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Case Report

Effects of Acupotomy on a Dorsal Wrist Ganglion Cyst with Ultrasonography: A Case Report with a 7-Month Follow-up

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ABSTRACT

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acupotomy, ultrasonography, dorsal wrist ganglion cyst, numeric rating scale

Background: This study was conducted to evaluate the clinical effect of acupotomy, a newly upcoming acupuncture treatment method for a dorsal wrist ganglion cyst.

Methods: A patient with a dorsal wrist ganglion cyst was treated with acupotomy under ultrasonographic guidance. The symptoms caused by the cyst and size of the cyst under ultrasonographic observation were used to evaluate the effect of the acupotomy treatment.

Results: The numeric rating scale score reduced from 7 to 1.4 throughout the treatment period. The size and swelling of the cyst decreased following acupotomy treatment.

Conclusion: Acupotomy had a positive clinical effect in the treatment of a dorsal wrist ganglion cyst in this case. Further studies are required for its additional retrospective application

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Introduction

Dorsal wrist ganglion cysts are the most common benign soft tissue tumor, accounting for 50-70% of tumor cases on the hand and wrist area [1]. The origins and causes of dorsal ganglion cysts remain unclear. However, joint stress or joint abnormalities lead to weakening of the joint capsule, leakage of synovial fluid, and eventual cyst formation [2].

Aspiration is one of the main conservative treatments for dorsal wrist ganglion cysts. Aspiration techniques could vary in the puncturing methods and different chemical agents used. Even after using these various options, the recurrence rate is reported as high; up to 70% [3]. Surgical excision is often recommended to avoid recurrence. The recurrence rate after surgical treatment for a dorsal wrist ganglion cyst is reported as a maximum of 40% [4]. Although surgical excision is very efficient, it has complications and risks. Therefore, researchers are continuously devising new surgical treatment techniques to prevent recurrence and postoperative complications [3,5-7].

On ultrasonographic scan, wrist ganglion cysts are classically

well-defined, lobulated hypoechoic cystic masses with posterior acoustic enhancement and fine septations [8]. Therefore, ultrasonography is often used to diagnose and identify the exact condition of a lesion before treatment.

Acupotomy is a newly developed acupuncture treatment method that requires the understanding of both traditional Korean medicine meridian theory and modern surgical principles simultaneously. Acupotomy induces a soft tissue lesion to restore its own normal kinetic state through peeling and removing abnormally adhered tissues, by balancing yin yang qi blood flow. Acupotomy is also reported to have a quick recovery following treatment, and be more effective at relieving pain compared with conventional acupuncture treatment for various diseases [9].

Few studies have investigated or reported treating dorsal wrist ganglion cysts with reference to traditional Korean medicine principle [10]. Park et al [11] reported a case of a dorsal wrist ganglion cyst treated with ultrasound-guided acupotomy, but several traditional Korean medical treatments were performed together with; not acupotomy alone, and the follow-up period was approximately 1 month, which could be quite short.

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In this study, the effect of acupotomy guided by ultrasonographic scan in a patient with a dorsal wrist ganglion cyst is described with a 7-month follow-up.

Case Report

Case

Patient

Male aged 29 years.

Chief complaint

Pain and swelling at the dorsum part of the right wrist.

Onset

1-2 years ago.

Past history

None.

Present history of illness

A 29-year-old male who works a manual job that continuously requires high mobility of the hand and wrist joints, noticed a pain and swelling in his right wrist. Symptoms were relieved if he rested. He visited some local clinics a few times when the symptoms worsened. He only received injections in his right wrist for a year. He was brought to the outpatient Department of Acupuncture and Moxibustion Medicine, Daegu Hanny university Traditional Korean Medical hospital.

Acupotomy under ultrasonographic guidance

Two clinicians performed the treatment procedure. The primary clinician administered the acupotomy treatment while the secondary clinician implemented the ultrasonographic guidance.

Acupotomy was administered by the primary Korean medical doctor having the Department of Acupuncture and Moxibustion Medicine specialist license (licensed by the Ministry of Health and Welfare, Korea). The identical, primary clinician, having more than 25 years of clinical experience, administered the procedures throughout the treatment period.

