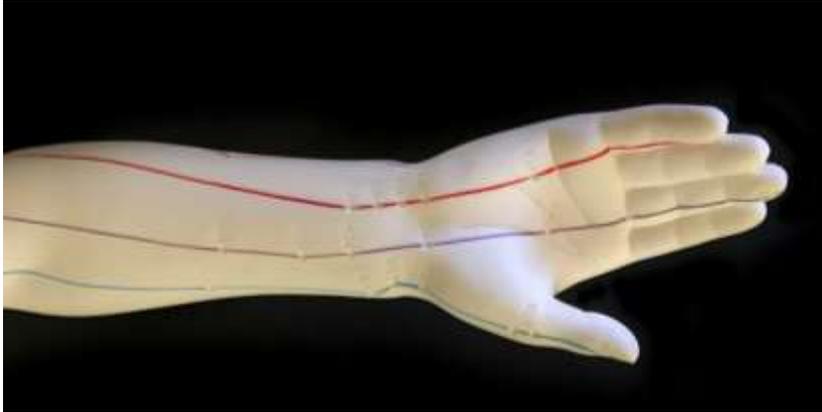


Acupuncture Cuts Neck Surgery Pain

Published by [HealthCMi](#) on November 2017



Acupuncture is effective for pain relief after surgery of the cervical spine. Researchers find electroacupuncture applied to acupoints Hegu (LI4) and Neiguan (PC6) safe and effective for achieving significant pain relief. Surgery on the anterior cervical spine is a complex

procedure. Analgesics including fentanyl and sufentanil may be used to alleviate postoperative pain. However, due to concerns regarding respiratory depression, they are often prescribed at low dosages leading to only a partial painkilling effect. The results of the perioperative research finds acupuncture effective for pain relief and for stabilizing hemodynamics during surgery.

Acupuncture point Hegu is traditionally used by licensed acupuncturists to relieve pain and dredge the acupuncture meridians. Neiguan is used by licensed acupuncturists to calm the shen (spirit), which has a tranquillising effect. Neiguan is also used to regulate the heartbeat, alleviate nausea, and to reduce pain. Together, these acupoints may be used to relieve pain in patients undergoing cervical spine surgery. Using electroacupuncture at the acupoint sites has the advantage of providing continuous acupoint stimulation, effectively relieving pain and reducing the required dosage of opioid analgesics. Moreover, it is a straightforward procedure to administer with minimal risk of adverse effects.

Foshan Chinese Medicine Hospital researchers (Zhou et al.) find that electroacupuncture significantly reduces the dosage of remifentanyl and propofol required during surgical anaesthesia. The researchers determined that electroacupuncture produces additional benefits during surgery, heart rate and mean arterial blood pressure are more stable when electroacupuncture is applied. Postoperatively, patients in the electroacupuncture study group regained consciousness more quickly and had a shorter extubation (endotracheal tube removal) period compared with the control group that did not receive acupuncture.

Visual analogue scale (VAS) and Ramsay evaluations were used to measure pain and sedation. The evaluations were taken immediately after extubation and again at 2, 4, 8, 12 and 24 hours after extubation.

The results showed significant positive patient outcomes for patients receiving electroacupuncture. For example, at 4 hours after extubation, the electroacupuncture group achieved better sedation and pain relief than the control group.

In the control group, 6 patients experienced nausea, vomiting, constipation and other adverse effects while only 1 patient in the electroacupuncture group experienced these issues. Electroacupuncture was applied perioperatively. The frequency of patient controlled analgesic administration was recorded for 24 hours after surgery. The control group self-administered analgesics a total of 116 times while the electroacupuncture group self-administered only 21 times. The researchers note that electroacupuncture stimulation reduced the overall need for pharmaceutical analgesics. The results indicate that electroacupuncture significantly reduces pain following surgery.

