

Treatment of varicocele with Fu's subcutaneous needling

A case report

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Abstract

Rationale: Fu's subcutaneous needling (FSN) is an innovative therapy of traditional acupuncture. FSN has been widely applied for the treatment of pain symptoms by relieving local muscle tension and promoting local blood circulation. Varicocele (VCL) is a disease that commonly occurs in male adolescents. Patients with VCL can suffer from pain in the scrotum, inguinal area, or unilateral testis, which could be an indication for FSN. In this study, we present a unique case, in which a 30-year-old male patient with VCL benefitted from FSN.

Patient concerns: A 30-year-old male complained of dull pain and swelling in the testicular area for 4 months. No significant abnormalities were identified in his genitalia by physical examination.

Diagnoses: The patient was diagnosed with VCL, with his symptoms and signs of dull pain and swelling in the testicular area, and ultrasound also demonstrated the left-side VCL.

Interventions: FSN was performed successfully twice a week on a different day without postoperative complications. The total course lasted 8 weeks.

Outcomes: The patient experienced obvious relief of his testicular pain and swelling after each treatment course. All his symptoms resolved and disappeared after 4 treatment courses. After the 8-week treatment course, the color ultrasound after treatment demonstrated improved anastomotic blood flow rates in his left spermatic vein. No narrow or thrombotic parts were observed post-treatment compared to the color ultrasound before treatment. The patient was followed up at 1, 3, and 6 months after treatment. During the follow-up period, his previous symptoms disappeared without recurrence.

Lessons: FSN significantly improved the patient's symptoms of testicular pain and abnormal dilatation and tortuosity of the spermatic veins. FSN might exert its therapeutic effect by improving the relaxation of muscle oppression and increasing the local blood reperfusion to resume blood stream. Due to the limitation of a single clinical observation case, a randomized clinical trial with a sufficient follow-up time is needed.

Abbreviations: FSN = Fu's subcutaneous needling, MTpP = myofascial trigger-points, VCL = varicocele.

Keywords: case report, Fu's subcutaneous needling, varicocele

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1. Introduction

Varicocele (VCL) is defined as an enlargement of the veins in the scrotum along with an abnormal dilatation and tortuosity of the internal spermatic veins in the scrotum and usually occurs in the left side.^[1] With a morbidity of up to approximately 15%, it is regarded as the most common physical abnormality in subfertile men. VCL is prone to occur in the left spermatic veins in male adolescents and is associated with impaired testicular function.^[2] Around 2% to 10% of men with VCL complain of pain, primarily in the scrotum, inguinal area, or unilateral testis.^[3]

Currently, therapies for VCL primarily include medical treatment and surgery. For medical management, antioxidants, hormonal agents, phlebotropic drugs, and a few Chinese herbs have been used as conventional medical therapy. However, evidence for the efficacy of these medications in VCL treatment is still limited.^[4] Various surgical methods have been applied for VCL repair; varicocelectomy is a popular surgical therapy for VCL, but its efficacy in improving male infertility is still disputed.^[5,6] In addition, surgery is accompanied by risks of complications, relapse, and is costly.^[7]

