Nesbit Operation for Peyronie's Disease: A 7-years Experience

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Abstract

“Background”
Peyronie’s disease which refers to an acquired penile deformity / curvature which occurs during erection may or may not be associated with pain. Peyronie’s disease is quite often a cause of worry to both the patient and his female partner. A number of treatment modalities have been available for the management of peyronie’s disease including: wait and see; oral medications; the now abandoned extra-corporeal shock wave therapy and surgical operations including Nesbit operation (Nesbit procedure).

“Aims”
To review our limited experience with patients who have undergone Nesbit procedure in order to find out our success rate with regard to improvement in: (a) penile pain, (b) penile curvature, (c) sex life as well as penile shortening post operatively.

“Patients and Methods”
15 patients with a mean age of 42.3 years who underwent Nesbit procedure at North Manchester General Hospital between 1999 and 2006 for peyronies disease were reviewed and regarding their experience Nesbit procedure to document their pre-operative symptoms including pain/no pain, extent of penile curvature, sex life pre-operatively and post –operatively to see if there has been any change and to document any complications. The mean follow-up time was four and half years.

“Results”
6 out of 7 patients who had pain associated with their penile curvature did no have any more penile pain after Nesbitt operation.
12 out of 15 patients (80%) had almost 100% straightening of their penis and another patient had improvement in penile curvature making it a total of 86.67% who either had improvement in their penile curvature or complete straightening of their penis during erection.
11 out of 15 patients (73.33%) had improvement in their sex lives
8 out of 15 patients (53.33%) noticed shortening in their penile length post-operatively.

“Conclusions”
Nesbit procedure is a useful and effective treatment modality in the management of Peyronie’s disease. In our experience 86.67% of patients had reported improvement in penile curvature with 80% reporting full straightening of penis; however 53.3% of our patients noticed that they had developed shortening of their penis post operatively.

Patients therefore need to be informed pre-operatively about the high possibility of penile shortening as has been observed by other authors.

Introduction

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Patients and Methods

Fifteen patients with a mean age of 52.3 years (range 23 – 72 years) at the time they underwent Nesbit operation for Peyronie’s disease between 1999 and May 2006 in the Acute Pennine Hospitals NHS Trust were reviewed with regard to outcome of their operations. They had all undergone Nesbit procedure through a standard degloving incision. Artificial erection was done at the beginning of the operation to assess the extent of angulation. Artificial erection was done towards the end of the operation to check and be sure that the curvature of the penis has been corrected before the wound was stitched. The duration of follow up ranged from 5 months to 7 years and 7 months (mean 4 and half years). The following data were recorded:
- Whether or not the patient had any pain associated with the bend of the penis during erection prior to the Nesbit operation and the outcome after the operation.
- The degree of angulation / curvature before the operation and the outcome after the operation.
- Sex life and degree of penetration before and after the operation. Whether or not they had any post operative complications.

Results

Seven of the 15 patients who had Nesbit operation had pain associated with their bends pre-operatively (see illustration1a). The remaining 8 did not have any pain associated with their bends pre-operatively. Six of the 7 patients (85.7%) who had penile pain associated with curvature on erection stated that their pain had either resolved or improved after the Nesbit operation (see illustration 1b). The remaining 8 patients who did not have any pain associated with their curvature remained pain free after their operations.

With regard to curvature, three patients had penile bends of less than or up to 30 degrees pre-operatively, ten patients had penile bends of between 30 and forty-five degrees pre-operatively and two patients had penile bends greater than 45 degrees pre-operatively.

Post-operatively, 13 patients (86.7%) reported improvement in their penile bends. 12 patients out of the 15 (80%) about 100% straightening of penis and one patient said he had 40 percent improvement in his penile bend during erection (see illustration 2).

With regard to sex life, 11 out of the 15 patients (73.3%) reported improvement in their sex lives. Four patients did not notice any improvement in their sex lives. One of these four patients straightening of his penis on erection but he had developed penile shortening to such an extent that he did not have enough penile length left to allow a meaningful or deep enough vaginal penetration (see illustration 3).

