Penile Implants in the Treatment of Peyronie's Disease with Erectile Dysfunction

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Abstract

Background: Peyronie's disease and erectile dysfunction is common related pathological condition and single treatment for both conditions is the goal.

Objective: To report our practice in the managing of patients with Peyronie's disease associated with erectile dysfunction.

Patients and Methods: This study was carried out during the period of 2014-2018, twenty-one adult patients (39-68) years were treated by malleable penile implant surgery. All patients presented with Peyronie's disease associated with erectile dysfunction. The sorts of additional maneuvers and their achievement in additional straightening the residual curvature have been stated.

Results: We deliberate medical conditions that have an association between erectile dysfunction and Peyronie's disease and performing straightening procedures, modeling was successful in decrease penile curvature and Patient satisfaction rates 80% for both patients, partners have been reported in this literature.

Conclusion: However, when Peyronie's disease exists with ED, the gold standard treatment is penile prosthesis surgery with additional straightening procedures.

Keywords: Penile prostheses, Erectile dysfunction, Peyronie's disease

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Introduction

Erectile dysfunction is the persistent incapability to attain or maintain a sufficient erection for a satisfactory sexual performance [1]. Erectile dysfunction has long been considered as a quality of life issue rather than a medical condition [2]. Depending on the cause, erectile dysfunction is classified as organic, psychogenic, or mixed. The development of erectile dysfunction is generally considered to be multi-factorial with several risk factors such as cardiovascular disease, diabetes mellitus, aging, smoking, hormonal disturbances, and metabolic syndrome [3].

Peyronie's disease is an acquired benign pathologic condition characterized by exaggerated inflammation cause fibrosis of tunica lead to abnormal deposition of collagen lead to a varying degree of deformity with the symptom of penile pain on erection and nodule cause distress in sexual performance and sometimes difficult

vaginal penetration [4,5]. Erectile dysfunction is common among men with Peyronie's disease. Approximately 75% of men with the disease will experience erectile dysfunction [6].

Diabetes mellitus has been proposed as a likely independent risk issue for Peyronie's disease. Numerous demographic studies have revealed that up to 29% percent of men with Peyronie's disease have diabetes mellitus. The occurrence of other vascular risk causes for erectile dysfunction has been described in Peyronie's disease incident sequence including hypertension (18%) and hyperlipidemia (38%) [7,8].

Studies through alprostadil injection with duplex color ultrasound or dynamic infusion cavernosography cavernosometry techniques found that the primary cause of Peyronie's disease is arterial insufficiency and this pathology is the focal cause of erectile dysfunction [9,10]. evidence of corporal veno-occlusive dysfunction on duplex ultrasound analysis, with a resistance index of less than 0.80 as possible predictors of severity of curvature of Peyronie's [11,12]. Therefore, it is no wonder that erectile dysfunction is often found in males with Peyronie's disease.

Although men suffering from Peyronie's disease and erectile dysfunction that arise from disease difficult to treated conservatively. The surgical procedure that leads to the straight penis will not treat erection ability but also this type of surgery may lead to more erectile dysfunction [13] Surgery with penile implant straight the penile deformity and restore erectile function with high success rate and low complication most patients satisfy by single surgical procedure[14]. Some research report risks of changed glans sense, decrease penile length and recurrence of curvature because of progression of vascular pathological dysfunction[15,16].

Patients and Methods

This study was assumed to evaluate the risk factors and satisfaction of gold standard penile prosthesis surgery in patients with Peyronie's disease and erectile dysfunction. This cohort study was carried out during the period of 2014-2018, 21 adult patients (39-68) years were treated by malleable penile implant surgery.

Evaluations start with, a detailed history, physical examination, and complete the measurement of penile curvature. the erectile dysfunction was tested by dynamic color duplex ultrasound and hormonal assay. Most of the patients were evaluated in the clinic. A surgical procedure is done for patients that do not respond to oral drugs and intracavernosal injection of alprostadil with stable Peyronie's disease which clinically unchanged for at least three months based on patient report, which elucidates the fibrotic chronic phase reveal stabilization and no progressive curvature of the disease [17,18]. Measurement of the degree of penile curvature after intracavernosal injection of alprostadil and according to the site of plaques illustrated in Table (1),(2) Figure (1).

