Acupuncture and Moxibustion Treatment for Inguinal Hernia

Nobuyuki Otsuka†, ††

† *Hotal Ancient Medicine Research Institute (HARI),* †† *Otsuka Clinic*
3-8-14 Hotarugaike-nakamachi, Toyonaka, Osaka, 560-0033 Japan
E-mail: hari.otsuka.holding@gmail.com

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An inguinal hernia (rupture) is a hernia that prolapses above the inguinal ligament into the inguinal region. According to the anatomical site where the hernia occurs, it is classified into external inguinal hernia, internal inguinal hernia, and supravesical hernia. In an external inguinal hernia, intra-abdominal tissue exits the external inguinal fossa via the inguinal canal into the shallow inguinal ring. External inguinal hernias are also called indirect inguinal hernias, and the majority of inguinal hernias in infants are congenital. Internal inguinal hernia is a hernia in which the intra-abdominal tissue extends from the internal inguinal fossa through the inguinal triangle to the shallow inguinal ring. Internal inguinal hernia is also called direct inguinal hernia and is less common in Japanese than in Western countries, accounting for less than 1% of all inguinal hernias. In supravesical hernia, the intra-abdominal tissue extends from the supravesical fossa to the shallow inguinal ring. supravesical hernia is characterized by a reducible tumor in the inguinal region, scrotum, or labia majora.

Conservative clinical protocol with a hernia belt or injection therapy is not currently available for the treatment of inguinal hernia. Spontaneous healing is not expected after the age of 1 year, and surgical treatment is recommended due to the risk of complications such as strangulation[1]. Inguinal hernia has a high incidence of 1 in 30 to 40, with an incidence rate of 1.5% and males in 75%. External inguinal hernias are the most common, regardless of age. Internal inguinal hernias are increasing in adults. Inguinal hernias do not heal spontaneously, and surgery is the only clinical protocol [2]. The annual number of surgeries in Japan is 160,000 for adults and 140,000 for children [3].

A search of PubMed for academic articles on acupuncture and moxibustion treatment of inguinal hernia revealed several reports on the alleviation of postoperative pain after inguinal hernia surgery by acupuncture and moxibustion treatment, but no academic articles on the effect of acupuncture and moxibustion treatment on inguinal hernia were found. Therefore, if the symptoms of inguinal hernia can be alleviated by acupuncture and moxibustion treatment, it would be of high clinical value.

In this paper, we performed acupuncture and moxibustion treatment for in-

guinal hernia, for which surgery is the only clinical protocol, and aimed to clarify the effect of acupuncture and moxibustion treatment on the amount of swelling of the inguinal hernia as a measurable index. As a measurable index, we quantitatively measured the height of the swelling in the right inguinal region caused by inguinal hernia, and aimed to decrease the amount of swelling.

The diagnosis and treatment based on Western medicine are described below. The definition of inguinal hernia is the escape of intra-abdominal organs from the external inguinal fossa, internal inguinal fossa, and supravesical fossa, where resistance is weak, through the inguinal canal, or out of the abdominal cavity directly through the external inguinal ring. The external inguinal fossa is a major causes of external inguinal hernia because it is in direct contact with the internal inguinal ring across the peritoneum and is extremely weakly resisted. The internal inguinal fossa abuts the area of weak resistance between the inguinal sickle and the interfoveolar ligament, which is the site where internal inguinal hernia occurs. Internal inguinal hernias are rare. External inguinal hernias are usually unilateral, while internal inguinal hernias are often bilateral. The hernia tumors in external inguinal hernia are pear-shaped, with a narrow neck and a wide distal end, while those in internal inguinal hernia are generally globular with a wide neck. More importantly, in external inguinal hernia, the superior abdominal wall artery is present inside the hernial orifice, and in internal inguinal hernia, the inferior abdominal wall artery is present outside the hernial orifice.

