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# Physical Therapy and Dry Needling for Erectile Dysfunction and Impaired Penile Sensation Following Reconstructive Surgeries of the Penis; A Case Report

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**Abstract**
Peyronie's disease (PD) is a connective tissue disorder resulting from abnormal development of fibrotic and non-expandible thickened scar tissue in the penis. Surgical intervention might lead to other complications, including decreased sensation in the penis, persistent pain after surgery, and less-rigid erections. This study presents the physiotherapeutic assessment and management of a 33-year-old man with erectile dysfunction and impaired penile sensation following reconstructive surgeries of the penis. The patient was given physiotherapeutic interventions including dry needling (DN) and subcision of the scar and stretching exercise of the penis. After the 5th visit, the patient reported improvement in symptoms. This case report suggests that dry-needling and subcision techniques can improve pain and sexual well-being in patients with post-plication surgery problems.
**Keywords:** Peyronie's disease, Penile sensation, Dry needling, Subcision, Case report

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## Introduction

Peyronie's disease (PD) is a connective tissue disorder resulting from abnormal development of fibrotic and non-expandible thickened scar tissue in the penis.[1] It is characterized by pain with erection or abnormal penile curvature, shortening, narrowing, hinge effects, and hourglass deformity, which can result in either arteriogenic or veno-occlusive erectile and sexual dysfunction.[2-4] Studies suggested that PD might affect 0.4%-9% of the male population.[5] However, the underlying pathophysiology is unknown. It seems that repeated injury and penile trauma may trigger an acute inflammatory process and formation of fibrous plaques in the tunica albuginea and septum of the corpora cavernosa leading to loss of elasticity and contraction of the tissue.[2,6]

Many patients with PD complain of poor quality of life and a variety of psychological issues, including depression, poor self-image, marked low self-esteem,[2] and difficulties in interpersonal relationships.[7,8] It seems that a loss of penile length and having difficulty with penetrative intercourse are the main threats to their sexual self-confidence and emotional well-being.[9] Some patients are good candidates for penile plication, which is a surgical technique usually recommended in severe and chronic PD to correct the curvature of the penis[10]; however, surgical intervention might lead to other complications, including decreased sensation in the penis, persistent pain after surgery, and less-rigid erections.[11] Furthermore, many patients with PD have unrealistic expectations about the results of plication surgeries and may not be aware that a decrease in penile length and a loss of sexual sensation may occur.

One potential non-surgical technique to manage part of the complications after penile plication is dry needling (DN), which is increasingly used by physiotherapists. DN, is indicated for the treatment of pain, limited strength and range of motion, and fascial adhesions, including scar tissue.[12] One DN approach for scar tissue

adhesions involves a technique known as subcision, or subcutaneous incisionless surgery, which aims to release cutaneous or superficial fascia adhesions from deeper tissue layers.[13] The resulting tissue injury may initiate a healing process.[14,15] In this paper we described our experience in managing penile erectile dysfunction following multiple surgeries in a patient with PD using DN for the first time.

## Case Report

The patient was a 33-year-old single man who underwent plication surgery in October 2012 at the age of 25. After the first surgery, he had five more surgeries over a period of three years because of recurrent infections. After the fourth surgery, which occurred six weeks after the first, the patient noticed a lack of penile sensation and sexual dissatisfaction, presumably because of symptomatic scar tissue and persistent abnormal penile curvature. A psychiatrist prescribed 50 mg sertraline per day for depression. The patient denied having any erectile dysfunction and penile numbness before the first surgery. He opted for surgery because he and his partner were annoyed with the deviation of his penis. He did not have any underlying disease.