Eight of the 15 patients (53.3%) had noticed variable degrees of penile shortening during erection (see illustration 4). However, the shortening of the penile length did not affect their sex lives.

Discussion

Ralph and colleagues [10] reported their 16 year experience of the Nesbit operation for Peyronie’s disease. They analyzed the long term outcome of the Nesbit operation for the correction of the penile deformity due to Peyronie’s disease. Between 1977 and 1992, the penile deformity due to Peyronie’s disease was corrected in 359 patients using Nesbit operation. With regard to the results, Ralph and colleagues observed that the overall success rate was 82%, which increased to 90% during the last 8 years with better patient selection due to improved preoperative investigations. They observed that only 6 (1.67%) patients had significant penile shortening that precluded sexual intercourse. They concluded that Nesbit operation remains the procedure of choice to correct the penile curvature of Peyronie’s disease.

Borelli and colleagues [11] analysed the results of 22 patients with Peyronie’s disease who had surgical correction of the penile curvature using Nesbit operation. They used a modification of the technique using a skin incision over the local area where the ellipse was taken thereby avoiding unnecessary
extended dissection. They described their results as satisfactory with minimal surgical complications, with good results, short term hospitalization. They were of the opinion that simplicity of the technique makes this approach the first to be considered in cases of surgical correction of Peyronie's disease.

Bokarica and associates, [12] presented their selection criteria for surgical techniques for the treatment of patients with Peyronie's disease. They reported on a total of 55 men with Peyronie's disease who were surgically treated. They created specific criteria for selection of the appropriate surgical technique. All patients had a stable disease for 6 months and impossible vaginal intromission. All patients had subjective (as reported by the patient) and/or objective normal penile rigidity (as observed after intracavernosal administration of alprostadil). Also they all underwent drug therapy, which was unsuccessful. Among them, 40 patients with penile curvature of < 60° and erect penile length of ≥ 13 cm underwent Nesbit's operation, on the other hand plaque excision and grafting with polytetrafluoroethylene patch was performed in 15 patients with penile curvature of ≥ 60° and/or erect penile length of < 13 cm. They observed that at a mean (±s.d.) follow-up of 81.1 ±33.8 and 78.7±32.8 months, respectively, straightening of the penis was achieved in 35 (87.5%) out of 40 and 12 (80%) out of 15 patients respectively, on the other hand, erectile dysfunction developed in 2 (5%) out of 40 and 1 (6%) out of 15 respectively. Shortening of the penis was reported to have occurred in all 40 patients who underwent Nesbit operation and in none of the patients who underwent plaque excision. Subjective perception of penile shortening was reported by 6 out of 40 (15%) patients who underwent Nesbit's operation but none of the patients who underwent plaque excision complained of this discomfort. Bokarica and colleagues [12] made the following conclusions:

- We recommend the selection of surgical technique based on penile length and degree of curvature.
- Nesbit’s operation is an appropriate surgical technique for the treatment of patients with erect penile length of ≥ 13 cm and deviation of < 60°.
- Plaque excision and grafting with polytetrafluoroethylene patch is a technique of choice in the treatment of patients with erect penile length of ≥ 60° and/or erect penile length of < 13 cm.

Akkus and co-workers [13] concluded that the Lue procedure is an effective option in the surgical management of Peyronie's disease but penile shortening after surgery remains a risk.

Assessment of the potency status, curvature and vascular structure were performed pre-operatively with detailed history, counselling, autography, and colour Doppler ultrasonography. Realistic expectations from the surgery were discussed with the patients in advance. Post operative evaluation was performed at least twice in the 6th week and 3rd month. The third evaluation was done in 12-36 months by telephone. Akkus and colleagues [13] reported that 50 of the patients (86%) achieved straight erections after the surgery. Five patients (9%) had improvement in their penile curvature that enabled them to have sexual intercourse easily. In 3 of their patients (5%) recurrence of the curvature was observed. Thirteen of the patients (22.4%) were noted to have developed penile shortening of 0.5 to 1.5 cm. Fifty-four (93%) of the patients reported no change in their quality of erections. Akkus and co-workers [13] concluded that incision of the tunica albuginea and venous patch grafting technique is a very satisfactory surgical method in the treatment of the curvature in Peyronie's disease.

