SURGERY

Surgical Outcomes of Plaque Excision and Grafting and Supplemental Tunica Albuginea Plication for Treatment of Peyronie's Disease With Severe Compound Curvature

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ABSTRACT

Background: There are limited data in the literature that describe the management of Peyronie's disease (PD) with severe compound curvature, which often requires additional straightening procedures after plaque excision and grafting (PEG) to achieve functional penile straightening (<20 degrees).

Aim: This study highlights the clinical distinction and our experience with men with PD and severe compound curvature treated with PEG and supplemental tunica albuginea plication (TAP).

Methods: We performed a retrospective chart review of patients with PD and acute angulation who underwent PEG (group 1) and patients with compound curvature who underwent PEG with TAP (group 2) between 2007 and 2016.

Outcomes: Primary post-operative outcomes of interest include change in penile curvature, change in measured stretched penile length, and subjective report on penile sensation and sexually induced penile rigidity.

Results: 240 Men with PD were included in the study, of which 79 (33%) patients in group 1 underwent PEG and 161 (67%) in group 2 underwent PEG and TAP. There was no difference in associated PD co-morbidities including age, hypertension, hyperlipidemia, hypogonadism, diabetes, or tobacco use. After artificial induction of erection with intracorporal trimix injection, the average primary curvature was 73 (range, 20–120) degrees for group 1 compared to 79 (range, 35–140) degrees for group 2 (P = .01). Group 2 had an average secondary curvature of 36 (20–80 degrees). After completion of PEG, men in group 2 had an average residual curvature of 30 (range, 20–50) degrees which required 1–6 TAPs to achieve functional straightness (<20 degrees). At an average follow-up of 61 months, there was no difference for group 1 and group 2, respectively, for recurrent curvature (11.4% vs 12.4%, P = .33), change in penile length (+0.57 vs +0.36 cm, P = .27) or decreased penile sensation (6% vs 13%, P = .12). In all, 81% of group 1 and 79% of group 2 were able to engage in penetrative sex after penile straightening with or without pharmacotherapy (P = .73).

Clinical Translation: Our review shows promising surgical outcomes for the use of PEG and supplemental TAP for this subtype of complex PD.

Strengths and Limitations: This article reports the largest experience with treatment of PD with compound curvature to date. Limitations of this study include the retrospective nature of the analysis as well as the lack of a validated objective measurement of erectile function after penile straightening.

Conclusion: Our study found no baseline difference in underlying co-morbidities in men with severe compound curvature compared with men with acute severe angulated curvature. Men with severe compound curvature represent a severe and under-recognized population of men with PD who can be surgically corrected with PEG and supplemental TAP(s) when needed without an increased risk of loss of penile length, recurrent curvature, decreased penile sensation, or erectile dysfunction when compared to men treated with PEG alone. **Chow AK, Sidelsky SA, Levine LA. Surgical Outcomes of Plaque Excision and Grafting and Supplemental Tunica Albuginea Plication for Treatment of Peyronie's Disease With Severe Compound Curvature. J Sex Med 2018;XX:XXX–XXX.**

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Key Words: Peyronie's Disease; Plaque Excision and Grafting; Tunica Albuginea Plication; Surgical Outcomes; Compound Curvature

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INTRODUCTION

Peyronie's disease (PD) is a progressive fibrotic disorder of the penis in which disorganized collagen and elastin replaces the normal tunica albuginea.¹ This scarring phenomenon can cause structural and functional changes to the penis including curvature, shortening, hinging, narrowing, pain, erectile dysfunction (ED), as well as associated psychologic stress. Contemporary epidemiology studies suggest that the incidence of PD can involve 3-13% of men in the general population.²⁻⁴ Although these studies suggest that PD may not be as rare as it was once thought, the published range may still be under-reported due to the associated emotional and psychological impact of the disease.^{5,6}

The 2-phase theory of PD is well-accepted. The first phase is an acute period during which the patient may present with penile pain and progressive deformity. The second phase, which is known as the chronic phase, is defined as stabilization of penile curvature and deformity and resolution of painful erections beginning approximately 1 year from the onset of disease.¹ This phase marks the resolution of acute inflammation and stabilization of the penile deformity. Surgical correction remains the most reliable and durable treatment for the chronic phase of PD. The currently accepted surgical treatments include tunica albuginea plication (TAP) for PD <60 degrees and tunica lengthening (plaque incision or partial excision and grafting) for PD >60 degrees with or without severe indentation and/or bothersome penile shortening. When drug-refractory ED is also present, the option should be placement of a penile prosthesis with straightening maneuvers.^{1,7–9}

In this article, we define men with severe compound penile curvature as having multiple vertices of angulation with the primary curvature measuring >60 degrees. We have identified 2 subtypes of compound curvature. The first type, uni-planar compound curvature (UPC), occurs when an elongated plaque extends along the same plane. In addition to the point of maximal curvature, there can be additional vertices of angulations along the same plane creating a gradual crescent-shaped curvature (Figure 1). The second type of compound curvature, multi-planar curvature (MPC), occurs when there are multiple geometric planes creating curvature in multiple directions (Figure 2). In both scenarios, partial plaque excision and grafting (PEG) at the point of maximum curvature alone leaves behind



Figure 1. Uni-planar compound curvature.

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