CASE REPORT

Excision and Patch Grafting of a Lateral Peyronie’s Plaque—Utilizing a Longitudinal “Window” Approach

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ABSTRACT

Introduction. Peyronie’s disease (PD) is a debilitating disorder in which collagen deposition, fibrosis, and plaques in the tunica albuginea result in penile curvature, shortening, and pain. For severe curvatures requiring plaque incision or excision with grafting (PIEG), a subcoronal circumcising incision with penile degloving has historically been used.

Aims. The aim of this study was to report our unique approach to PIEG via a longitudinal “window” incision for the correction of PD, minimizing the surgical manipulation and dissection accompanying the traditional circumcising incisional approach that may lead to increased postoperative edema, pain, and prolonged healing time.

Methods. A patient presented with a stable, painless, 90-degree midshaft leftward curvature causing penetration difficulties and painful intercourse for his partner. His Sexual Health Inventory for Men (SHIM) score was 23. The patient opted for surgical correction with plaque excision and grafting via a 4-cm longitudinal incision overlying the point of maximal curvature along the left lateral penile shaft. This direct access to the left corpus cavernosum and plaque, along with dissecting skin, dartos, and Buck’s fascia, created a window with sufficient exposure for excision and patch grafting.

Main Outcome Measures. The main outcome measures were objective data and subjective data in men undergoing PIEG via lateral longitudinal “window” incision for PD repair.

Results. The plaque was excised and a porcine small intestinal submucosa graft was sewn in. Intraoperative artificial tumescence at the end of surgery revealed complete correction of the curvature. The patient experienced painless rigid erections by postoperative day three with minimal penile edema. By postoperative week four, he could successfully partake in coitus. His SHIM score remained unchanged. At maximum follow-up 6 months postoperatively, he still endorsed excellent cosmetic and functional outcomes with spontaneous unassisted erections and no recurrence of his curvature.

Conclusion. A lateral longitudinal incision for PIEG is a feasible technique and may reduce the postoperative morbidity and dissection required with traditional circumcising incision with penile degloving. Larger comparative studies are necessary for further evaluation.

Key Words. Peyronie’s Disease; Plaque Excision; Patch Grafting; “Window” Technique
Peyronie’s disease (PD) is a debilitating condition in which collagen deposition in the tunica albuginea results in penile curvature, shortening, and pain. The disease is progressive, with an early acute phase where plaque is developing, curvature changing, and the patient experiences pain. The chronic phase is marked by stability in the fibrosis and plaque, and a resolution of the pain. Surgical treatment is typically reserved for the chronic phase and the method of treatment is influenced by the degree of curvature, status of erectile function, surgeon comfort level, and the patient’s wishes [1].

Surgical therapy is indicated for those with a complex deformity, extensive plaque, or symptoms refractory to conservative therapy. Tunical plication and penile prosthesis implantation have shown good results in properly selected patients following standard algorithms. For severe curvature and concomitant erectile dysfunction, plaque incision or excision with grafting (PIEG) has historically been used [2,3]. Classically, a subcoronal circumcising incision with subsequent penile degloving is used for PIEG [4]. However, there are many drawbacks with this approach. It does not allow preservation of an uncircumcised foreskin and can lead to severe postoperative pain and edema. Additionally, access to proximal plaques can be difficult. In this report, we describe our alternate technique of approaching lateral PIEG using a lateral longitudinal “window” incision.

**Aim**

The aim of this study is to report our unique approach to PIEG via a longitudinal “window” incision for the correction of PD, minimizing the morbidity that can accompany the traditional circumcising incisional approach.

**Methods**

A 47-year-old Caucasian male with no significant past medical history or penile trauma was referred to our practice for the continued management of PD. He had previously taken oral colchicine, pentoxifylline, and had six rounds of intralesional interferon injections without benefit. He reported good erectile function with a Sexual Health Inventory for Men (SHIM) score of 23, but difficulty with intercourse due to the severity of penile curvature. Specifically, he reported difficulty with penetration and pain to his partner due to the severity of the PD. The degree of curvature had been stable for over a year. Physical examination with tumescence revealed leftward curvature of 90 degrees. The patient decided to proceed with plaque excision and patch graft with porcine small intestinal submucosa (SIS) graft (Biodesign, Cook Urological Inc., Spencer, IN, USA). Of note, he expressed a desire to remain uncircumcised because of the concern of loss of sensation.

**Surgical Procedure**

Tumescence was induced with intracavernosal injection of alprostadil 10 mcg, confirming a 90-degree leftward curvature with palpable plaque (Figure 1). A 4-cm longitudinal incision on the left lateral aspect of the penile shaft overlying the point of maximal curvature was made for direct access to the left corpus cavernosum and plaque. Buck’s fascia was then dissected off of the tunica with careful elevation of the left side of the neurovascular bundle up to the deep dorsal vein. A 2.5 cm by 5.5 cm rectangular piece of tunica was excised.

