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# THE EFFECT OF ELECTROACUPUNCTURE ON POSTOPERATIVE PAIN MANAGEMENT FOLLOWING INGUINAL SURGERY

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## ABSTRACT

**Introduction:** Postoperative pain is a problem which surgeons are faced with every day. To control this pain, they usually use opioids, which cause problems such as nausea, vomiting, drowsiness, confusion, and decrease in motility of gastrointestinal system. Generally, these pains can cause delay in patient's recovery. Nowadays, acupuncture, which has low complications, is being tested in many medical research centers for treatment of different types of pain. **Objective:** In this research we evaluate the effects of acupuncture on the inguinal surgery. **Materials & Methods:** Ninety patients who needed inguinal surgery were referred to urology department. They were divided randomly into two groups. The first group received was sham acupuncture and the second one received true acupuncture. Electroacupuncture was performed 30 minutes before the surgery. A blind observer to the acupuncture recorded patients' pain according to 10 parts criterion VAS (visual analogue standard) after the surgery. Data was analyzed using SPSS software and t-test. **Results:** Our results showed that pain in sham acupuncture group is significantly higher ( $P < 0.05$ ) compared to the true acupuncture group. Fifty-six patients (62.2%) needed opioids after the surgery and 34 patients (37.8%) did not need opioids. The average of requiring opioids in sham acupuncture group was significantly higher than true acupuncture group ( $P < 0.05$ ). **Conclusion:** Acupuncture causes pain reduction after the surgery in patients under the inguinal surgery and decreases the need of opioids for pain relief.

**Keywords:** Inguinal surgery, opioid, postoperative pain, electroacupuncture

## INTRODUCTION

The pain after the surgery is a major concern that patients are faced with. About 86% of the patients will experience moderate to severe pain. To control this pain surgeons usually use opioids that have remarkable complications<sup>1,2</sup>. These complications include nausea (44%), vomiting (15%), drowsiness (41%), confusion (43%), and decrease in motility of gastrointestinal system. Generally, the pain can cause delay in the patient's recovery. Beside, shortage of opioids in operation room and shortage of analgesic devices such as opioid injection pump cause the patient to have an unpleasant memory about postoperative hospital stay. Nowadays, different methods of acupuncture are being tested in many medical research centers for treating different types of pain<sup>3,4</sup>. This study aimed to evaluate

the effects of aforementioned method on postoperative pain, because of low rate of complications of acupuncture and availability of specialists in the university. Since, there are more than forty surgeries inguinal surgeries including varicocele and hydrocele part in urology department, we choose these patients for our research.

## MATERIALS & METHODS

This study was a double blind clinical trial that was approved by the Mashhad University of Medical Sciences Ethics Committee. Ninety patients who needed inguinal surgery were included in the study after giving informed consent. All of them were matched in age, sex and type of surgery. Patients with

history of previous surgery in same region, addictions and neurological diseases were excluded from the study. We put them in sham acupuncture group (45 patients) and true acupuncture group (45 patients) randomly. The method of this study was electroacupuncture. We started the treatment 30 minutes before the surgery and used points were chose in two areas: points with the main role of controlling the pain and points near the incisive.

In true acupuncture group, the acupuncture specialist stimulated the area of treatment by the electrode. And in sham group, the electrode was connected to the patient and interrupted in the middle of the process.

Age, sex and other factors were registered in the patient's profile. After the surgery, the patients were under common care in the urology department and used opioids if they had pain.

A blind observer to the acupuncture recorded the patient's pain according to 10 parts criterion VAS standard (0= no pain; 1, 2= very little pain; 3, 4= little pain; 5, 6= moderate pain; 7, 8=severe pain; 9, 10=very severe pain). Data was analyzed using SPSS software and t-test. The level of P-value was considered lower than 0.05.

## RESULTS

Due to the type of surgeries (varicose, inguinal) all the patients were male. The average age of the patients who were under study was  $26.22 \pm 8.34$ . The oldest

age was 52 and the youngest was 12.