Treatment of external inguinal hernia includes conservative therapy, injection therapy, and surgical therapy. The conservative therapy for external inguinal hernia has long used a hernia belt. The hernia belt is used to compress the hernial orifice, preventing the intra-abdominal organs from escaping the hernial orifice and allowing the hernia to heal as spontaneously as possible. The hernia belt should not be used as a treatment for inguinal hernia, but should be considered to prevent hernia prolapse. For inguinal hernia to heal spontaneously, aseptic inflammation of the hernial orifice and its surrounding area must occur due to the use of a hernia belt, which causes fibrous adhesion and closure of the hernial orifice. In the case within 3 years, spontaneous healing is reported in about half of both boys and girls. The use of hernia belts in infants under 3 years of age may promote the tendency toward spontaneous healing. The use of hernia belts should be limited to children up to 3 years of age, and their use after 3 years of age should be considered. Injection therapy is a traditional method of injecting various drugs locally into the hernia to form a scar in the tissue surrounding the hernia, reduce or close the hernial orifice, and regress the hernia sac. Surgical therapy is the only curative treatment for hernias. Surgical therapy for this disease has been studied for many years, and many methods have been devised and many variants have been performed.

The diagnosis and treatment based on Oriental medicine are described below. A search of PubMed for academic articles related to inguinal hernia revealed several reports on the alleviation of postoperative

pain after inguinal hernia surgery by acupuncture and moxibustion treatment, but no academic articles on the effect of acupuncture and moxibustion treatment on inguinal hernia were found. There is a report of alleviation of postoperative pain after inguinal hernia surgery reported in "Investigation of the effect of muscle meridian therapy on the relief of postoperative wound pain after inguinal hernia surgery"[4]. The results of a study on the effect of muscle meridian therapy on relieving wound pain during early postoperative movement in postoperative patients with inguinal hernia showed that the VAS value of inguinal pain during hip flexion immediately after treatment was significantly higher in the acupuncture group than in the other groups of patients with more severe symptoms. The results suggest that muscle meridian therapy may be a useful clinical protocol for postoperative wound pain in patients with inguinal hernia. There are also reports such as "Postoperative analgesia after low-frequency electroacupuncture as adjunctive treatment in inguinal hernia surgery with abdominal wall mesh reconstruction"[5], "Anaesthetic effect of acupuncture during an inguinal hernia repair"[6], and "Hypoalgesic effect of the transcutaneous electrical nerve stimulation following inguinal herniorrhaphy"[7].

Many books on acupuncture and moxibustion treatment of inguinal hernia have been published. In Oriental medicine, pain caused by inguinal hernia is called fox-like colic. In the Yellow Emperor's Classics of Internal Medicine, Spiritual Pivot, fox-like colic is considered to be a disease of symptoms associated with internal organ such as the liver or a lesion of the kidney. In the Nan Jing, the classic of difficult issues, fox-like colic is listed as a symptom of the conception vessel[9]. In the acupuncture and moxibustion basic chapter, fox-like colic is listed as a symptom associated with the meridian of the liver[10]. In the acupuncture and moxibustion clinical chapter, colic is listed as a disease in which the testicles and scrotum become swollen and painful[11]. In the Chinese medical diagnostics, the scrotum is called fox colic when it is swollen and opaque but not hard, and the small intestine often enters the scrotum [12]. In the Chinese medical diagnosis and treatment by symptoms, fox colic is called migratory testis [13]. The Jinkui Yaolue, synopsis of prescriptions of the golden chamber, discusses colic disease [14].

The following is a clinical protocol of acupuncture and moxibustion for inguinal hernia. In various books, many treatment points for pain relief have been reported for pain caused by inguinal hernia as fox-like colic. Many books on acupuncture and moxibustion treatment for inguinal hernia have been published especially in modern times. The treatment is described as taking mainly the acupuncture points of the liver meridian and the acupuncture points of the conception vessel and the governor vessel [10]. The treatment points are reported CV4, ST29, ST36, KI6, LR1, and triangle moxibustion points (Ex/M-CA23) [11]. Triangle moxibustion points are to make an equilateral triangle with the length of both corners of the patient's mouth as one side, and the base of the triangle is horizontal. The treatment points are located at both bottom angles of the equilateral triangle whose base is horizontal and whose vertices are placed

in the umbilicus. Triangle moxibustion points should be applied moxibustion treatment frequently.