Adeniyi and associates [14] assessed the Lue procedure (plaque incision and venous grafting) for correcting the penile deformity of Peyronie’s disease (which can cause penile shortening and erectile dysfunction) as an alternative to the Nesbit procedure (which can worsen the shortening). In all 51 patients (mean age 51 years, range 27 – 68 years) with Peyronie’s disease had their penile deformity corrected by plaque incision and saphenous vein grafting. All the patients had stable Peyronie’s disease and a mean (range) penile deformity of 57 (20 – 90) degrees. The vein graft was obtained from the long saphenous vein at the ankle or groin and several sites were grafted in 14 patients. The mean patient follow-up was 16 months. Adeniyi and associates [14] reported that an excellent or satisfactory result was obtained in 47 patients (92%); the penis was completely straightened in 42 (82%). Four of the 51 patients (8%) developed postoperative erectile dysfunction. Adeniyi and associates [14] also reported that 18 men (35%) had some degree of penile shortening (-1 cm in eight), among whom coitus was affected to a variable extent in six (12%). They concluded that the Lue procedure is an effective option in the surgical management of Peyronie's Disease but penile shortening after surgery remains a risk.
Metin and co-workers [15] evaluated the results of plaque incision and venous patch grafting to correct the dorsal curvature associated with Peyronie’s disease. In all 18 patients with Peyronie’s disease were treated surgically. All these 18 patients had dorsal penile curvature for more than one year causing intromission impossible or with some difficulty on account of curvature. The median penile angulation was 60 degrees with a range of 45 to 75 degrees. About a 2 cm long transverse incision was made on the plaque where maximal site of curvature was identified. The saphenous vein obtained from the ankle region was opened longitudinally and its endothelial surface was placed and sutured in contact with the tunica defect. Metin and co-workers [15] reported that complete penile straightening was achieved in 16 (88.8%) cases and only 2 patients had residual curvature less than 30 degrees permitting coitus. None of the patients returned to baseline preoperative angulation state in the follow-up period. 3 patients (16.6%) reported penile shortening postoperatively nevertheless, only one was concerned and expressed dissatisfaction about it. Six patients (33.3%) had transient changes in penile sensation that resolved within four months. They concluded that plaque incision and placement of saphenous vein patch offers a 94.4% satisfactory result in Peyronie’s disease causing penile dorsal curvature.

Schultheiss and associates [16] evaluated their results for Essed procedure for the correction of penile curvature, either congenital or due to Peyronie’s disease and compare it with the data from the literature, both for the Essed and the Nesbit procedure. Between 1991 and 1996 the Essed procedure was performed in 61 patients 65.6% (n=40) had congenital deviation and 34.4% (n=21) suffered from secondary deviation due to Peyronie’s disease. In all two to six non absorbable inverting interrupted sutures were placed bringing the knot between the plicated tunica. The patients’ ages ranged between 15 and 65 (mean 31.3) years and their mean follow-up time was 39.8 (range 12 – 75) months. The preoperative penile deviation ranged between 20 and 90 degrees (mean 47.4 degrees). Eighteen patients (29.5%) had a recurrent deviation following surgery. This failure rate was observed to be higher in the patient group with Peyronie’s disease (42.9%) in comparison with the congenital group (22.5%). Post operatively, two patients (3.3%) with Peyronie’s disease reported de novo erectile dysfunction. Twenty patients (32.8%) complained of persistent discomfort or pain at the area of the still palpable placation sutures, nevertheless, this inhibited sexual intercourse in only 1 case. 45.9% stated penile shortening after surgery but only 21.3% felt bothered by this. Schultheiss and associates [16] made the following conclusions:

- The results reported are in accordance with the literature showing a higher recurrence rate of deviation with the Essed procedure in comparison with the Nesbit procedure.
- For both methods the risk of recurrent disease is higher in patients with Peyronie’s and with both techniques, an equally low incidence of erectile dysfunction is evident.
- However, since the with the Essed technique one third of all patients complained of discomfort from the non absorbable sutures, the Nesbit procedure seems to be superior.