The level of the pain was according to VAS unit. The average pain level in the sham acupuncture group was significantly higher than true acupuncture ( $P=0.001$ ). (Table 1)

Fifty- six patients (62.2%) needed opioids and 34 patients (37.8%) did not. With regards to chi-square test, the patients in true acupuncture group needed opioids more than sham acupuncture group (48.9% vs. 75.6% respectively;  $P=0.009$ ). The mean need of opioids in sham acupuncture group was significantly higher than true acupuncture group (44.4 vs. 30 respectively;  $P=0.023$ ). (Table 1)

## DISCUSSION

Our results showed that the pain level in sham acupuncture group was remarkable higher than true acupuncture group. The Usichenko et al. showed that the pain level in true acupuncture group was lower than sham acupuncture group<sup>5</sup>.

Raji et al. performed a study to investigate the effects of acupuncture on decreasing the pains that the patient will face after the surgery. In the acupuncture group, the special needle was used in GV.4, SP6, and GV.2 points. In the control group, the needles were used in non- specific points of the body. The pain level was measured according to 10 parts criterion VAS standard. The results of this study showed that, using acupuncture causes pain decrease in the 2-5 hours after the surgery<sup>6</sup>. In another study by Skilnand et al., the effect of acupuncture on labor pain was evaluated.

**TABLE 1.** Comparison between type of surgery, pain level, opioid need, and level of opioid need in sham and true acupuncture groups.

Values expressed as mean  $\pm$  SD and percent; SD= standard deviation, P value less than 0.05 considered significant

Variables		Group		P value
		True	Sham	
Level of opioid need	Mean $\pm$ SD	30 $\pm$ 34.37	44.4 $\pm$ 30.56	0.023
Opioid need (%)	Yes	48.9	75.6	0.009
	No	51.1	24.4	
Pain level	Mean $\pm$ SD	3.84 $\pm$ 1.96	5.06 $\pm$ 1.35	0.001
Type of surgery(%)	Varicocle	84.4	88.9	0.535
	Inguinal	15.6	11.1	

The results showed that the women who used acupuncture, did not feel a lot of pain during delivery<sup>7</sup>. The results of Lewis et al. demonstrated that acupuncture decreases the pain of the patients with chronic back pain<sup>8</sup>. They declared that acupuncture has beneficial effects on the patients with this problem. The same results were reported by Cherkin et al<sup>9</sup>.

Some studies showed that, electroacupuncture cannot decrease the pain. For example, Gilbert et al. reported that electroacupuncture cannot decrease the pain after herniorrhaphy surgery and requires more studies in this field<sup>10</sup>. In 2005 Lee et al., evaluated the effects of acupuncture on the pain after the surgery. Their results showed no obvious effects of acupuncture on the post-operative pain<sup>11</sup>.

A study in 2008 aimed to investigate the effect of electroacupuncture on the level of the pain after the herniorrhaphy surgery. This study clearly showed the need for analog drugs and opioids after the surgery in active acupuncture group<sup>12</sup>. Besides, Usichenko et al. reported that the patients who were treated with acupuncture needed more analog drugs within 36 hours after the surgery compared to the control group. In addition, the first request for opioids took more time significantly<sup>5</sup>.

Mechanism of acupuncture is unknown. Many mechanisms have been suggested to explain the effects of acupuncture. The most acceptable is the neural mechanism, i.e., after needling, the small nerve fibers of muscles stimulate and send the stimulations to the spinal cord, and then the neural messengers will relieve the pain<sup>12, 13</sup>.

## CONCLUSION

In conclusion, the results show that electroacupuncture is a safe and uncomplicated method. This method can reduce the need for the opioids in the patients who undergo inguinal surgery. Also, acupuncture can reduce the pain after the surgery, but its effect with the opioids is 2 to 5 hours. After this period the pain reaches to its peak, because of that, it is recommended to use acupuncture frequently after the surgery to reduce the pain. Considering the vast usage of acupuncture, more studies are needed in this field for acceptable results.

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