Three years after the sixth operation, the patient reported that only 30% of the sensation of his penis had been restored. He had not experienced any recent improvement and reported decreased sexual satisfaction. The patient was admitted to a pelvic floor physiotherapy clinic in June 2020 with a chief complaint of decreased penile sensation, sexual dissatisfaction, and erectile dysfunction. He also complained about diminished self-esteem, i.e., when commencing new relationships, and considerable reduced emotional well-being and self-confidence. He had not received any treatment to address the impaired penile sensation and erectile dysfunction, but had continued to take the prescribed sertraline. The patient had taut bands and non-extensible scar tissue at the suprapubic area. Also he reported severe pain during a digital rectal exam and he had less-rigid erection with considerable impaired penile sensation. He could not contract his pelvic floor muscles (PFMs) efficiently but he did not report any urinary or fecal symptoms. Data confidentiality and anonymity were guaranteed. The patient completed the International Index of Erectile Function (IIEF)[16] and the General Health Questionnaire (GHQ)[17]. The modified Oxford grading scale was used to evaluate PFM strength.[18] Penile sensation was assessed with a visual analog scale (VAS)[19]. Measurements were performed during the first, fifth, and tenth treatment sessions. Two weeks following the last treatment, the patient was assessed again.

## Outcome Measures

### *The International Index of Erectile Function*

The IIEF is a 15-item self-report questionnaire to assess patients' sexual experiences during the last four weeks. This questionnaire evaluates five variables including erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. Questions are ranked on a 5-point scale, and the patient's erectile function is checked by total number of points in the survey. The reliability and validity of this questionnaire have been confirmed by previous studies.[16]

### *The Visual Analog Scale*

The VAS of penile sensation is a segmented numeric scale along a horizontal bar or line, whereby the respondent selects a whole number (0–10 integers) that best reflects the intensity of their sensation.[19]

### *The General Health Questionnaire*

The GHQ-28 is a 28-item self-report questionnaire consisting of four sub-scales each containing seven questions. It is the best known and most popular version of the GHQ designed by Goldberg and Hiller.[20] The GHQ-28 assesses somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Individual sub-scales are used to provide diagnostic or profile information, but there are no thresholds for individual sub-scales. A score of six or more on each subscale and a total score of 22 or more indicates discomfort. The reliability and validity of the Farsi version of the test was confirmed in 2004 by Yousefy and colleagues.[17]

### *Modified Oxford Grading Scale*

The Modified Oxford Grading Scale,[18] commonly used in clinical physiotherapy, has fair inter-rater reliability.[21] This scale quantifies PFM strength as: 0, no contraction; 1, flicker; 2, weak; 3, moderate; 4, good; and 5, strong.

### *Therapeutic Intervention*

After the initial examination, DN was considered for the patient. During the treatment sessions, the patient was placed in the supine position. To perform the subcision DN technique, the needles were inserted superficially up to 30 mm in a horizontal direction between the dermis and the hypodermis of the scar tissue in the suprapubic region, rotated clockwise and counterclockwise and retained for 30 minutes. The treatment intensity was "grade 3" based on Sudarshan and Murugavel DN Grading Scale.[22] Simultaneously, the physiotherapist performed regular DN by inserting needles at a depth of 15 mm into fascial adhesions or densifications in and around the scar (Figure 1). These needles were also retained for 30 minutes. For both DN techniques, the clinician used 0.25 × 30 mm needles (Dong Bang Spring Handle, South Korea).

Twenty needles were used during each treatment session. DN was combined with an application of infrared light (Osram, Model: 240V150W IR1, Netherlands) covering the region of DN to potentially increase blood

**Figure 1.** Dry Needling Technique.

flow and tissue extensibility, reduce pain, and maximize function.[23] During each treatment session, the needles were manipulated after 10-20 minutes, respectively, in a reciprocating and rotating (clockwise and counterclockwise) manner. Also, the patient was encouraged to do exercises at home, 15-20 times every day every two hours, focusing on downward stretching of the penis to improve the elasticity and flexibility of the scar tissue above the penis. The patient had ten physiotherapy sessions over a 5-week period (two sessions per week). The patient was asked to call the therapist in case of any problem.

The patient reported improvement in penile sensation, correction of the penile appearance, and sexual self-confidence after completion of the treatment sessions. As shown in Table 1 and Figure 2, PFM strength, pain and penile sensation improved.

Regarding the IIEF, the scores on the erectile function, orgasm, and sexual desire subscales continued to improve during the treatment sessions. The overall sexual satisfaction and total score of the scale gradually improved until the last session of treatment and had not changed in the follow-up session (Table 1 and Figure 3).