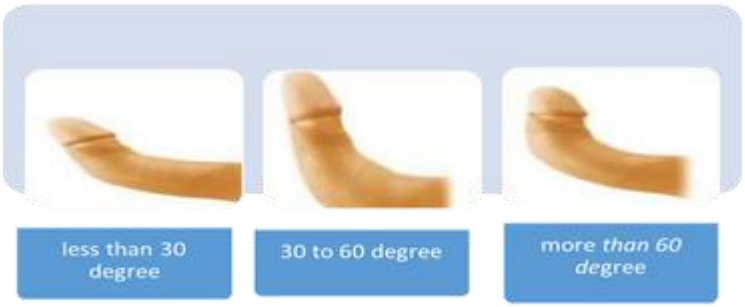

Figure (1)

Table (1): Degree of penile curvature

Plaque	Dorsal	lateral	ventral	Multiple	Total no
Group 1 Curvature 20% to 30%	2	3	2	2	9
Group 2 Curvature 30%to 60%	5	2	2		9
Group 3 Curvature over 60%	3				3
Total number of patients	10	5	4	2	21

Table (2): Group according degree of curvature

Degree of curvature	Frequency	(%)
G1	9	(42.9)
G2	9	(42.9)
G3	3	(14.3)
Total	21	(100.0)

According to guideline, there is no need for surgical intervention of Peyronies disease if the curvature below 20% except when it is associated with erectile dysfunction. The severity of Peyronie's disease is not what's the degree of curvature only but also mix laterally with ventral or dorsal or form of angulation.

Surgical Procedure

The semi-rigid penile prosthesis surgery is done in a dorsal penile incision in whole patients. Prophylactic antibiotic (vancomycin 1gm IV) is given two hours before surgery the patient is placed in a supine position under general anesthesia. A 3- to 5-cm transverse incision was made at the sub coronal dorsal distal penile in circumcision line Figure (2) and dissect dartos and buck's fascia to expose tunica albuginea. We do a small longitudinal corporotomy incision (2-3cm), Figure (3) on each corporal body, a tunnel through the expansion of a Hegar dilator from 7 to 13, in which the prosthesis is placed is created in each cavernous body. Figure (4). And then we room prosthesis 1cm less than measured length through the corporotomy.

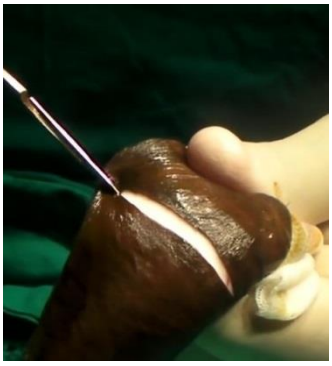

Figure (2): Sub coronal incision

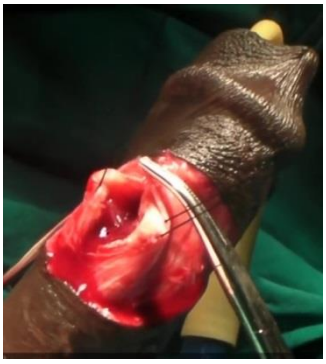

Figure (3): Tunica incision

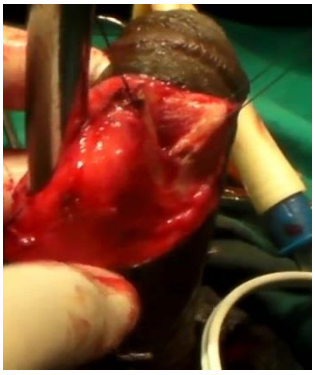

Figure (4): Corporal dilatation

In nine patients who had less than 30° of curvature, we achieved penile straightening with adequate dilatation without an additional procedure. Principally, in 3 patients who had 30° to 60°curvature, and severe fibrosis after dilatation. The Hegar dilator is flexed in direction opposite curvature and relaxing incisions were made using scissors to the most fibrotic part of the tunica, not so deeply, avoiding any tunica rupture. in other 9 patients who had 30° to 60° curvature without severe fibrosis maneuvers of fibrous plaque.

Breaking performed by using the modeling procedure after malleable implant insertion and suturing of the corporotomy grasping the base of the penis by two fingers and middle for protecting urethra then forcibly bent the penile shaft opposite to the curvature for 2 minutes to rupture the plaque. Wilson and Delkf first labeled modeling procedure Figure(5) over the penile prosthesis.

