Original Article

Penile corporoplasty with Yachia's technique for Peyronie's disease: Single center experience with 117 patients

Ivo Lopes, Nuno Tomada, Pedro Vendeira

Department of Urology, São João Hospital and Medical School of Oporto University, Oporto, Portugal

Abstract

Introduction: Peyronie's disease is an acquired penile deformity with a variety of presentations, caused by the formation of fibrous plaques within the tunica albuginea, leading to bio-mechanical and vascular abnormalities. The objective is to investigate the 18 years outcome of patients with Peyronie's disease treated with penile corporoplasty (Yachia technique) in our department.

Materials and Methods: One hundred and seventeen patients underwent surgical treatment for PD between 1991 and 2009 and were retrospectively evaluated. We used the Levine and Lenting's algorithm for surgical treatment. Data was obtained from medical records, clinical evaluation, and telephone interview. Post-operative follow-up was at 6 weeks and 12 months. The mean time of follow-up was 14 months (12-19 months).

Main Outcome Measures: Patient demographic, co-morbidities, erectile function, penile curvature, and surgical intervention were documented. The main outcome measures of this study are postoperative complications, surgical purpose, and patients and partner's satisfaction rates.

Results: Surgical aim was obtained in 106 patients (success rate of 94.6%). Complications occurred in 4.5% of patients, but most of these were mild. At 6 weeks, complete straightening of the penis was achieved in 57 patients (50.9%), and partial straightening which allow sexual intercourse in 49 patients (43.7%). Nine patients report gland hypoesthesia and almost all report subjective perception of penis shortening (0.5 cm to 5 cm). Twenty-two patients developed recurrent deformity at 12 months follow-up, with compromise of sexual intercourse in 7 patients. Patients' responses to our questionnaire showed that overall 88.4% of the patients and partners were satisfied with the surgical results.

Conclusion: According to the results of this long-term, retrospective study, surgical correction, using the Yachia technique, is an excellent option for patients with functional impairment from their Peyronie's disease, especially.

Key Words: Penis induration, penis surgery, Yachia corporoplasty, peyronie's disease

Address for correspondence:
Dr. Ivo Lopes, Department of Urology, São João Hospital, Medical School of Oporto University, Alameda Prof. Hernâni Monteiro, 4200-319 Porto, Portugal.
E-mail: Ivo.lopes.urologia@gmail.com

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INTRODUCTION

Peyronie's disease (PD) is an acquired penile deformity with a variety of presentations, caused by the formation of fibrous plaques within the tunica albuginea, leading to bio-mechanical and vascular abnormalities. Many of the older reports referred that the symptomatic incidence of PD ranged from 0.3% to 1%, but recent studies reported a higher incidence, most likely between 3% and 10%.[1,2] Although the basic science research on the etiology of PD is limited by the failure, to date, to develop a true animal model, most investigators believe that PD results from a combination of a scar-forming tendency coupled with penile trauma as the direct inciting event. Currently, it is accepted that buckling trauma of the penis,

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usually occurring during intercourse, leads to small lesions that activate the process of wound healing and development of a fibrotic plaque. TGF-β has been found to be related to the disordered healing process.[3] This plaque limits expansion of the tunica albuginea during erection, and results in curvature, indentation, and/or foreshortening. The natural history of the disease is variable, ranging from spontaneous remission to a chronic condition. The natural history of PD includes two phases: Active and quiescent. The first phase is associated with painful erections, a palpable nodule or plaque and evolution of deformity of the penis with erection. It is followed by a quiescent secondary phase, characterized by stabilization of the deformity, dissolution of the pain, and possible new onset of erectile dysfunction (ED).

Despite the numerous medical treatments for PD, none has showed a high success rate. Fortunately, most of the patients require only reassurance and education. Surgical treatment is the mainstay of therapy for patients with severe curvature or narrowing that causes difficulty in penetration, affecting both patients and partner's quality of live.[3,4] It should only be performed in the quiescent phase, which means at least 12 months of disease, at least 6 months of non-progression or regression of penile deformity and/or plaque and absence of pain.[5,6] Surgical treatment can be divided in three main categories: Wedge resection/plication surgery, plaque excision/incision with grafting procedure, or implantation of a penile prosthesis. Generally, the degree and localization of the curvature, type of deformity, penile length, preoperative erectile status, and patients and partners expectations, are all important factors in the choice of the surgical procedure. It's widely accepted that tunical shortening procedures are ideal for men with adequate penile length, curvature <60°, and no hourglass deformity and hinge-effect.[7,8] Meanwhile, tunical lengthen procedures should be performed on PD patients with curvature >60°, complex curvatures, or the presence of hourglass deformity, hinge-effect, and small penis.[7,8] Adequate erectile capacity is *sine qua non* for both tunical shortening and lengthening procedures, whereas patients with diminished erectile capacity are candidates for penile prosthesis implantation.[7,8]

We have reviewed the case histories of 117 patients with acquired penile curvature corrected with Yachia's procedure to assess patients and partners' satisfaction and functional results at long term follow-up.