There are a variety of accepted approaches to the patient with Peyronie’s disease and erectile dysfunction, including penile prosthetic surgery. During prosthesis surgery for Peyronie’s disease some of the patients are left with residual curvature upon maximum device inflammation. Mulhall and associates [17] did an analysis of penile prosthetic surgery for Peyronie’s disease in order to define or identify how often and which patients would require intraoperative adjuvant maneuvers. They analyzed the results of men undergoing penile prosthesis surgery for combined Peyronie’s disease and erectile dysfunction. Residual curvature of > 10° was deemed to warrant secondary maneuver to correct curvature. In this analysis, plaque release incisions were undertaken and grafting was performed only in the case of overt exposure of the prosthesis. Mulhall and associates [17] included 36 men in this study and they made the following observations:

- All patients with preoperative curvatures ≤ 30° had complete resolution of the penile curvature with full inflation of the prosthesis alone.
- Of patients who had > 45° curvature preoperatively, 86% needed plaque incision to achieve adequate penile straightening.
- Grafting was required in only 5.5% of patients and both of these patients had preoperative curvature > 60°

They concluded that:
- In 61% of patients with combined Peyronie’s disease and and erectile dysfunction in their study, the placement of a three-piece inflatable penile prosthesis alone corrected the penile curvature.
- 86% of patients requiring plaque incision had preoperative curvatures > 45°
- This information should enable surgeons to plan such operations more effectively and to counsel patients more comprehensively prior to operative intervention.

Andrews and associates [18] reported on their
analysis of the failures in Nesbit operation for Peyronie’s disease. They analysed critically the reasons for a poor outcome of the Nesbit operation for Peyronie’s disease in 51 patients over a 20-year period. These 51 patients who were classified as having had a poor result from the Nesbit operation were reviewed (mean follow-up 21 months, mean age 53 years). The factors which were considered to be responsible for a poor outcome were analysed and classified into three groups:
- Deformity > 30
- Penile shortening > 2 cm
- Impaired erection

Patients with a recurrent deformity were classified according to the interval from surgery to the presentation of recurrence. With regard to results, they observed that:
- Thirty-one patients had a deformity of > 30 degrees. This was observed to have occurred immediately in three patients through surgical error, soon after surgery in eight patients because of suture failure and after 11 months in the remaining 20 patients because their Peyronie’s disease progressed.
- Penile shortening of > 2 cm was present in 19 patients but this only affected coital function in four.
- Erection was impaired in 10 patients but this was observed to have been present before surgery in most of the patients.

Andrews and associates [18] concluded that the results of the Nesbit operation for Peyronie’s disease can be improved by a preoperative assessment of erectile dysfunction and the use of sutures of high tensile strength. They also recommended that patients should be warned that the disease may progress and that some penile shortening should be expected, although this does not affect coital function.