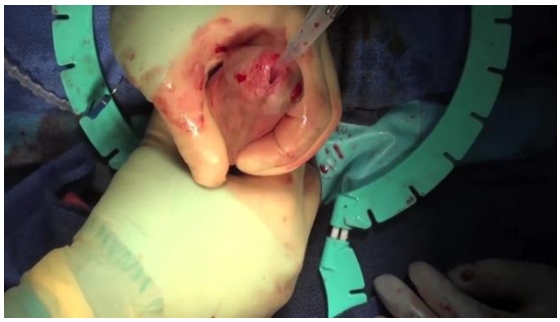

Figure (5): Modeling twisting of corpora after implant insertion

In 1994 this procedure has a success rate in (86%) from 118 patients through a crack the plaque over rigid dilator but although they notice major complications of urethral injury in four patients this technique accepted to decrease penile curvature and good general results [17]. For the other three cases with severe curvature, more than 60° incision of corpora is done.

The Coloplast Genesis implant is used this semi-rigid prosthesis does not change in size this allows the prosthesis to be inflexible only during sexual intercourse to allow penetration and routinely we insert a urethral catheter for 24-hour postoperatively. The most common intraoperative complication is the perforation of the corpora cavernosum which happens in four cases because of severe fibrosis of corpora. The urethra is not involved, the procedure continued.

Results

The mean age ± S. D at presentation was 50.5 ± 8.0 years (ranged 34- 68) and about 48% were married.

Patients had been symptomatic for a median of two years which is a long period before seeking treatment. This is a problem in Iraq's country that for this type of disease they seek medical consultation late so the duration of erectile dysfunction and Peyronie's disease is long, Table (3) and, (4).

Table (3): Frequency of erectile dysfunction

Duration of erectile dysfunction	Frequency	(%)
6 months	6	(28.6)
1years	7	(33.3)
2 years	2	(9.50)
3years	2	(9.50)
6 years	1	(4.89)
10 years	2	(9.50)
15 years	1	(4.89)
Total	21	(100.0

Table (4): Frequency duration of peyronies disease

Duration of peyronies disease	Frequency	Percent
2 years	1	(19.0)
3 years	1	(19.0)
4 years	4	(19.0)
5 years	2	(9.50)
6 years	2	(9.50)
7 years	2	(9.50)
10 years	3	(14.3)
12 years	1	(4.80)
15 years	2	(9.50)
Total	21	(100.0)

Most the patients have significant medical and surgical history the commonest is hyperlipidemia and diabetes mellitus around 35% of patients as in Table (5) which is the main risk factors for peyronie's disease there 15% of cases have prostate and cardiac

surgery which is the main distressing bases in Peyronie's disease45% of patients is smoker this risk factor discussed in many literature's and know there is advice stop smoking may decrease the progression of the disease.

Table (5): Frequency of medical history of the study participants

Medical history	Frequency	(%)
Asthma	1	(4.8)
COPD	3	(14.3)
DM	3	(14.3)
DM,HBP	2	(9.5)
DM, HBP, hyperlipidemia	2	(9.5)
DM, hyperlipidemia	2	(9.5)
HBP	2	(9.5)
HBP, ischemic heart dis	1	(4.8)
Ischemic heart disease, hyperlipidemia	1	(4.8)
Nothing	3	(14.3)
Stroke ,DM	1	(4.8)
Total	21	(100.0)

All surgical operations are done for patients after confirmation of stabilization of Peyronie's disease when there is no pain and stable penile curvature for more than three months, but we see most the patients come long period after disease, while the relation of onset of severe erectile dysfunction with Peyronie's does not differ for correction of both pathologies. For most the patients, a rectile dysfunction occurs after Peyronie's related to Peyronie's or other pathology that is a risk factor for both diseases. Hear of we compare to international studies risk factor DM 28%, HBP 18%, and hyperlipidemia 38% [7,8] and this study is DM 47%, HBP 33% and hyperlipidemia 24%.

In all literature's there a clear relation between prostate surgery and Peyronie's disease and a known relation between cardiac surgery and erectile dysfunction in taken past history seven patients out 21 have a history of prostate and cardiac surgery. The average operative time was 71.6 minutes' Table 6, which there is a mild difference between surgeries for penile prosthesis only or penile prosthesis with correction of Peyronie's disease like we add 10-minute average.

Table (6): Frequency of operative time

Operative time	Frequency	(%)
45 minutes	6	(28.6)
50 minutes	3	(14.3)
55 minutes	2	(9.50)
60 minutes	4	(19.0)
65 minutes	2	(9.50)
70 minutes	1	(4.80)
80 minutes	3	(14.3)
Total	21	(100.0)

In surgery. there were four intraoperative complications. One patient had a proximal corporeal body perforation which was dealt with by suturing the rear tip extender to the corpora and the other three medial corporal perforations with crossover these cases treated intraoperatively by placing the dilator in imperforated corpora and gently dilate the rupture site with lateral direction then insert prosthesis in normal site first and insert the second prosthesis with lateral direction.