After the tenth session, the patient reported an increase in somatic symptoms. However, a decline was noted at the 14-day follow-up. Anxiety/insomnia has declined after the 10-week intervention and remained steady after the 2-week follow-up, but social dysfunction has not changed. The depression scores, which indicated mild depression, did not change during the treatment sessions. The total scores of the GHQ have declined which shows an improvement at the 14-day follow-up (Figure 3).

## Discussion

We presented an effective treatment approach consisting of subcision, DN, and stretching exercises for a 33-year-old patient admitted to our pelvic floor physiotherapy clinic following previous treatment for PD. Initially, he complained of numbness, and scars at the surgical site following a penile plication, which severely affected his sexual health.

During the post-treatment interview, the patient reported improvement of sensation of the area by about 50% compared to before the treatment.

Because of the changes in the surgical scar, increased angiogenesis[24] may have accelerated nerve injury healing leading to enhanced sensation. Rotating the needle may result in winding of collagen tissues around the needle shaft, creating a whorl of collagen just around the needle.[25] Rotating the needle increases the mechanical bond between the needle and the tissue, which leads to internal tissue stretching. This stretch is sustained when the needle is left in situ. This internal stretching may result in visco-elastic reorganization followed by improving the mobility of the connective tissue.[26] Animal studies have shown a fibroblastic response to needling and an increase of the cross-sectional area of the place where fibroblasts expand, sometimes even several centimeters away from the needle.[27] The improvements in the patient's penile sensation and PFM strength may have occurred from internal stretching and as a result of the enhanced mobility of the tissue. Studies on the role of needling in relieving scar tissue complications are sparse. Kotani and colleagues[28] reported the analgesic effect of DN on abdominal scar pain. In their study, intradermal needles were inserted into painful points. More than 70% of patients in the treatment group showed excellent to good pain relief based on the VAS.[28]

Song and colleagues[29] investigated the effect of needling and ultrasound therapy on hypertrophic scars. They inserted needles around the scar tissue and similar to our technique manipulated the inserted needles once every ten minutes. This study reported statistically significant better results in the treatment group compared with the control group.[29] Previous case reports on old scars also reported favorable results for using needling technique to reduce pain and enhance tissue mobility.[30-32] Besides the aforementioned wound healing mechanisms, the activation of central antinociceptive systems following needle insertion, may be another possible analgesic mechanisms of DN.[34] The activation of central antinociceptive systems following needle insertion, that would be a possible analgesic mechanism of DN.

Although in this case, we did not offer any direct treatment for PFM, the patient's pain decreased during the digital rectal exam evaluation and his PFM strength increased. One explanation might be an indirect role of myofascial force transmission in reducing pain and improving PFM strength.[35] Because of the structural association between skeletal muscle and collagenous

**Table 1.** Outcomes

| Parameters | | 1st Session | 5th Session | 10th Session | 2-Week Follow-up |
|---|---|---|---|---|---|
| GHQ | Somatic symptoms | 10 | 15 | 20 | 7 |
| | Anxiety/insomnia | 15 | 9 | 7 | 7 |
| | Social dysfunction | 20 | 16 | 19 | 20 |
| | Severe depression | 7 | 7 | 7 | 7 |
| | **Total score** | 52 | 47 | 53 | 41 |
| Pain (VAS) | | 7 | 0 | 0 | 0 |
| MMT | | 2/5 | 3/5 | 3/5 | 3/5 |
| IIEF | Erectile function | 23 | 30 | 30 | 29 |
| | Orgasmic function | 8 | 8 | 8 | 9 |
| | Sexual desire | 7 | 9 | 9 | 9 |
| | Intercourse satisfaction | 10 | 10 | 10 | 10 |
| | Overall satisfaction | 8 | 9 | 9 | 9 |
| | **Total score** | 56 | 65 | 65 | 63 |
| Penile sensation (VAS) | | 3 | 8 | 8 | 8 |

GHQ: General Health Questionnaire; VAS: Visual Analogue Scale; MMT: Manual Muscle Test; IIEF: International Index of Erectile Function.