MATERIALS AND METHODS

Between December 1991 and August 2009, 117 patients with PD were assigned to be submitted to penile corporoplasty with Yachia's technique. Operative reports as well as hospital records were retrospectively reviewed. All patients were submitted to an admission protocol which focused on detailed sexual and medical history, duration of the disease, quality of erections, pain on erection, autophotography, and location and degree of curvature after combined injection and stimulation (CIS) test with vasoactive agent.

At follow-up, the potency status and penile deformity were assessed at 6 weeks and 12 months postoperatively.

Then, at a median follow-up of 14 months (range 12-19 mo), patients and partners were interviewed either personally or by telephone. They were asked about their satisfaction status (which was classified as "excellent," "satisfied," or "poor"), the reason for dissatisfaction and about residual deformity. In this way, complete follow-up data were available in 112 out of 117 patients.

Patient's characteristics and surgical procedures

To identify and characterize predictive factors for PD accessed the risk factors for systemic vascular disease and the type and degree of deformity.

All patients' select for the corporoplasty had sufficient erection for intercourse although the majority presented complaining of difficulty with it. At the time of surgery, all patients had the presence of disease for at least 1 year and stable disease for at least 6 months (neither pain nor progression of deformity).

General anesthesia was performed in all cases.

Circumcision type incision and degloving the penile shaft was performed in all patients, while prepuce sparing was carried out only in one patient. We used the surgical technique described by Yachia that consists in performing one or more longitudinal incisions with no more than 1 cm in the tunica albuginea contralateral to the penile curvature, with subsequent transversal plication with 4-0, nonabsorbable, synthetic, monofilament (PDS®), in a Heineke-Mikulicz fashion.[9] Patients were advised to avoid intercourse for 6 weeks while they heal.

Surgical aim was defined as complete straightening of the penis or partial straightening (residual curvature less than 15°). Same or better erectile quality postoperatively was accepted as "functional success."

RESULTS

Penile deformity, pain on erection, and palpable plaque were the most common presenting symptoms.

At least one risk factor for systemic vascular disease was identified in 73.5% of patients. Hypertension, hypercholesterolemia, and diabetes were the most common Table 1.

Table 1: Risk factor for systemic vascular disease

	N (%)
Hypertension	57 (48,7)
Hypercholesterolemia	63 (53,8)
Diabetes mellitus	42 (35,9)
Tobacco	38 (32,5)
Obesity	53 (45,3)

Dorsal curvature (43.6%) was the most common one, with lateral, dorso-lateral, and ventral curvature being less common (27.4%, 27.4%, and 1.6%, respectively). Of these patients, the degree of deformity was less than 30° in 20 (17.1%), 31° to 60° in 84 (71.8%), and greater than 61° in 13 (11.1%).

The mean age at surgery was 57.9 years (28-73 yrs).

Surgical aim was obtained in 106 patients (success rate of 94.6%). At 6 weeks, complete straightening of the penis was achieved in 57 patients (50.9%), and partial straightening which allow sexual intercourse in 49 patients (43.7%). No patient reported over-correction.

Complications occurred in 4.5% of patients, but most of these were mild (penile hematoma and edema, and pain). Only one patient who insisted on preputial sparing, secondary circumcision had to be performed due to severe edema and phimosis.

Almost all patients reported subjective perception of penis shortening (0.5 cm to 5 cm; mean 1.8 cm), but only three patients considered it a "real concern," interfering with sexual intercourse.

Nine patients (8%) reported gland hypoesthesia although just two stated it as permanent and with interference with intercourse.

Twenty-two (19.6%) patients developed recurrent deformity at 12 months follow-up, with compromise of intercourse in 7 (6.3%) patients.

At 6 weeks after the operation, all patients except one had complete erection.

At long-term follow-up (mean 14 months), only one patient had complete loss of erectile function.

Responses to our satisfaction questionnaire showed that overall 88.4% of the patients and partners were completely satisfied with the outcome of surgery, 4.5% were partially satisfied, and 7.1% were unsatisfied.

The reasons for dissatisfaction included penile shortening, ED, major sensory changes of the glans, and recurrence of deformity.

DISCUSSION

PD is a sexually debilitating disease causing significant penile deformity and ED, as well as psychological stress for many men. PD regresses spontaneously in 13% of men, while progressing in 40% of untreated ones, and showing no change over time in 47%.[9]

The efficacy of medical management of PD is difficult to determine because, in the past, few studies were properly done. Treatments that have been suggested as effective in PD through the years have included: Vitamin E, colchicine, potaba, tamoxifen, as well as injectable corticosteroids, collagenases, and verapamil.

