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EARLY RESPONSES ACUPUNCTURE AND SPLINT TREATMENT IN WRIST VOLAR GANGLION CYST

AKUPUNKTUR VE SPLİNT TEDAVİSİNİN BİLEK VOLAR GANGLİON KİSTİNDE ERKEN CEVABI

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ABSTRACT

Ganglion cysts on the volar surface of the wrist are a relatively rare and various treatment approaches are used. The aim is to investigate the clinical effect of acupuncture and splint on the pain and aesthetic complaints of a 73-year-old retired office worker female patient who uses the computer extensively and has an unilateral ganglion cyst. Acupuncture treatment was received every other day three times a week and a custom-made compressive right wrist-hand splint was fabricated to the patient. As an early response, one of the cysts disappeared completely and a significant decrease in the size of the other was reported. Acupuncture and two-piece compression splint approaches may be successful approaches in the conservative treatment of ganglion cysts.

Keywords: Ganglion Cyst, Acupuncture, Splint, Orthosis, Pain

ÖZET

El bileğinin volar yüzeyindeki ganglion kistleri nispeten nadir görülen bir durumdur ve çeşitli tedavi yaklaşımları kullanılmaktadır. Amaç tek taraflı ganglion kisti olan, yoğun bilgisayar kullanan 73 yaşında emekli ofis çalışanı kadın hastanın ağrı ve estetik şikayetlerine akupunktur ve splintin klinik etkisinin araştırılmasıdır. Haftada üç gün gün aşırı akupunktur tedavisi ve hastaya özel yapım sağ el-el bileği kompresyon splint uygulandı. Erken müdahale olarak kistlerden birinin tamamen kaybolduğu, diğerinin boyutunda ise ciddi oranda küçülme olduğu kaydedildi. Ganglion kistlerinin konservatif tedavisinde akupunktur ve iki parçalı kompresyon splint yaklaşımları başarılı yaklaşımlar olabilir.

Anahtar Kelimeler: Ganglion Kisti, Akupunktur, Splint, Ortez, Ağrı

1. INTRODUCTION

Ganglion cysts are common benign cystic tumours that commonly originate from connective tissue structures, such as joint capsules and tendon sheaths, and rarely from the bone (1). Ganglion cysts contain a high-viscosity fluid mainly composed of hyaluronic acid, with glucosamine, globulins, and albumin (1,2). The origin of ganglion cysts has been widely theorised. The most commonly reported causes in the literature include pre-existing intra-articular joint pathology, joint stress leading to mucoid degeneration of adjacent extra-articular connective tissue, and joint stress stimulating mesenchymal cells to secrete mucin (1).

Ganglion cysts are cystic structures filled with a gel-like fluid and are often observed in the hand and wrist regions in the joint capsule, tendon, or tendon sheath. They mostly occur on the dorsal wrist and rarely on the volar wrist. Patients with ganglion cysts usually present with pain and aesthetic problems caused by repetitive manual activities (3).

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Although ganglion cysts are usually diagnosed based on their location and appearance, radiological examinations are performed when necessary (4-6).

Currently, ganglion cysts with no clinical complaints are only followed up regularly, and no conservative or complementary medical treatment approaches have been considered. However, treatment is indicated when ganglion cysts are painful, cause aesthetic concerns, or limit daily activities.

Recurrence of these cysts can be prevented with both conservative and surgical treatments, but it is not possible to eliminate it. Recently, several methods have been used for the surgical treatment of ganglion cysts in the hands and wrists. There are ongoing studies to reduce the recurrence rates of these cysts (7,8).

This report aimed to share the early results of traditional medicine (acupuncture) and custom-made compressive splint application to treat the ganglion cyst on the volar surface of the wrist, which is rare in clinical practice.

2. CASE PRESENTATION

A retired female computer operator aged 73 years (weight, 91.5 kg; height, 1.61 m; and body mass index, 35.29 kg/m2) visited our clinic for pain and non-aesthetic appearance of a ganglion cyst in the right wrist. The diagnosis of ganglion cyst was made by different medical doctors during hospital admissions due to different health problems. It had been stated that it had taken the form of an unaesthetic and painful structure for two years. Surgery was recommended, but the patient stated that she refused the surgery. Ethical approval was obtained from the Ethical Board Committee of the Health Ministry of Turkiye Republic Ankara Bilkent City Hospital Ethics Board, and the patient provided informed consent before initiation of the study (File no. E2-23-4567).

