Dermis as an Interposing Graft for Reconstructing Peyronies Disease

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ABSTRACT:

BACKGROUND:

Peyronies disease is an acquired fibrous plaque induced penile deformity,it has two phases;acute with painful erection and chronic with minimal pain but persistant penile curvature.Many conservative and surgical treatment modalities have been described.Plaque excision and dermal grafting has given promising results.

OBJECTIVE:

To evaluate the efficacy of plaque excision and dermal grafting in peyronies disease.

PATIENTS AND METHODS:

A prospective study was conducted on ten patients with chronic peyronies disease.All the patient underwent surgical excision of fibrotic plaque and dermal grafting.All the patients were evaluated postoperatively through regular visits for six to eight months to detect any recurrence or erectile dysfunction.

RESULTS:

The disease was more prevalent between ages of 40-55 years.All the plaques were located dorsally on the penile shaft except one which was dorsolateral.Five patients were complaining of erectile dysfunction preoperatively,two of them improved after surgery.Postoperative recurrence of fibrotic pluque involved only one patient.

CONCLUSION:

Fibrotic plaque excision and dermis grafting is an effective method on the long term with minimal associated complications.

***KEY WORDS*:** Peyronies disease,dermis graft,fibrotic plaque.

INTRODUCTION:

Peyronies disease is an acquired plaque induced penile deformity[1]. It was first reported by Fallopius in 1561 and then popularized in 1743 by Francois de La Peyronie,since then the disease has born his name[2].It causes penile curvature by forming fibrous plaque involving the tunica albuginea[3]. About two thirds of the patients are aged 40-60 years[4]. The etiology of the disease is unknown and its pathogenesis is still unclear but there are many theories suggesting its development;traumatic theory is mostly accepted suggesting that stretch and bend traumas that may occur during sexual intercourse can result in delamination of the tunica albuginea leading to microvascular injury and haematoma formation forming an eventual fibrosis[5]. Autoimmunity(6)and Genetic factors[7] may play a role in developing the disease.Neutrophils ,macrophage, and mast cells secret cytokhnes and vasoactive factors which then become involved in fibrous development[8].

Platelets have an important part in plaque formation,as they release serotonin,platelet derived growth factors,transforming growth factors and fibrin which are incorporated into the scar[9].

Peyronies disease has been associated with an increased incidence of Dupuytrens contracture,plantar fascial contractures(Ledderhoses disease),DM,gout,pagets disease,trauma,tympanosclerosis and even beta blocker use[7]. The disease has two phases;acute phase with painful erection,inflammation and deformity of the penis; and chronic phase with minimal pain ,persistant penile curvature,plaque calcification and establishment of erectile dysfunction[10].

Diagnosis is made by history and physical examination:a palpable plaque ,curvature and painful erection are characteristics of the disease[10]. The treatment of choice in the acute phase is conservative therapy using oral antioxidants like vitamin E ,colchicine and intralesional steroids and verapamil[11].For chronic

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cases,several surgical procedures has been suggested,often based on the incision or excision of plaque accompanied by plication or grafting,using natural or synthetic grafts,hence dermis,tunica vaginalis,venous wall,dacron and fascia can be used to close the excised region of penis post operatively[12]. After 30 years of innovation of dermal patch grafting,it has remained one of the best approches due to low complications,cost effective,availability and maintaining the length[12]. Spontaneous improvement or response to medical treatment is probable during the acute phase,thus surgery must be performed at least six months following the beginning of symptoms[13].In this study we used dermis as a natural and freely available material to resurface the raw area following fibrotic plaque excision to promote penile straighting.

PATIENTS AND METHODS:

A prospective study involving 10 men with peyronies disease was conducted between April 2007 to May 2010. Preoperatively, the patients

were evaluated by full medical ,surgical and sexual history taking focused on duration of the disease,quality of erection,pain on erection,any history of genital trauma or instrumentation,any difficulties in intercourse, and any associated medical diseases like diabetes and ischemic heart disease.

The lesion was evaluated by determining the location and dimensions of the plaque while the penile shaft being stretched for accurate evaluation.The palms of hands and the soles of feet being examined for any thickened fascia or contractures.The patients were classified according to Kelami classification that depends on plaque size(14);

Class 1:plaque size < 2 cm2.
Class 2:plaque size 2-4 cm2.
Class 3:plaque size > 4 cm2.

All the patient were operated upon under general anaesthesia,the surgery begins with circumcision type incision,the penile shaft skin being degloved in the layer immediately superficial to the Buck's fascia.The superficial and deep(Buck) fascia being incised alongsides the dorsal neurovascular structures that are elevated in concert with these structures allowing clear exposure of the fibrotic plaque.Artificial erection is then performed to identify the maximal curvature(fig.1).

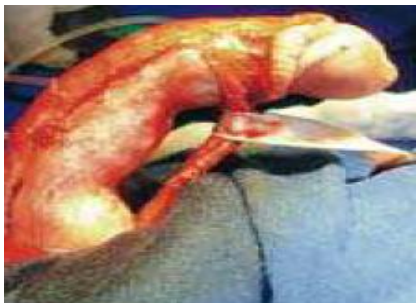

Fig.1:Artificial erection to assess the maximal curvature.

The plaque(fig.2) is then excised and haemostasis secured.The defect is then grafted by dermis taken from the groin or medial arm areas.A polydiaxanone sutures were used to fix the graft in place in a continuous over and over suturing method to create a water-tight state so as to prevent post operative haematomas and improve erectile dysfunction(fig.3). A second artificial erection is performed to assess the repair(fig.4) . The circumcision type incision is then closed with absorbable sutures, leaving a small drain for 24 hours postoperatively.

Fig.2: Dorsal penile fibrotic plaque obviously seen after elevating the dorsal neurovascular bundle.