A patient must have stable and mature disease to be surgical candidate. At least a year from the onset of disease and 6 months of stable disease should surpass before surgery is undertaken, because a large number of patients with stable disease for less than 6 months suffer recurrence postoperatively.[10] Levine proposed an algorithm for the surgical treatment of PD: Simple curvatures <60° with adequate erectile capacity were candidates for conservative procedure (shortening procedures); on the other hand, recommend lengthening procedures for complex curvatures >60° and short penile length.[8] Deciding on the type of surgery is a balance between erectile function and penile shortening, and it requires individualization. Knowing the prerogatives to purpose a patient to penile corporoplasty, we always discuss expectations, risks, and complications of surgery with patients, and if possible, with their partners.

Although we had respect at least 6 months of stable disease, 19.6% ($n = 22$) of the patients developed recurrent deformity at 12 months follow-up, 6.3% of which with compromise of intercourse. Of these patients, 12 (54.5%) had a deformity bigger than 60° and 10 (45.5%) between 30° and 60°, before surgery. This data supports Levine recommendations, but despite our regard these patients accepted this procedure because they considered it safer.[8]

The Nesbit procedure was been modified by Yachia and consists in making single or multiple 1 cm longitudinal incisions along the convex side of the tunica, which are subsequently closed horizontally.[6,9] By doing so, it would be expected a reduction in the injury to the neurovascular bundle and glans hypoesthesia.[9] Recent reviews show a success rate of penile straightening and satisfaction for Nesbit procedure ranging between 73% and 90.5% and 75% and 88%, respectively.[4] Similar rates of straightening (93%) and satisfaction (78-83%) have been found with the Yachia technique.[11] In our study, we presented the highest number

Table 2: Results of Yachia procedure in patients with PD

Authors	*N*	Mean follow-up (months)	Straingtness (%)	ED (%)	Satisfaction (%)	Shortening (%) (cm)	Complicatons (%)
Lopes	117	14	50,9 complete straight 43,7 (<30°) 6,3 (recurrence causing SD)	12,5 (worse)	88,4 excellent 4,5 satisfied 7,1 poor	100 (0,5-5) 2,7 shortening causing SD	1,8 penile hypoesthesia 0,9 phimosis (require subsequent circumcision)
Daitch[12]	19	24,1	92,9 straight 7,1 (<20°)	7,1 (worse)	42,9 very satisfied 35,7 satisfied 7,1 neutral 14,3 dissatisfied	43 (no change) 57 (1,2-7,5)	-
Licht[13]	30	12	93 straight	0	83 satisfied	67 (1-2) 3,3 shortening causing SD	3 penile hypoesthesia
Sulaiman[14]	78	50	4,8 (recurrence)	23,1 (worse)	79,5 satisfied	40 concerned about shortening 7,7 unsatisfactoy intercourse	3,8 penile hypoesthesia 3,8 unhappy with circumcision

PD: Peyronie's disease; ED: Erectile dysfunction; SD: Sexual dysfunction

of patients submitted to Yachia corporoplasty to correction of PD ever publish. Although curvatures greater than 60° were present in a significative percentage of cases (11.1%), satisfactory surgical outcome was attained in nearly 95%, and both patients and partners presented high scores of satisfaction, what makes this technique an excellent option in the treatment of PD [Table 2].

We operated only the patients with good preoperative erectile function. In those with ED, we recommended implantation of penile prostheses. Only one patient reported postoperative *de novo* ED, but after detailed clinical investigation, we didn't find any organic cause, for that we believe in a psychogenic cause. At long-term follow-up (mean 14 months), only one patient had complete loss of erectile function. However, on reviewing their clinical records, it could be attributed to diabetes or obesity. Our results confirm that Yachia corporoplasty is a safe method to guarantee post-operative erectile function in most patients.

The main issue of patient's unsatisfaction was the shortening of the penis. A recent review reported that significant penile shortening of the penis occurred in 37-100% of patients with the Nesbit procedure and 57-67% of patients with the Yachia procedure.[11] Of these, only 1.3-11.9% (Nesbit) and 3.3-7.7% (Yachia) reported difficulty in sexual intercourse attributable to penile shortening. Although all our patients had penile shortening, only a small number ($n = 3$) considered it a "real concern," interfering with sexual intercourse.

After surgery, nine patients (8%) in our study reported major sensory changes although just two stated it as permanent and with interference with intercourse.

On the basis of these data from the biggest serie ever publish, we believe that for a successful outcome of Yachia procedure, the operation should be offered only to patients with significant curvatures, good erectile function, and adequate penile length.

CONCLUSION

According to the results of this long-term, retrospective study, after medical therapy is considered and the PD has stabilized, surgical correction, using the Yachia technique, is an excellent option for patients with functional impairment from their Peyronie's disease, especially if selected by Levine's and Lenting's algorithms. All patients should be informed about the risk of penis shortening, hypoesthesia, and residual curvature prior to surgery, being imperative open and honest discussion to avoid false expectations. The recurrent penile deformity at medium time should be related with the etiopathogeny of the disease, which remains unclear.

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