Treatment points listed in other books include SP5, LR8, CV3[15], SP15[16], Ex/M-CA23, LR3, CV4, LR1, SP6, SP9 [17], SP12 [18], SP5, ST29, SP12, LR12 [19], ST30, SP12, CV12, ST25 on the affected side, LR13, CV6, GB26 on the affected side, GB28 on the affected side, BL13, BL14 or BL43, BL18, BL23, BL25 on the affected side or Ex-B7 [20]. Add GV12 and SP5 for children [21]. SP12 for rupture, SP5 and GV12 for inguinal hernia in children. TE5, GB15, LR3 and HT5 for extra meridian therapy [22]. In children aged 1 to 2 years, moxibustion on BL18 or BL23 on the affected side or BL23 is sufficient to cure most cases [23]. 3 years and older, moxibustion on GV12 or GB26 on the affected side is used. For adults, moxibustion should be done on GV12, BL18, BL23, BL25 on the affected side, CV12, ST27 on the affected side, ST37, LR4, and so on. Acupuncture is performed on BL18, BL20, BL25, LR13, etc. Acupuncture should be applied according to the pattern based on the tenderness in the lumbar and abdominal regions. It is said that mild hernias (rupture) can be cured[24].

The following is a case of inguinal hernia. A 54-year-old male patient was treated with acupuncture and moxibustion. The chief complaint was swelling of the right inguinal region. On June 8, X year, he noticed swelling in the right inguinal region and went to the surgery department of a general hospital. The symptoms were swelling and mild traction pain in the right inguinal region in the upright position. The doctor diagnosed him with inguinal hernia by palpation and ordered surgery because it did not heal spontaneously. The patient had a history of appendicitis surgery. In the standing position, there was a swelling of about 4 cm in diameter in the right inguinal region, with an internal induration of about 2 cm in diameter. In the supine position, swellings and induration disappeared, so the symptoms based on oriental medicine were considered as fox-like colic. Tongue examination revealed a pale red tongue, thin white moss, and a tender-soft enlarged tongue. Pulse diagnosis was floating, normal speed, and deficient. Touching diagnosis revealed tenderness at LR3 and GB25. Based on Oriental medicine, pulse diagnosis was performed, and the pulse was found to be deficient at the left second position and the left third position, and there was tenderness in LR3. The diagnosis of the symptoms associated with internal organ was liver deficiency. The swelling was located near the liver meridian, and was diagnosed as symptom associated with the meridian of the liver. Based on Western medicine, the diagnosis of inguinal hernia was made by a doctor's interview and palpation of the swelling.

The treatment based on Oriental medicine was to improve the liver deficiency. As the root treatment, acupuncture was applied to the left LR8 or left LR3, which are on the liver meridian, because the patient was suffering from liver deficiency. The acupuncture points described in the literature were used as the branch treatment. For inguinal hernia (rupture), we selected acupuncture points of SP5[19] and ST27[23], which have been reported in books, and TE5 and GB15[22], which are acupuncture points for extra

meridian therapy. Moxibustion points were also added to the left LR3 as appropriate. Direct moxibustion using moxa cone with half the size of a grain of rice was applied to the right SP5 for 5 times and ST27 for 5 times. In addition, direct moxibustion using moxa cone with half the size of a grain of rice was performed 3 sets, as 1 set is right TE5 for 3 times and left GB15 for 2 times. Direct moxibustion using moxa cone with half the size of a grain of rice was applied to the left LR3 as appropriate. The acupuncture and moxibustion treatment based on modern medicine was applied to improve traction pain by improving blood flow and relaxing muscle tension by applying moxibustion in the vicinity of the swelling. Direct moxibustion using moxa cone with half the size of a grain of rice was applied to the right ST29 [19] or right ST30 [20] for 5 times as appropriate, which were in the swelling area. Treatment based on Oriental medicine and Western medicine were performed simultaneously. The treatment started on June 30, X year, and continued for 6 months with a basic treatment frequency of 6 times a week.

To quantitatively evaluate the size of the swelling of the inguinal hernia, photographs of the lower abdomen, including the swelling, were taken once a week in the standing position immediately after bathing.