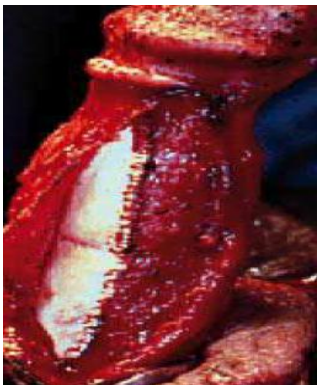

Fig.3: Dermal patch graft applied dorsally resurfacing the raw area after plaque excision

Postoperatively,the paients were discharged on the next day after drain removal.A compressive dressing was maintained for 7 days and the patients were asked to do glans massage using xylocaine gel as a lubricant to enhance venouse drainage to minimize or prevent any probable swelling.

The patients were asked to stretch the penis by glans traction 4-6 times a day,holding it stretched for 5-10 minutes as an early measure to minimize adhesions.All the patients were asked to keep the penis in an upright position using slings or plasters and adopting supine posture as much as possible for 3 weeks to prevent odema.A 6 weeks period of sexual abistinence was recommended .

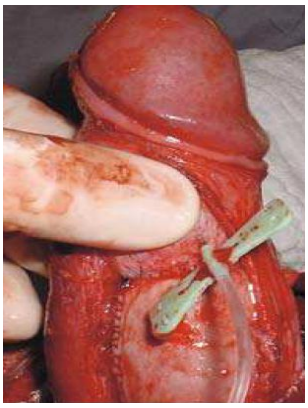

Fig.4: The second artificial erection to assess the repair.

All the patients were evaluated post operatively through regular visits,once weekly in the first postoperative month ,then monthly for the subsequent 5-7 months,hence the patients were evaluated for 6-8 months postoperatively.In each visit the patients were asked about the the state of erection, any erectile dysfunction,any pain on erection and any difficulties in intercours .The site of repair beneath the skin palpated to assess the repair & any fibrosis or adhesions.

RESULTS:

10 men were involved in the study,all of them were in chronic phase of the disease (the time of presentation is varring between 7 – 18 months after the appearance of the clinical manifestations of the disease).Their ages ranged between 40 – 55 years , only one of them had received three intralesional steroid injection. Neither Dupuytrens nor Ledderhoses contractures were seen in all the patients. Four patients(40%) were diabetic and having ischemic heart disease and only one of them was hypertensive. Only two patients (20%) were Kelami class 3 (plaque size > 4 cm2) and the rest of them(80%) were Kelami class 2 (plaque size 2-4 cm2) ,all the plaques were dorsal penile in location except one which was dorsolateral.

Five patients (50%) were complaining of erectile dysfunction preoperatively ,two of them were improved postoperatively.Six(60%) of the patients complained of pain on erection preoperatively ,all of them improved except one .Postoperative recurrence of fibrotic plaque involved only one patient.

DISCUSSION:

Surgical treatment is the mainsty of the therapy in chronic phase of peyronies disease.It aims at correcting the deformity while preserving the capacity of the penis [(15)]. Devine and Horton were the first who described plaque excision and dermal patch grafting with successful results in 1974 [(16)].Excision of the fibrotic plaque and grafting the defect is known as tunical lengthening procedure that has many advantages;lack of antigenisity ,differentiation into tunica albuginea on the long term , increased compliance ,ability to nourish from the corpora[(17,18)] and reliability to prevent bulging of the graft because the burst pressure of these materials is much higher than that of corpus cavernosum[(19,20)].

In this study , all the patients were in the 4th and 5th decade of life , so the ages are comparable to the epidemiological data of the disease as described by Scharzer et al[(21)]. No patient had associated palmar (Dupuytrens) or plantar (Ledderhoses) fascial thickening or contractures,this finding is in a disagreement with that of Carreri et al who showed an increased incidence of plantar and palmar contractures in association with peyronies disease[(22)]. We have no clear explanation for this difference,but the little number of cases in our study and/or racial difference might be the cause.

Most of the patients (80%) presented late in the chronic phase of the disease ,this made the chance of medical treatment that is very beneficial in acute state as stated by Gerald et al [(2)] being impossible shifting the modality of treatment to the surgical one.

Five patients were complaining of erectile dysfunction preoperatively,three of them improved and two remaind impotent postoperatively.These two patients were known cases of diabetes and the history of erectile dysfunction was dated back to the period prior to the development of the clinical features of peyronies disease .We believe that this persistence of erectile dysfunction after surgery is due to the autonomic neuropathy of a prolonged

uncontrolled diabetes ,so such patients with erectile dysfunctions should be informed that surgery is not always promising.

The majority of patients (90%) with penile shaft curvature and pain on erection improved after surgery except one case of recurrence . This case was hypertensive and he was Kelami class 3 and complicated by big post operative haematoma which eventually organized and produced further fibrosis.Three cases had minimal post operative ecchymosis that resolved after one week.It can be stated that dermis patch graft can provide satisfactory results in most of the cases and this is in an agreement with the results of Gholami et al [(23)].

Cra atz et al[(24)] reported that the dorsal lamina of the rectus sheath is the most similar structure to tunica albuginea among other human connective tissue structures.Recently,Pathak et al[(25)]reported that 14 of 15 patients with severe penile fibrosis treated with excision and interposing autologus fascial graft had satisfactory sexual intercourse results.For these reasons,it can be stated that an autologus rectous fascia is a reasonable competitive to dermal graft .

CONCLUSION:

Surgery remains the gold standard in treating patients in chronic phase of peyronies disease.Dermal patch grafting provides promising results in reconstructing chronic peyronies disease as this method is cost effective,corrects penile curvature regardless the size of fibrotic plaque with minimal associated complications.

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