Ultrasonographic guidance for acupotomy treatment of the ganglion cyst was performed by the secondary Korean medical doctor having the Department of Acupuncture and Moxibustion Medicine specialist license (licensed by the Ministry of Health and Welfare, Korea). The identical, secondary clinician, having 7 years of clinical experience, implemented the ultrasonographic guidance procedure throughout the treatment period.

Prior to beginning the treatment, the clinicians explained to the patient the entire treatment procedure, cautions to be aware of, and probable side effects after the treatment to patient in detail. The informed consent form about treatment was filled in by the patient.

A sterilized, disposable acupotomy needle was used (DongBang Acupuncture Inc., Seongnam, Korea; 0.75 × 50 mm, whole length 105 mm, length of acupuncture body 75 mm, length of acupuncture head 25 mm, length of cylindrical apex 5 mm, and radius 0.75 mm). The patient was in the supine position with his right wrist supinated on his abdomen for the entire treatment. The clinician first marked the point with a surgical marking pen to indicate at which point the acupotomy treatment would be performed. The clinician wore a sterile mask and surgical gloves throughout treatment. Skin sterilization was performed with

a disposable alcohol stick swab (Firson Inc., Cheonan, Korea; Altistick, ethanol 80%) and a disposable povidone iodine stick swab (Firson Inc., Cheonan, Korea; Postick, povidone iodine 10%). Subsequently, a surgical sterilization wrap was draped around the lesion. Acupotomy treatment was performed at the marked point.

Longi or trans scans were performed using a GE Logiq e ultrasound system with a 5-13 Hz linear transducer probe (GE Logiq 12L-RS). The depth, width, and length of the ganglion cyst were measured in each image. The acupotomy treatment was administered under the ultrasonographic guidance (Fig 1.). Both clinicians only carried out the treatment procedure and did not take part in the evaluation.

Acupotomy was administered by peeling around the swollen point of the dorsum part of the right wrist. The centro-square acupuncture method, which is reported to be effective for treating ganglion cyst, was used with acupotomy throughout the treatment period [12]. Both clinicians controlled the acupotomy needle or transducer carefully to avoid contamination of the sterilized acupotomy site with the ultrasound gel. Following treatment, a circular sterilized bandage was applied onto the administration site to prevent a secondary infection. Both clinicians checked for any abnormalities at the treatment site or side effects in the patient.

Acupotomy treatment was performed at every other visit. On the visits in between, only ultrasonographic observation was performed.

Evaluation

At every outpatient visit, the patient status and symptoms

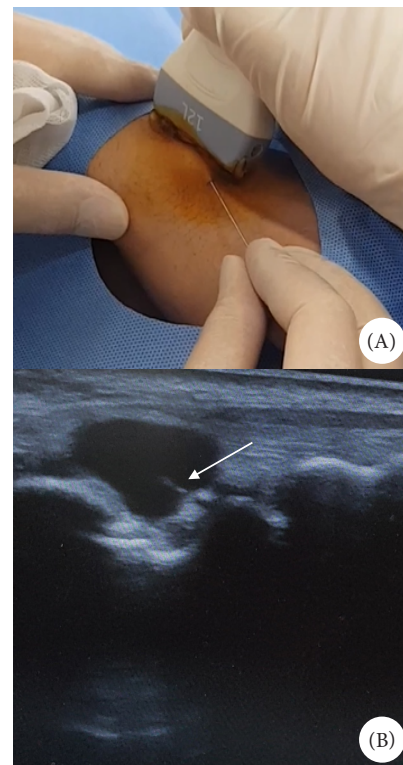


Fig. 1. (A) Acupotomy treatment (under the ultrasonographic guidance) of the dorsal ganglion cyst. (B) Acupotomy needle peeling around the swollen point of the ganglion cyst (ultrasonographic observation).

were assessed just before the treatment. The clinical features of the ganglion cyst were evaluated and the size measured at each outpatient visit using ultrasonographic scan.