The angulation that occurs as a result of Peyronie’s disease can be successfully corrected by Nesbit procedure nevertheless this sometimes results in a significant amount of penile shortening. As an attempt to avoid penile shortening, Kalsi and associates [19] adopted the surgical technique of penile plaque incision and fascia lata (a commercially available human fascia lata called Tutoplast) grafting of the defect. They adopted this technique due to the fact that there is no need for a second procedure to obtain the graft material such as saphenous vein harvesting which is used in the Leu procedure, thus avoiding morbidity and lengthened procedure time. 14 patients, including 4 diabetics, had penile plaque incision and Tutoplast grafting. Seven of the patients had erectile dysfunction pre-operatively and these were responsive to intercavernosal therapy of phosphodiesterase-5 inhibitors and 3 had previously undergone Nesbit procedure. Before Kalsi and associates [19] performed their operations, they ensured that the Peyronie’s disease had been stable for at least one year. The penile deformity of the patients was assessed with alprostadil in the outpatient department and again at time of surgery and the stretched penile length was also recorded. The degree of penile deformity, quality of erection and penetration were used to assess outcome. Kalsi and associates [19] observed that the average penile deformity pre-operatively was 67.2 (20 – 90) degrees, 6 patients had undergone previous penile surgery or had a complex deformity requiring additional placation sutures in addition to the graft(s). Ten patients had one, three had two and one had three grafts during the procedure. With regard to outcome, 11 of 14 (78.57%) patients and 13 of 14 (92.85%) had a satisfaction rate of excellent or satisfactory overall. There was no evidence of penile shortening in 10 (71.4%) patients and only one developed de novo erectile dysfunction which was treated alprostadil. One patient with penile shortening was not able to have intercourse. It was not clear from the study whether those patients who developed penile shortening were the patients who required additional sutures.

Kalsi and associates [19] were of the opinion that their results were comparable to other graft materials despite some complicated deformities being corrected without the need for an operation to attain graft material. At the time of publication, the mean follow up time of these patients was 31 months and hence Kalsi and associates [19] stated that the long term results for this graft in this setting is unknown but it may be a useful material. They also stated that the risk of penile shortening or development of erectile dysfunction still exists with the use of plaque incision and human fascia lata graft for Peyronie’s disease.

Conclusions

Nesbit procedure is a useful and effective treatment modality in the management of Peyronie’s disease. In our experience 86.67% of patients had reported improvement in penile curvature with 80% reporting full straightening of penis; however 53.3% of our patients noticed shortening of penis post operatively.

Patients therefore need to be informed pre-operatively about the high possibility of penile shortening as has been observed by other authors.

References
1. de la Peyronie F. Sur quelques obstacles qui s’opposent à l’ejaculation maturelle de la semence. Memoire de l’Academie de Chirugie 1743; 1: 318
ILLUSTRATION 1  (A and B)

(A) PRE-OPERATIVE AND POST OPERATIVE PAIN

PAIN OR NO PAIN PRE-OPERATIVELY

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain with erection pre-operatively</td>
<td>7</td>
</tr>
<tr>
<td>No pain with erection pre-operatively</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

(B) OUTCOME OF PATIENTS WITH PRE-OPERATIVE PENILE PAIN POST NESBIT OPERATION

<table>
<thead>
<tr>
<th>Symptom or no symptom post-operatively</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>No penile pain on erection post-operatively</td>
<td>6</td>
</tr>
<tr>
<td>Still had penile pain on erection</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Number of Patients (Percentage)</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>About 100% / complete straightening of penis on erection</td>
<td>12</td>
</tr>
<tr>
<td>40% straightening (improvement) of penis at erection</td>
<td>1</td>
</tr>
<tr>
<td>No improvement</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

**ILLUSTRATION 3**

**OUTCOME OF SEX LIFE POST NESBIT OPERATION**

<table>
<thead>
<tr>
<th>Improvement or No improvement in sex life</th>
<th>Number of Patients (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex improved</td>
<td>11 (73.33%)</td>
</tr>
<tr>
<td>Sex not improved</td>
<td>4 (24.67%)</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

**ILLUSTRATION 4**

**REPORTED COMPLICATIONS POST NESBIT OPERATION**

<table>
<thead>
<tr>
<th>Penile Shortening or no shortening</th>
<th>Number of patients (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penile shortening noticed</td>
<td>8 (53.33%)</td>
</tr>
<tr>
<td>No noticeable penile shortening</td>
<td>7 (46.67%)</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>
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