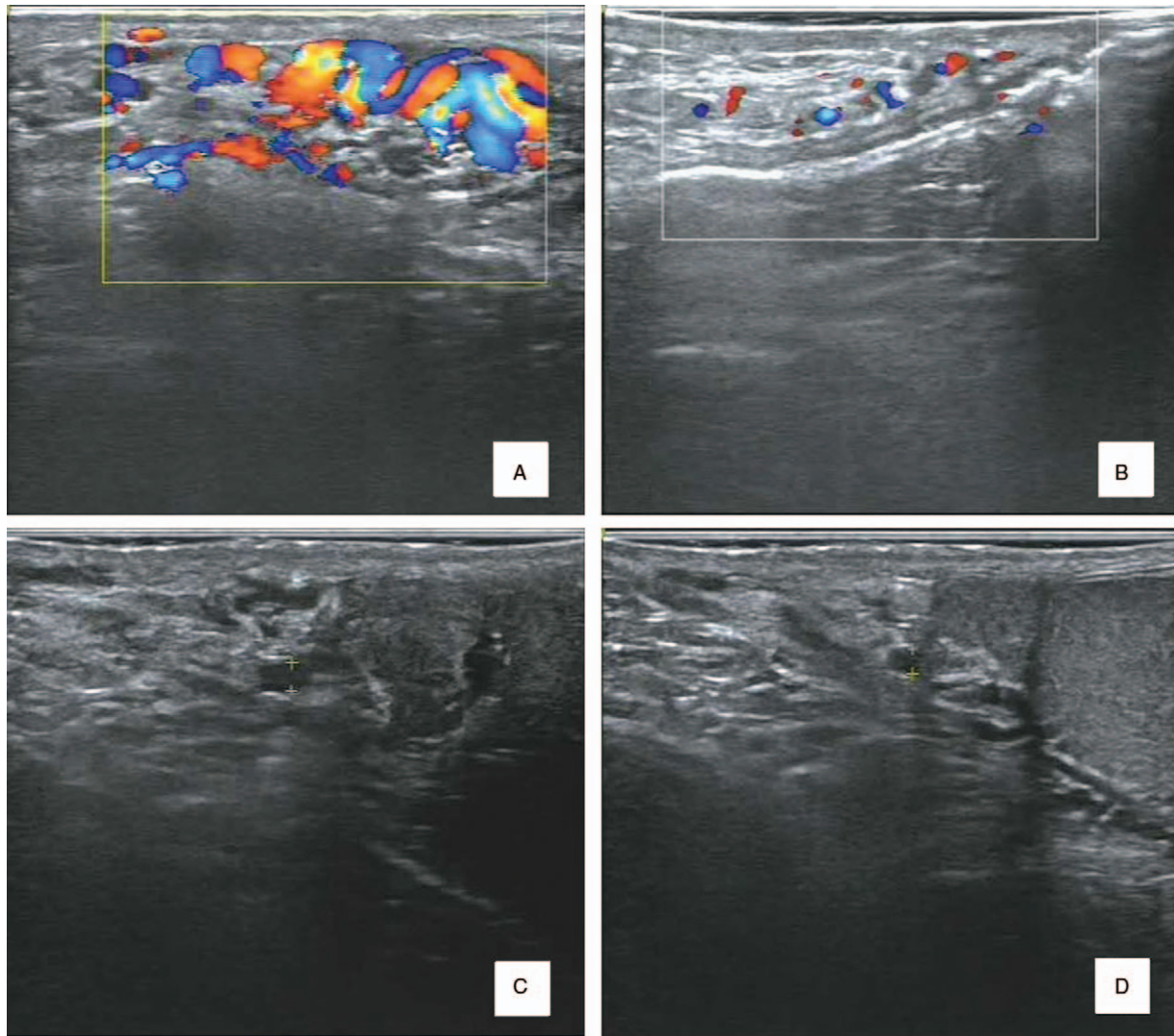


Figure 1. Ultrasound (A), before treatment, revealed that the pampiniform plexus was significantly decreased, and flow was only seen with Valsalva maneuver. Ultrasound (B), after treatment, revealed that anastomotic blood flow rates were unobstructed, and no narrow or thrombotic parts were observed. Ultrasound (C) shows that the diameter was wide before treatment, with a maximum diameter of 2.8 mm. Ultrasound (D) shows that the maximum diameter of the spermatic vein had decreased to 2.2 mm.

In China, Fu's subcutaneous needling (FSN) is a combination of eastern and western medicines, with elements of traditional Chinese acupuncture.^[8] It has a curative effect in treating pain, with a hypothesized mechanism of action of finding and releasing pathological tight muscle that causes pain, which consequently relieves tissue spasm and ischemia.^[9] Characteristics of FSN are as follows: the FSN needle is mainly inserted into the subcutaneous layer,^[10] whereas acupuncture penetrates several layers, including the skin, the subcutaneous layer, and the muscular layer; the FSN needle is moved smoothly and rhythmically by mechanical forces, with no "rotation and up-and-down" movement, which is a characteristic needling strategy in acupuncture; FSN does not emphasize *Deqi* (the patient's feeling of soreness, numbness, heaviness, and distension around the acupuncture point), while acupuncture and dry needling go deep into the muscular layer and elicit *Deqi*.^[11] The most important part of FSN is to find myofascial trigger-points (MTrP), which are closely connected with insertion points.

In this paper, we report the case of a 30-year-old man with VCL with a complaint of testicular pain and the clinical efficacy of FSN in reducing varicose veins. To the best of our knowledge, this is the first case to report the therapeutic effect of FSN in a patient with VCL.

2. Case report

In 2017, a 30-year-old man came to our Traditional Chinese Medicine treatment clinic with complaints of dull pain and swelling in the testicular area. He had suffered from these symptoms for 4 months. He refused to accept any medication to alleviate his symptoms for fear of aggravating his disease. A complete physical examination revealed normal appearing male genitalia. Ultrasound showed a left-side VCL with a wide diameter, with a maximum diameter of 2.8 mm (Fig. 1A). The blood flow manifests return signals (Fig. 1C). He refused a varicocelelectomy and instead had a preference for conservative



Figure 2. The Fu's subcutaneous needling insertion points were on left medial head of quadriceps (A), adductor muscle (B), rectus femoris (C), and intra-abdominal oblique muscle (D). The needles were horizontally moved, smoothly and rhythmically, from one side to the other (E). The steel needle was then withdrawn and insertion points were covered with a 6×7 cm transparent dressing (F).

treatment. Therefore, we advised him to accept FSN after informing him of the relevant details.