The numeric rating scale (NRS) score was also used to assess the severity of pain or symptoms. On a scale of 0–10, where 0 indicates “no pain at all” and 10 indicates “the most severe pain imaginable”, the patient was asked to say the number index that describes the symptom best, in a relaxed position.

Progress

Visit 1 (January 18th, 2020)

A distinct swelling on the right wrist could be noticed even by naked eye. The NRS score was assessed as 7. The pain and discomfort worsened due to manual labor. Even eating a meal with a spoon was very annoying by the pain in the right wrist. When the pain worsened, tingling on the first and second fingers of the right hand occasionally occurred. Acupotomy treatment under ultrasonographic guidance was conducted (Fig. 2).

Visit 2 (January 23rd, 2020)

The pain and discomfort decreased just after the first treatment and the NRS score was assessed as 2.8. The patient described his status as 60% of his symptoms relieved. However, the swelling on the right wrist had barely decreased as observed by ultrasound. Although the pain and discomfort worsened after manual labor, it was not as severe as before acupotomy treatment. No other side effects were observed (Fig. 3).

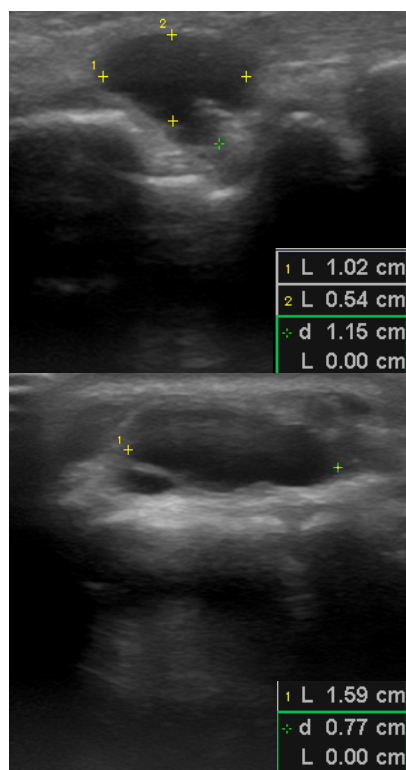


Fig. 2. Observation of the dorsal ganglion cyst under ultrasonographic scan on the patient's wrist prior to acupotomy treatment in Visit 1.

Visit 3 (February 1st, 2020)

Pain and discomfort were almost the same as the previous visit. The NRS score was assessed as 2.8. However, the size and swelling of the ganglion cyst had slightly increased, almost replicating what had been observed at first visit. Acupotomy treatment under ultrasonographic guidance was conducted again. Following acupotomy treatment, to prevent recurrence of symptoms at work, the primary clinician showed the patient how to compress his wrist around the ganglion cyst with a wristband (Fig. 4).

Visit 4 (February 8th, 2020)

Symptoms of pain and discomfort were further relieved after the previous treatment. The NRS score was assessed as 1.4. The patient described his status as 80% of his symptoms had been relieved. The size and swelling of the ganglion cyst had also decreased. No swelling was observed by naked eye. Tingling in the left finger had also disappeared. No other side effects were reported (Fig. 5).

Visit 5 (August 7th, 2020)

The NRS score was assessed as 1.4, the same as that of the previous visit. Due to repetitive stress caused by the continuous manual labor of his job, symptoms have not been completely relieved. However, there was no swelling of the right wrist or exacerbation of any symptoms after previous treatment (Fig. 6).

Discussion

Usually, wrist ganglion cysts have a radius of 1-2 centimeters. However, in some special cases of the “occult ganglion” which