We used a tape measure and calliper to measure the dimensions of the ganglion cyst. The visual analogue scale (VAS) was used to assess the pain in the affected wrist. The VAS is a 10-cm scale with a starting point of 0, indicating no pain, and an endpoint of 10, indicating unbearable pain. The patient was asked to mark the degree of pain on the scale, which was measured using a tape measure from the starting point. Pain scores were evaluated based on the degree of pain at rest (VAS-r), during movement (VAS-m), and at night (VAS-n) (9-11). The VAS score was 7 for all three measures.

There were no limitations in the range of motion of the right wrist in goniometric measurements. Moreover, according to the manual muscle testing no decrease or difference was observed in the strength of the muscles controlling the right and left wrists or fingers.

The cyst had a very wide basal cyst structure, which was 40 mm in diameter and 25 mm in width and extended from the radial to the ulnar region, and a second protruding oval cyst structure was 20 mm in diameter and 15 mm highness, localised on top of the first basal cyst (Figure 1a).

A combination of acupuncture and splint application was decided for the patient, as she refused aspiration and surgical excision procedures; the patient's informed consent was obtained for the same.

The wrist splint was planned for night-time use in this patient. The second orthosis, the opponens splint, was designed for daytime use, and it was worn over the wrist splint. During the 5-day treatment period, it was recommended that the patient use the wrist splint for 8 h at night, and the short opponens for 4 h during the day (2 h in the morning and afternoon each).

We recommended using both splints together for 1 h maximum when the patient needed to carry weight during the day.

In this patient, three sessions of acupuncture treatment were conducted every other day along with the custom-made splints, starting from the first day for 5 days, with the wrist splint at night (8h) and short opponens splint in the day (4h), and when necessary, both the wrist splint and short opponens splint together for maximum 1 h. The treatment showed a difference in the size of the basal cyst. The 40 mm in length elliptical basal cyst (first cyst) measured 25 mm after the 2nd session and 0 mm after the 3rd session. While it decreased in width from 23 mm to 4mm after the 2nd session and to 0 mm after the 3rd session. The length of the highly protruding annular ganglion cyst (second cyst), with its apex directed to the ulnar side, decreased from 10 mm to 4 mm after the 2nd session and to 2 mm after the 3rd session. The second cyst protrusion reduced from 15 mm to 10 mm after the 2nd session and to 2 mm after the 3rd session (Table 1).

Table 1. Pre and post-treatment measurements of ganglion cyst

Ganglion cyst	Pre-treatment 1st Measurement (mm)	Post-treatment 2nd Measurement (mm)	Post-treatment 3rd Measurement (mm)
Dimension	**L - W**	**L - W**	**L - W**
1st cyst (elliptical)	40 - 23	25 -4	0 - 0
2nd cyst (annular)	10 - 9	4 - 3	2 - 1
Protrusion height	15 (1st cyst 7 + 2nd cyst 8)	10 (1st cyst 4 + 2nd cyst 6)	2 (1st cyst 0 + 2nd cyst 2)

L: Length, W: Width

Acupuncture application

First, disposable sterile acupuncture needles (0.25 × 25 mm; Hua Long Acupuncture, Suzhou, China) were placed around the ganglion cyst on the right wrist. A needle depth of approximately 10–15 mm for the acupuncture treatment was maintained for 20 min (Figure 1b) (12).

Following this, disposable sterile stainless steel acupuncture needles were inserted at the Yin Tang Ex HN-3, HT 5, HT 7, PC 7, SJ 5, LI 4, LI 5, and Liv 2 points [12-14]. A single needle was inserted at ST-36, which is located on the anterior aspect of the lower leg, distal to the anterior crest of the tibia, and within the tibialis anterior musculature. Another needle was inserted at LR-3 (15,16).

The treatment regimen consisted of three sessions of both acupuncture and splint treatment, and each session lasted for 40 min. The patient continued to use the splint for 4 weeks.