The patient received FSN therapy for 8 weeks. The treatment was provided twice a week on different days. The FSN needle was designed and patented in China (patent number: CN97114318, Nanjing FSN Medical Appliances Co, China). After palpation, the insertion points were identified; these were across the direction of the muscle fibers. The chosen insertion points were located on the medial head of quadriceps (Fig. 2A), adductor muscle (Fig. 2B), rectus femoris (Fig. 2C), and intra-abdominal oblique muscle (Fig. 2D). They were all aligned with the midpoint of the groin. After disinfection with 75% ethanol, a 3.5-cm FSN needle was quickly inserted through the skin and into the subcutaneous layer. The steel needle was then drawn back by 3 mm to wrap the steel tip of the soft tube so as not to injure blood vessels or other tissues during the following procedure. The needles were horizontally moved, smoothly and rhythmically, from one side to the other 200 times in 2 minutes (Fig. 2E). After drawing the steel needle back, insertion points were covered with a 6×7 cm transparent dressing (produced by

Nanjing FSN Medical Co, Ltd), and the soft tube was left for 8 hours (Fig. 2F).

At the end of each treatment course, the patient reporting experiencing obvious relief of his testicular pain and swelling. After all 4 treatment courses, all his symptoms had resolved and disappeared. After 8 weeks' treatment, the patient's color ultrasound demonstrated improved anastomotic blood flow rates in his left spermatic vein and no narrow and thrombotic parts were observed (Fig. 1B). Ultrasound also showed that the maximum diameter of the spermatic vein had decreased to 2.2 mm (Fig. 1D). In addition, the patient was followed up at 1, 3, and 6 months after the treatment course had ended by mobile telephone, and reported that all his previous symptoms had disappeared and had not recurred. The patient provided written informed consent for publication of this case.

3. Discussion

As an innovative therapy of traditional acupuncture, FSN is quite different from traditional acupuncture in the selection of the

insertion points, in the tissue layer involved, as well as in the rules obeyed during manipulation. The core manipulation of FSN is to find the MTrP, of which acute tenderness to palpation and local tenderness are the top diagnostic features.^[12,13] The mechanism of FSN is not yet fully understood.^[14] The primary mechanism underlying FSN is that the local MTrP formation affects the blood supply to neighboring tissues, which leads to tissue ischemia and hypoxia.^[15] Thus, manipulation of FSN on MTrP can relieve local muscle tension, promote blood circulation, and finally eliminates pain. Moreover, some randomized trials have shown that FSN has an immediate and safe effect on alleviating pain.^[16,17]

Clinically, VCL is considered as a predominantly left-sided disease. However, its pathophysiology has not been clearly delineated and, in general, the available treatments are not effective. The etiology of VCL may be multifactorial. Probable mechanisms underlying VCL include the compression of surrounding neural fibers in the dilated venous complex, increased venous pressure and testicular blood flow, and hypoxia.^[18] One of the mechanisms underlying VCL is that increased venous tension may promote the blood supply and microvasculature of the testis by down-regulating arterial inflow.^[19] According to the FSN theory, the increase of muscle tension leads to the compression of blood vessels between muscles, which causes poor local metabolism and blood circulation, and eventually causes venous congestion. Therefore, in this case, FSN might have effectively treated VCL by alleviating the MTrP in the patient's scrotum or inguinal area to reduce muscle spasms and tension. This may have enhanced the blood supply to the spermatic cord, resulting in an improvement of local blood circulation and tissue metabolism acceleration.

FSN is easy to learn and manipulate in the clinic and is applicable for patients who prefer conservative treatment. Moreover, FSN is a convenient way to study the mechanisms underlying the efficacy of needling techniques and could therefore have implications for research that aims to uncover the underlying mechanisms of traditional acupuncture.

In conclusion, we described the therapeutic effect of FSN in a patient with VCL. FSN significantly alleviated testicular pain and abnormal dilatation and tortuosity of the internal spermatic veins. The therapeutic effect of FSN might result from the relaxation of local muscle and the increase of local blood reperfusion. This was a single-case clinical observation, and so further randomized clinical trials with sufficient follow-up times are needed to verify the efficacy and safety of FSN.

Author contributions

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