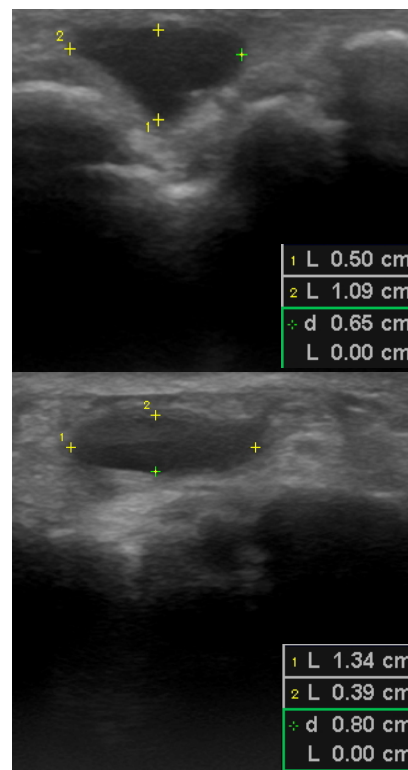


Fig. 3. Observation of the dorsal ganglion cyst under ultrasonographic scan on the patient's wrist on Visit 2.

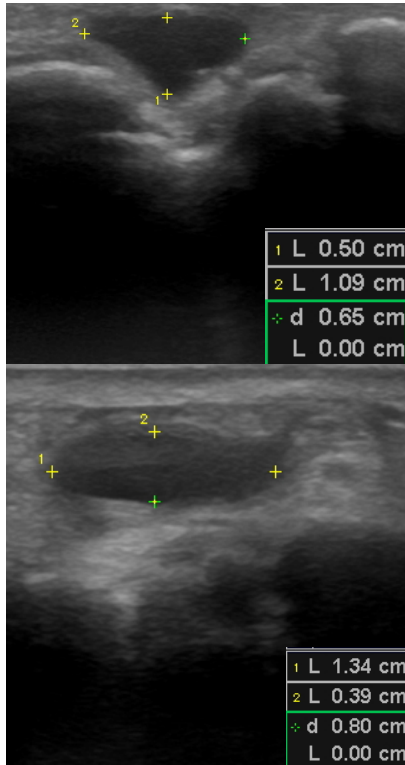


Fig. 4. Observation of the dorsal ganglion cyst under ultrasonographic scan on the patient's wrist on Visit 3.

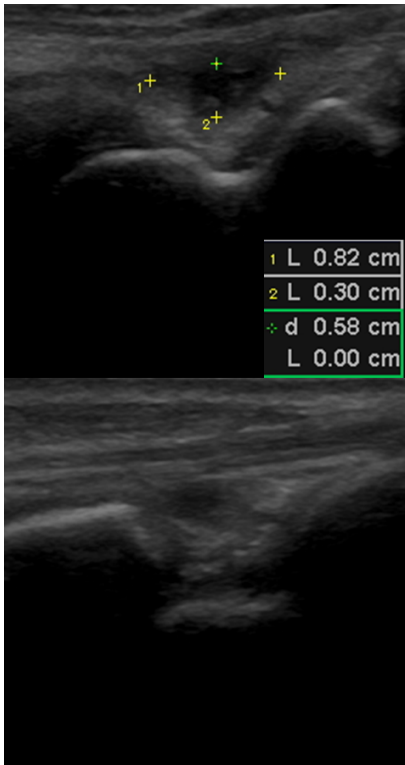


Fig. 5. Observation of the dorsal ganglion cyst under ultrasonographic scan on the patient's wrist on Visit 4.

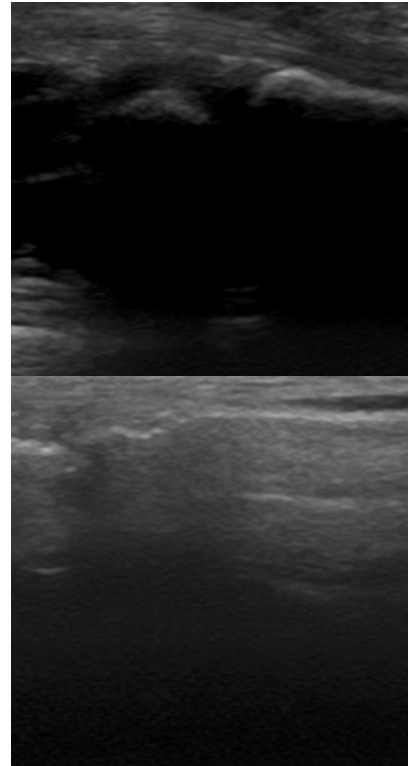


Fig. 6. Observation of the dorsal ganglion cyst under ultrasonographic scan on the patient's wrist on Visit 5.

cannot be seen with the naked eye, magnetic resonance imaging (MRI) or ultrasonography are required to make an accurate diagnosis [13,14-16]. Likewise, ultrasonography was used in this study to make a detailed diagnosis and to conduct precise treatment.