Acupuncture was performed by a Turkish neurosurgeon and acupuncturist having 10 years of clinical experience in acupuncture.

Traditional Chinese Medicine theories state that phlegm is caused by the pathology of transformation, movement, and excretion of fluids. This involves the dysfunction of many organs, such as the lungs, spleen, stomach, kidneys, liver, bladder, and intestines, and the “triple burner” in Traditional Chinese Medicine. Wind can also be associated with phlegm, thus producing “wind phlegm” (17).

SJ 5 is point to use for releasing exterior Wind-Heat, and Luo-Connecting points of one meridian can communicate with two meridians.

ST36 is used to treat pain. Yin Tang is used for its calming effect on the mind and treatment stress, anxiety, insomnia, and to promote relaxation.

Acupuncture points away from the ganglion itself are often selected but are still on the meridian line that runs through the ganglion. The major acupuncture meridians are interconnected with other meridians. For instance, on the inside of the lower leg, the three meridians cross at a point called sanyinjiao, where the spleen, liver, and kidney meridians cross.

In our study the large first cyst reduced by 23 mm in width and 40 mm in length, whereas the second cyst localised above it reduced by 9 mm in width and 10 mm in length early responses to the custom-made wrist splint and short opponens splint with acupuncture treatment performed for three sessions every other day were recorded. Although the cyst located at the base completely lost its dimensions, a substantial but defined reduction in the dimensions of the second cyst was observed. The complaint of pain, which had intensified initially with use, gradually disappeared (Figure 1c).

Splint application

An opponens splint was used as an orthosis (18-20) because the two structures of the cyst on top of each other were located in the area innervated by the median nerve. In this splint, the thumb was positioned in abduction and opposition, and the wrist was extended at 20°. Additionally, a wrist splint was fabricated to cover the wrist and apply soft compression to both the structures of the ganglion cyst. The right wrist splint was to be worn inside the short opponens splint.

A 6-cm wide Orficast More was used to fabricate the wrist splint, while a 16-cm wide one was used for the opponens splint (Figure 1d). The material has a thermoplastic memory feature, and it is softened by warming in water at 600C. The softened Orficast More was shaped on the hand. The wrist and thumb were positioned, the proximal arches of the hand were supported, and gentle compression was applied to the ganglion cyst. This position is also suitable to make corrections and modifications in time, if necessary, owing to the nature of the material. Two pieces of 2-mm thick plastazote material were used for the compression pads, which were shaped according to the dimensions of the ganglion cyst. The wrist splint was fixed with a single Velcro piece, and the short opponens splint was stabilised using a double Velcro piece (Figure 1e).

The splint treatment was performed by a physiotherapist with 39 years of clinical experience in orthoses.

Before both acupuncture and splint treatment, the scores were VAS-r (score,7), VAS-m (score,7) and VAS-n (score,7). After the first treatment session the scores were reported as 3 and in the second and third early post-treatment period, the scores were set at 0 for all three measurements.

3. DISCUSSION

Conservative treatment for volar ganglion cysts is rare. This report is relevant because it reflects the early response of a ganglion cyst to acupuncture and compressive splint application.

It has also been reported that the postoperative recurrence rate of volar wrist cysts is higher than that of dorsal cysts. One study reported that the recurrence rates were 13–100% after non-surgical treatments for volar wrist cysts, such as aspiration, corticosteroid injection, and multiple perforations of the mass (21,22). However, another study reported a recurrence rate of 31.2% for the volar ganglion cysts in the wrist (22).

It is known that non-surgical treatment methods for ganglion cysts have low success rates (23). These rates range between 13% and 33% for aspiration, with or

without multiple punctures (24-26). In one study (24), splinting for 3 weeks improved the treatment rate (40% in the splinted group versus 13% in the non-splinted group), although another study did not show any beneficial effects with splinting (27). In another study, the splint was preferred to decrease the ganglion cyst size (28). We used the splint for two reasons. One reason was to supplement the acupuncture treatment, while the other was to decrease the size of the ganglion cyst. We observed that the size of the ganglion cyst gradually decreased when acupuncture and splint therapy were combined.