All postoperative complications during 6months of follow up not need surgical intervention but for some advice and medical remedies these complications are four patients have some residual curvatures usually they have no pain so frequent intercourse will decrease the curvature with the advice of traction method and four patients have some altered glans sensation and three patients have retarded ejaculation which only advice by increase time of foreplay one patient have some penile length loss.

The EDITS forms of sexual function questionnaire [7] Table (7), which consist of five questions, each question has three scores score which completed by 20 patients; they attend the outpatient clinic and being interviewed. The results are 50% are highly satisfied, the score 13-15 highly satisfied, 10-12 partially satisfied, 7-9 average and below 7 unsatisfied one patient who did not reply to the questionnaire had traveled after successfully using the prosthesis.

Table (7): EDITS forms sexual function questioner

Score	1	2	3
1. Are you usually satisfied with your penile prosthesis?	Dissatisfied Patient no.5	Somewhat satisfied Patient no. 10	Very satisfied Patient no.5
2. To what degree did penile prosthesis encounter your support?	Never met Patient no.1	Somewhat met Patient no.10	Completely met Patient no.9
3. How appropriate is penile prosthesis for constant use?	Inappropriate Patient no.2	Somewhat appropriate Patient no.10	Very appropriate Patient no.8
4. Is it simple to use the penile prosthesis for you?	Not easy Patient no.2	Somewhat easy Patient no. 7	Very easy Patient no. 11
5. How much do you trust your ability of sexual predilection during sexual intercourse?	Never Patient no.4	Sometimes Patient no.7	Always Patient no.9
Patient satisfaction	Average 4	Partially satisfied 6	Highly satisfied 10

Discussion

The chief outcomes in this study are that penile implant surgery with correction of Peyronie's diseases associated with minimal morbidity and better patient satisfaction. Major complications are uncommon, only some minor complication occurred. In this study as well as in many other clinical series [20,21,25] demonstrate that a penile implant surgery is a highly treatable therapy for erectile dysfunction and Peyronie's disease that resistant to all conventional options, and that's great patient spouse satisfaction rates

was attained with semi-rigid prostheses with six months follow up which is 50% highly satisfied, 30% partially satisfied and 20% average Table (7). Another study of five year follow up of the same surgery they report 85% high sexual satisfaction for patients and partners[26], and in these patients with severe erectile dysfunction they don't have sexual action so this improvement after the operation is like incredible but also there is many factors that must be evaluated for patients which are a preoperative expectation, presence of complication like pain, edema, and acceptability by partners all these may affect satisfaction.

During penile prosthesis surgery we insert 0.5 cm less than the measured length while in Peyronie' we advise to insert 1cm less than measured length to don't put a pressure on corpora. In three cases with severe curvature in this study only we did the incision of plaque with a good result while in many studies [22] report using of graft like small intestinal submucosa (surgisis) sutured with the edge of tunica albuginea not so much difference in changing curvature instead of that we advise daily traction on curved area three months after the operation and for three month like in other literature [23,24]. There was no further loss of length after prosthesis placement, and the majority had gained some length except one patient.

Many studies compared the complication rate in penile prosthesis implant for erectile dysfunction with or without Peyronie's disease and they find no differences [25]. Therefore, correction of two pathologies at the same time give more patient satisfaction but keep in your mind before dilation techniques and surgical maneuvers that the corpora are thin and diseased so careful handling must be performed like the lateral direction of dilators. If you find any resistance re-evaluate the surgical site and to compare it with other corpora and there's a possibility of perforation in any site in conjunction with the placement of penile implant so revaluate before closing the corpora to achieve a functional result.

Conclusions

Peyronie's disease remains a distressing illness that can have a chief effect on the quality of life. The aim of treatment is to straighten the penile deformity and treat erectile dysfunction. In modeling procedure for correction of penile curvature, we advise to taking care of urethra by put the index finger on it and to be sure it's away from pressure on corpora. Also, be gentle with the tissue and respect layers. Using of traction on prosthesis after surgery prevents re-curve and maintain length We find that implantation of a semi-rigid prosthesis leads to a satisfactory method to straight the penis and affords a high patient satisfaction rate in long-term follow-up, despite inadequate penile girth.

Recommendations

Therefore, select patients and asses according to their severity of conditions and deliberate about the expectations of their benefits from the surgery.

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