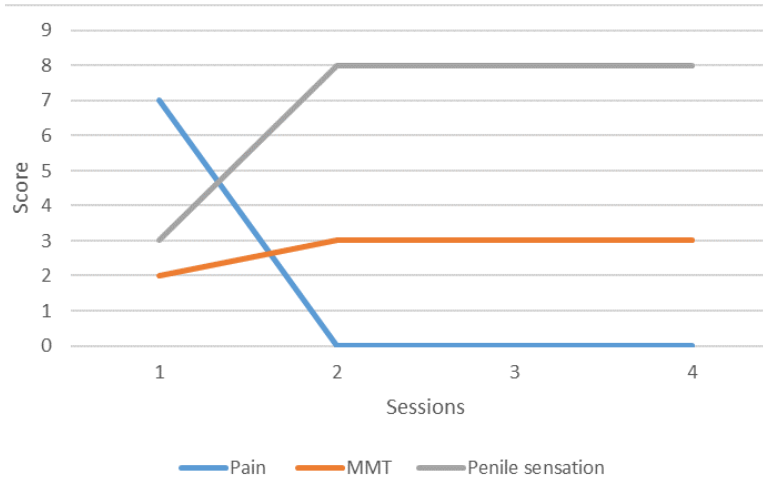


**Figure 2.** Pain, MMT, and Penile Sensation Scores.

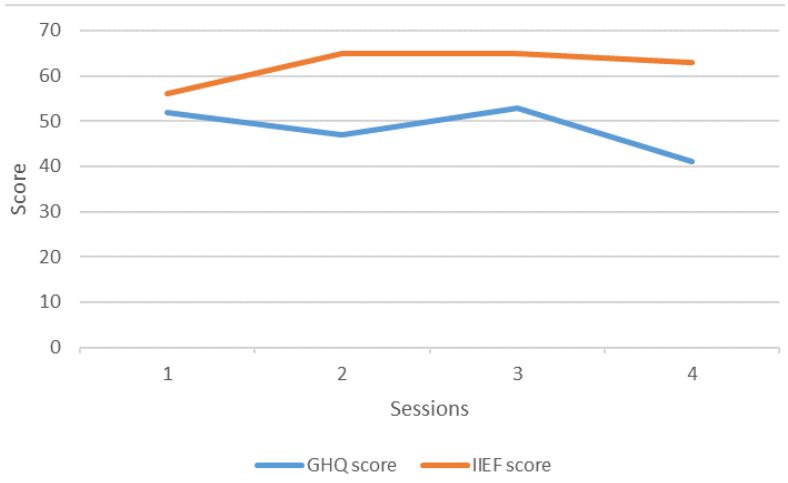


**Figure 3.** GHQ and IIEF Scores.

connective tissue, it is assumed that increased local stiffness would affect surrounding tissues over time, which subsequently may also become a source of pain and dysfunction.[35] Studies have also shown that exercises away from the site of pain can affect adjacent and related structures.[36,37] In this case, self-stretching exercises of the penis and scar tissue may have reduced the tension of the PFM. On the other hand, pain is an inhibitory factor,[38] and hypertonic muscles may not have a proper length-tension relationship.[39] Therefore, it might be possible that after the tension of the PFM returned to normal and the pain disappeared, the muscle contraction became more efficient and muscle strength increased. DN can reduce pain by affecting substance P, β-endorphin[40] and local blood flow level.[41] Besides the aforementioned mechanisms, a potential placebo effect should not be overlooked.

Despite an improvement in the patient's anxiety/insomnia and general health, results showed depression and social dysfunction scores were almost unchanged. The patient also reported an increase in somatic symptom scores after intervention followed by a mild decline at the follow-up session. These results may be related to the patient's personality characteristics and communication styles, which were not evaluated in this case study. Adjuvant psychological intervention for patients with chronic neuromuscular and urological problems may enhance their mental well-being.

## Authors' Contribution

Conceptualization: MB. Data curation: GK, MB, ND. Investigation: GK, MB, ND, MiM, MeM. Methodology: MB, MiM, JD. Supervision: MB. Visualization: MB, MiM, JD. Writing – original draft: GK. Writing – review & editing: MB, JD.

## Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

## Ethical Statement

The patient signed an informed written consent and gave permission to publish this case report.

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