A SIS graft was oversized to 3 cm by 6 cm, hydrated in normal saline, and sutured into place using four separate running 3-0 absorbable monofilament sutures. An artificial erection was induced with injectable saline into the contralateral corpora to ensure there were no leaks in our graft closure. A drain was placed over surgical bed via a separate stab incision. The wound was closed in three layers and a light compression dressing was placed. He underwent postoperative penile rehabilitation in the form of daily penile stretching, use of vacuum erectile device, and continued pentoxifylline.

**Main Outcome Measures**

The main outcome measures are objective data (improvement in degree of curvature, analysis of postoperative morbidity, and maintenance of erectile function postoperatively) as well as subjective data (cosmetic results) in men undergoing PIEG via lateral longitudinal “window” incision for PD repair.

**Results**

Pathology from the excised plaque showed dense fibro-connective tissue consistent with PD. Total operative time was 106 minutes and estimated blood loss was 35 mL. There were no peri-
or postoperative complications. The drain was removed at 24 hours. The patient experienced painless rigid erections by postoperative day three with minimal penile edema. At 1-week follow-up, there was no edema, ecchymosis, or sensory deficit and the wound was well healed with no erythema or drainage. The patient continued the aforementioned penile rehabilitation regimen. He was able to successfully partake in coitus at postoperative week four. His SHIM score remained unchanged. At his last follow-up 6 months after surgery, he had excellent cosmetic and functional outcomes with spontaneous unassisted erections and no residual curvature.

Discussion

PD is a relatively common condition. Even with a prevalence rate estimated to be as high as 9%, there are population-based studies suggesting this condition is still heavily underdiagnosed [3,5]. Given the frequency of presentation, it is reasonable to assume a number of these cases will be severe, underscoring the importance of surgical therapy in the armamentarium of PD management. PIEG is used for patients with good preoperative erectile function and severe curvature more than 60–70 degrees [4].

Lowsley and Boyce described the first PIEG in 1950 [6]. Their approach was through either a midline dorsal or ventral longitudinal incision using a fat graft to repair the tunical defect. In this series, the lateral plaques had the poorest results with over half requiring a repeat surgery.

Subsequently, Hall and Turner were among the first to describe PIEG using a circumcising incision [7]. With the circumcising incision, the penis was able to be degloved, allowing access to plaques located anywhere on the circumference of the penile shaft. Fournier and colleagues described a lateral inguinal scrotal incision for proximal plaques that also allowed for harvesting of the deep dorsal vein being used for the graft [8]. Lue and El-Sakka expanded the technique of venous patch grafting. As they preferentially obtained distal saphenous vein through an incision at the ankle, a circumcising incision was utilized to approach the penile plaque [9]. Currently, the circumcising incision is described as the most commonly used approach to PIEG [4].

Despite widespread adoption, the circumcising incision has a number of drawbacks. Complica-
tions can include penile lymphedema, decrease in glans sensitivity, paraphimosis, distal skin necrosis, and excess postoperative pain [10]. Given that the goal of PIEG is good functional and cosmetic outcomes, any one of these issues can be debilitating in the PD patient. In order to address this, we employ a minimally invasive approach with a lateral longitudinal incision to access lateral plaques instead of the circumcising incision. This allows for direct access to the plaque without any compromise in exposure. One benefit of the circumcising incision with penile degloving is maximal exposure, but we did not find any limitation in exposure using the longitudinal incision in a patient with this described pathology. A drawback of the circumcising incision is poor access to proximal plaques due to folding of proximal skin following degloving. With the lateral “window” approach, there is no folding of skin that limits exposure. Just as important is the decreased morbidity encountered postoperatively from the longitudinal incision axis.

To date, we have performed the “window” technique in three cases. The presented case is our initial patient with the longest postoperative follow-up, and the other two have similarly good short-term functional and cosmetic outcomes. All three patients suffered from PD with lateral curvature. We feel that candidates for the “window” technique are those with a simple lateral plaque located anywhere along the lateral side of the penile shaft. They have required patches as large as 18 cm² in area, which highlights lateral side of the penile shaft. They have required located both very proximally and distally along the ventral plaque.

In our small series, the plaques have been located both very proximally and distally along the lateral side of the penile shaft. They have required patches as large as 18 cm² in area, which highlights the feasibility of the technique for large plaques located anywhere along the lateral penile shaft.

While this pilot study shows that the technique is feasible, a large comparative study between the standard incision and the “window” technique needs to be performed, utilizing pain and outcome questionnaires along with objective postoperative data.

Conclusions

Surgical management continues to be the mainstay of treatment for severe PD with PIEG utilized in patients with good preoperative erectile function and lateral curvature more than 60 degrees. The standard approach utilizing the circumcising incision carries a number of potential problems. We have successfully applied a lateral longitudinal incision for PIEG of lateral plaques to reduce intraoperative challenges and improve postoperative recovery. This pilot report highlights the feasibility of our technique and can effectively be applied in select patients with good outcomes. Comparative studies with larger recruitment are needed for further evaluation.

References

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