Acupuncture together with splint treatment eliminated the complaint of pain caused by intensive use of the hand in the early stages. Studies have shown the positive effects of the opponens splint on pain reduction (18-20).

Early responses to the custom-made wrist splint and short opponens splint with acupuncture treatment performed for three sessions every other day. The first and large elliptical basal cyst reduced by 23 mm in width and 40 mm in length, whereas the second cyst localised above it reduced by 8 mm in width and 8 mm in length. Although the first cyst located at the base completely lost its dimensions (0 mm in diameter and 0 mm in length), a substantial but defined reduction in the dimensions of the second cyst was observed. The complaint of pain, which had intensified initially with use, disappeared. Furthermore, the ganglion cyst size was reduced. While the first large cylindrical basal structure disappeared completely, the second ovoid structure located on it reduced considerably in size. Thus, the early response to acupuncture and splint application was the reduction of the ganglion cyst to 7 mm in diameter and 4 mm in length.

The study is a case report with very high patient satisfaction. Although this case report does not justify the use of non-surgical treatment in all similar cases, we can consider performing acupuncture and splinting treatment in aspiration/non-aspiration ganglion cyst patients with medical conditions or social circumstances that contraindicate surgery. Moreover, this non-surgical combination treatment provides median and/or ulnar nerve decompression until surgery or aspiration becomes feasible or necessary and improves aesthetics.

4. CONCLUSION

Despite the limitations of this study in reporting the early treatment results of a single patient from a single centre with continued follow-up, it is valuable to demonstrate the feasibility of the acupuncture and splint combination approach using a custom-made adjustable compressive mechanism for the conservative treatment of patients refusing surgery but with a high recurrence probability. Furthermore, these applications should be studied in larger populations with a long-term follow-up.

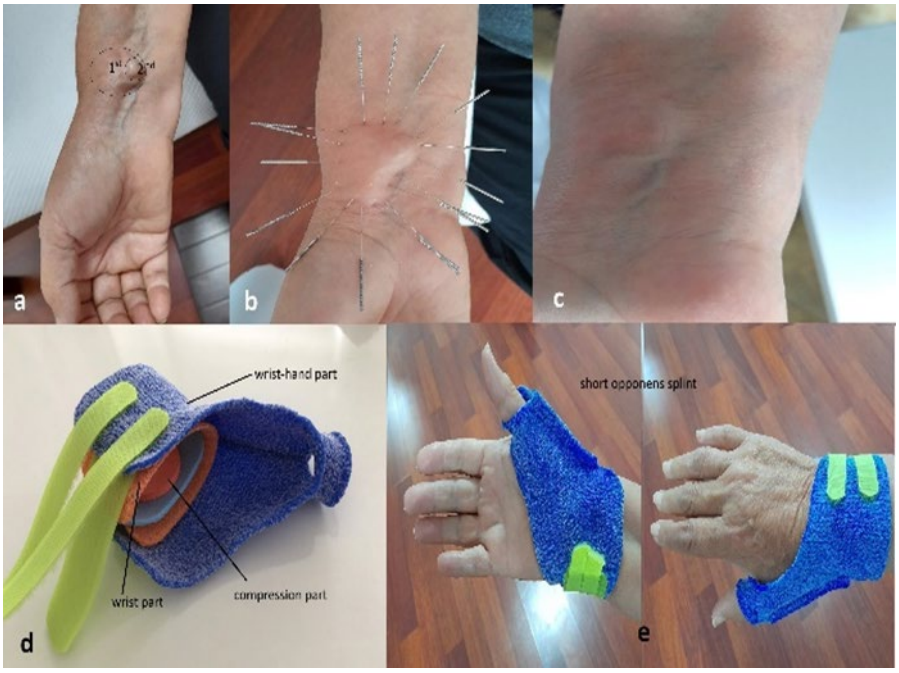

Figure 1. Pre and post-treatment appearances of acupuncture and splint applications:

a. Pre-treatment appearance

b. The view of 3 minutes after the needles' application

c. The view of the post-treatment (after the 3rd session)

d. The view of wrist splint with the short opponens splint

e. The view of volar and dorsal short opponens splint

Conflict of Interest

The authors have no conflict of interest to declare.

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