Figure 1 shows the configuration of the equipment used to capture the swelling of inguinal hernia. From the photographic image, the difference in height of the swelling on the right side was calculated as the amount of swelling based on the height of the same area on the left side. Figure 2 shows the method of calculating the amount of swelling. The amount of swelling was calculated from the ratio of the height and width of the image, using the umbilicus as the center and the distance between the apexes of the right and left swellings as 45 mm.

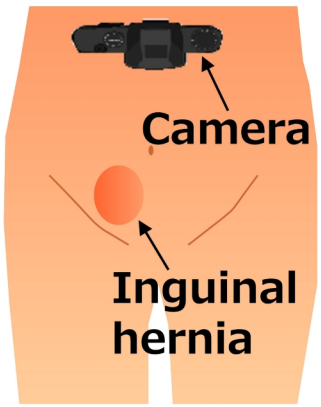

Figure 1. Configuration of the equipment used to capture the swelling of inguinal hernia

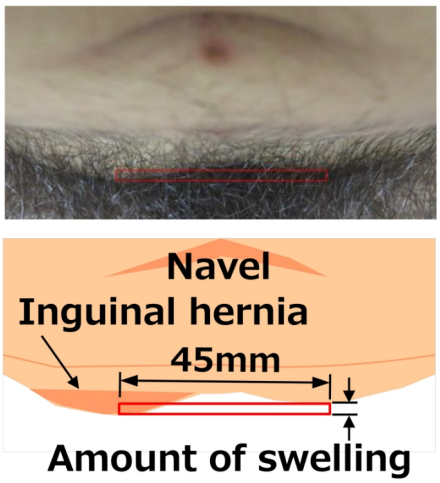

Figure 2. Method of calculating the amount of swelling

The results are shown below. Figure 3 shows a picture of the swelling of inguinal hernia on days 2 and 146. By implementing the treatment, the amount of swelling decreased according to the number of days after the start of treatment, from 2.3 mm on July 2, X year at the start of measurement, the second day after the start of treatment, to 0.5 mm on November 23, X year, 146 days after the start of treatment, five months later. Figure 4 shows the amount of swelling and the number of days since the confirmation of symptoms.

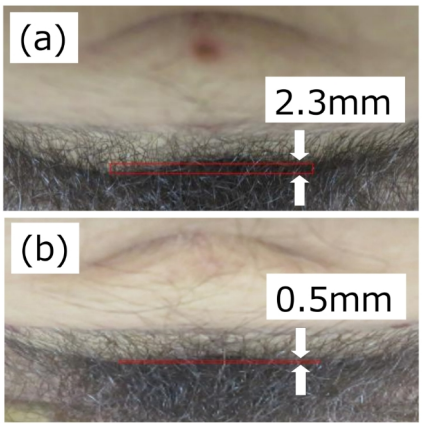

Figure 3. Picture of the swelling of inguinal hernia (a) 2nd day, (b) 146th day

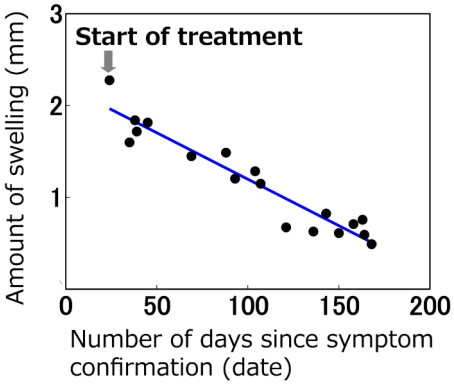

Figure 4. Amount of swelling and the number of days since the confirmation of symptoms

The amount of swelling decreased almost linearly with the number of days after the start of treatment. By the least squares method, the rate of decrease was 0.3 mm per month. The number of data was n=18, and the correlation coefficient was r=0.96. By the treatments, swellings were reduced not only in height but also in width, and traction pain was resolved. The same acupuncture and moxibustion treatment was continued, but the swelling increased, and in June X+4, four years after the start of treatment, a surgical operation was performed to insert a mesh using an endoscope.