Aspiration is the “primary” conservative treatment for dorsal wrist ganglion cysts. To lower the recurrence rate and to improve the success rate of simple aspiration, many techniques have been developed. Corticosteroid injection after simple aspiration was introduced based on the mistaken theory that ganglia are inflammatory in origin. To obtain a more complete drainage of the cyst, the use of hyaluronidase prior to aspiration was also introduced. Splinting the wrist after aspiration to prevent pumping synovial fluid, aspiration with multiple punctures, aspiration with an injection of a sclerosant, and the thread technique using a silk suture passing through the cyst have been introduced and used. However, these additional techniques have been reported to be no more effective than simple aspiration of the cyst [13,17,18].

Open surgical techniques have also been developed to maximize the therapeutic effect. However, there are risks including unsightly scars, postoperative pain, stiffness, grip weakness, and decreased range of motion [3,5,6]. Some of set up materials including surgical traction, and axillary blocks must be equipped and prepared prior to conducting surgical techniques [3,7]. Therefore, as an advantage over open-surgical techniques, a minimally invasive, simple procedure with a low postoperative complication rate, less postoperative pain, and faster recovery is required [7].

Acupotomy evolved from the “Chinese small knife acupuncture therapy” in 1976, combining traditional Chinese medicine

Table 1. The Changes of NRS Score Throughout the Treatment Period.

	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
NRS	7	2.8	2.8	1.4	1.4

NRS, numeric rating scale.

meridian theory and modern surgical principles [19]. From a pathological point of view, fluid effusion could increase internal pressure on soft tissues, leading to abnormal, localized excessive stress. This stress may cause pain in the soft tissues. At this point, “the peeling off method” of acupotomy can be used for treatment. Cutting the tissue and peeling it off could be useful to decrease the abnormally increased internal pressure and remove the inflammatory fluid. This method could lower the internal pressure on the soft tissues, improve the nearby circulation, and promote healing of the inflammatory lesions [9,19].

Acupotomy for dorsal wrist ganglion cysts is comparatively faster and simpler to perform than any other procedures previously discussed in this report. Additionally, there is no need to consider the postoperative recovery period or risk of cutaneous complications after acupotomy treatment, making it a safe procedure. Furthermore, it has been shown to have long-lasting effects and fewer complications post treatment. This method also promotes healing at the lesion that could lead to a nearly “fully recovered” state [20].

In this study, symptoms were relieved after the first treatment and resolved after several rounds of acupotomy. The patient’s NRS scores reduced from 7 to 1.4 (Table 1). The size of the ganglion cyst observed by ic scan also decreased, although it did not consistently reduce in size over the whole treatment period. From assessing the symptoms, the NRS scores, and the size of the cyst over 7 months, the improved state was maintained. Although the latent period until recurrence is unknown, it should be acknowledged that acupotomy treatment was effective.

Additional management after acupotomy treatment is also thought to be helpful to lowering the recurrence rate. In this case, compression of the wrist during manual labor may have helped. Post treatment care in daily life could maintain a long-lasting therapeutic effect.

However, in this study, a single case of a patient was too limited to obtain meaningful results. The evaluation criteria were not very sensitive to monitor changes during the treatment period. In addition, the effects of acupotomy treatment were not evaluated sufficiently during this study, as it did not include conventional treatment cases as a control to compare with. Therefore, there are limitations when assessing how objective and meaningful the effects of the acupotomy treatment were in the treatment of wrist ganglion cysts.

Further studies that overcome the limitations mentioned above and include meaningful evidence should be pursued to evaluate the safety and efficacy of acupotomy in a broader target area.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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