Treatment Method

A total of 60 patients aged 21–57 years with cervical spine fractures were randomly assigned to two groups: electroacupuncture plus medications (n=30), medications only (n=30). In the operating room, mean arterial pressure (MAP), oxygen saturation (SpO₂), heart rate (HR) and electrocardiogram (EKG) readings of all patients were monitored. Both groups received superficial anaesthesia to the nasal cavity, pharyngeal cavity and inner trachea, as well as sufficient sedatives and analgesics before conscious blind nasotracheal intubation was performed.

Subsequently, a Drager anesthesia system was connected. The first dosage of anaesthesia was administered prior to the surgery: midazolam 0.6 mg/kg, propofol 1.6 mg/kg, sufentanil 0.2 µg/kg, rocuronium bromide 0.8 mg/kg. Mechanical ventilation was utilised at 8–10 ml/kg of tidal capacity, at a respiratory rate of 10–12 times/min. Tidal volume, respiratory minute volume, respiratory rate and end-tidal carbon dioxide (PETCO₂) were controlled and monitored.

Anesthesia was administered using a microinfusion pump to continuously inject 4–8 mg/kg of propofol and 8–15 mg/kg of remifentanil per hour. According to the patient's blood pressure and heart rate during surgery, the value of mean arterial blood pressure was maintained at 10–20 mm Hg lower than the value prior to surgery. The duration of the surgery was between 55 and 95 minutes.

Towards the end of the surgery, during stitching, a patient-controlled analgesic pump was used. The analgesics included 100 µg of sufentanil mixed with saline to a total of 100 ml. The settings for the patient-controlled analgesic pump were 2.5 ml for the first dose and 1.5 ml for subsequent doses. Analgesic administration was limited to 1.5 ml every 20 minutes by the pump control mechanism.

Electroacupuncture

Prior to general anaesthetic, disposable acupuncture needles were inserted perpendicularly to the Hegu and Neiguan acupoints respectively. Upon arrival of deqi, a Shanghai Hua Yi G6805 electroacupuncture device was connected to the needles. Continuous wave output frequency alternated between 100 Hz and 1,000 Hz and stopped after 30 minutes. Towards the end of the surgery, electrical stimulation resumed during stitching. Electroacupuncture stimulation was discontinued after the endotracheal intubation process was completed.

The researchers determined that perioperative administration of electroacupuncture at Hegu and Neiguan acupoints for cervical spine surgery results in the alleviation of pain. Electroacupuncture stabilizes hemodynamics during surgery, enables a faster postoperative return to consciousness, and reduces postoperative pain.

Researchers (Lin et al.) from the University of South Florida (Tampa) and the Fujian University of Traditional Chinese Medicine (Fuzhou) provide insight into the mechanisms responsible for acupuncture's analgesic effects. Lin et al. determined that one mechanism responsible for acupuncture analgesic effects is the regulation of microglial cells. The research team notes that acupuncture reduces "microglial and astrocytic proliferation coupled with improved functional recovery after SCI [spinal cord injury]. . . . acupuncture exerts a remarkable analgesic effect on SCI by also inhibiting production of microglial cells through attenuation of p38MAPK and ERK activation." The results of the study cites "clinical evidence demonstrating that acupuncture is capable of producing analgesia in neuropathic pain by suppressing microglial activation." Funding for the research was provided by the US Department of Defense, University of South Florida Neurosurgery and Brain Repair, and the James and Esther King Biomedical Research Foundation. The researchers documented another important effect; acupuncture prevents damage to structures of the brain. The researchers note that electroacupuncture reduces oxidative damage to the hippocampus by "preventing microglial activation."

Emerging is a greater understanding of the clinical role and effective mechanisms of acupuncture. Detailed clinical and laboratory investigations demonstrate that an integrative model of medicine, incorporating acupuncture, produces superior patient outcomes. Today, we featured the role of acupuncture during and after surgery. The results of the investigation indicate that perioperative implementation of acupuncture reduces pain and stabilizes patients.

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