In discussion, the application of acupuncture and moxibustion treatment to inguinal hernia will discuss, as follows. Despite the high incidence of inguinal hernia, 1 in 30 to 40 people [2], academic articles on acupuncture and moxibustion treatment for inguinal hernia itself were not searched in PubMed. However, since many treatment points for pain relief have been reported in the books on pain caused by inguinal hernia as fox-like colic, acupuncture and moxibustion treatment for inguinal hernia seems to be expected to be effective, although academic evidence is lacking[15].

Yellow Emperor's Classic of Medicine refers to fox-like colic as symptoms associated with internal organ such as the liver [8], which matches the symptoms associated with internal organ of liver deficiency, in this case study. Therefore, it is suggested that patients predisposed to liver deficiency are more frequently affected by inguinal hernia. The acupuncture points for the inguinal hernia were selected from the acupuncture points

listed in the books, and the acupuncture points close to the swelling of the inguinal hernia and the acupuncture points of the hands and feet were used. By selecting the treatment points of SP5[19], ST27[23], ST29[19], ST30[20], TE5 and GB15[22] in this case study, their effect on reducing the amount of swelling of the inguinal hernia was successfully confirmed.

Although inguinal hernia does not heal spontaneously and surgery is the only clinical protocol, the decrease in the amount of swelling in the inguinal region suggests that acupuncture and moxibustion treatment is effective. In this case study, the inguinal hernia itself was not completely cured by subsequent continuous acupuncture and moxibustion treatment, and a surgical operation with mesh insertion was performed in June X+4. The patient was hospitalized for three days for the surgery. In daily life, it is important to alleviate the symptoms of inguinal hernia until surgery is performed because immediate hospitalization may not be possible. The patient was treated with acupuncture and moxibustion, which allowed an extension period of 4 years from the onset of the disease and allowed the patient to avoid immediate surgical treatment. If surgery cannot be performed immediately due to scheduling reasons, it is possible to schedule the surgery with a time to spare by relieving pain with acupuncture and moxibustion treatment.

In summary, inguinal hernia has a high incidence of 1 in 30 to 40 with an incidence rate of 1.5%. The annual number of surgeries in Japan is 160,000 for adults. Inguinal hernias do not heal spontaneously, and surgery is the only clinical protocol. A search of PubMed for academic articles on acupuncture and moxibustion treatment of inguinal hernia revealed several reports on the alleviation of postoperative pain after inguinal hernia surgery by acupuncture and moxibustion treatment, but no academic articles on the effect of acupuncture and moxibustion treatment on inguinal hernia were found. In this paper, we performed acupuncture and moxibustion treatment for inguinal hernia, for which surgery is the only clinical protocol, and aimed to clarify the effect of acupuncture and moxibustion treatment for inguinal hernia. As a measurable index, we quantitatively measured the height of the swelling in the right inguinal region caused by inguinal hernia, and aimed to decrease the amount of swelling. Many books on acupuncture and moxibustion treatment of inguinal hernia have been published. In the Yellow Emperor's Classics of Internal Medicine, Spiritual Pivot, fox-like colic is considered to be a disease of symptoms associated with internal organ such as the liver. In various books, many treatment points for pain relief have been reported for pain caused by inguinal hernia as fox-like colic. A 54-year-old male patient was treated with acupuncture and moxibustion. The chief complaint was swelling of the right inguinal region. On June 8, X year, he noticed swelling in the right inguinal region and went to the surgery department of a general hospital. The symptoms were swelling and mild traction pain in the right inguinal region in the upright position. The doctor diagnosed him with inguinal hernia by palpation and ordered surgery because it did not heal spontaneously. The patient had a history of appendicitis surgery. In the standing posi-

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Dr. Nobuyuki Otsuka

He graduated from Tohoku University in 1985 and completed the first half term of doctoral course of Tohoku University graduate school in 1987. He was awarded doctor degree in 1997 from Tohoku University.
He established Hotal Ancient medicine Research Institute (HARI) in 1999. He established Otsuka Clinic for acupuncture and moxibustion after graduated from Meiji school of oriental medicine in 2017. He is engaged in research on oriental medicine such as traditional Chinese medicine, acupuncture and moxibustion, qigong etc.