcome. Patients with a follow-up of 10 or more years were included.

Surgery

All patients included in the study underwent plaque incision and grafting with dorsal penile and/or greater saphenous vein as described by Lue et al.⁸ Patients were selected for the procedure based on adequate erectile function, a history of more than 6 months of stable PD, and penile curvature of at least 40° that made intercourse impossible or painful due to the deviation.

Main Outcome Measures

Data were collected prospectively. Where data were missing attempts were made to retrospectively collect information. Data were collected on patients' characteristics including age at surgery, degree of penile curvature, direction of curvature, and PD-relevant comorbidities (diabetes mellitus, Dupuytren's contracture, and carpal tunnel syndrome).

Operative data collected included donor site used for grafting (deep dorsal vein of the penis and/or greater saphenous vein), number of patches used, and additional plication sutures performed.

Postoperative follow-up data included time of follow-up, postoperative degree of erect penis, development of postoperative ED, ED treatment, postoperatively, improvement of sexual function (%), postoperative penile shortening (yes/no), recurrence of PD/plaque, postoperative hyposensitivity, and overall satisfaction (%).

Postoperative improvement of sexual function at 10 years was self-reported by the patient, giving a value between 0% and 100%, with 0% representing "no improvement at all" and 100% "very strong improvement."

Overall satisfaction was equally evaluated on a 0% to 100% scale, with 0% defined as "very dissatisfied" and 100% "very satisfied."

Penile deviation was assessed by cavernous injection of prostaglandin (PG)E1. Changes in penile length were reported by the patient.

Statistical Analysis

Logistic regression models were used to calculate odds ratios for the prediction of postoperative erectile dysfunction and recurrences, depending on the age, deviation, comorbidity, and number of patches used for surgery. A multiple logistic regression model was applied to calculate adjusted odds ratios for these predictors. To visualize the relationship between predictors and outcomes, mosaic plots and conditional-density plots were used.

RESULTS

Between 1992 and 2004, 85 patients with PD underwent plaque incision and autologous vein grafting. Between 2011 and 2015, 30 patients could be evaluated with a follow-up of 10 or more years.

Preoperative Data

Patients' characteristics, surgical aspects, and outcome measures are summarized in [Table 1](#). Median age at surgery was 57.5 years (range 44.4–70.7 years). The preoperative angle of deviation of the erect penis ranged from 40° to 110° (median 90°). Comorbidities related to PD, including Dupuytren contractures of the hand, carpal tunnel syndrome (CTS), and diabetes mellitus were found in 13 men (43.3%).

Surgical Aspects

The deep dorsal vein alone was used for grafting in 21 cases; the greater saphenous vein in 5 cases, and in 3 cases a combination of both deep dorsal and greater saphenous veins was used. In 6 cases (20.7%) additional Nesbit sutures were required to achieve complete straightening of the deformity.

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