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Acupressure improves the postoperative comfort of gastric cancer patients: A randomised controlled trial

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Gastric cancer;
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Summary
Objective: This pilot study evaluated whether acupressure affected the postoperative comfort of gastric cancer patients following a subtotal gastrectomy.
Methods: A randomised controlled trial was conducted. Sixty patients were recruited from 141-bed general surgery ward at a 3000-bed medical centre in Northern Taiwan. Participants were randomly assigned to either a control group receiving regular postoperative care or to the experimental group receiving additional acupressure at acupoints of Neiquan (P6) and Zusanli (ST36) for 3 consecutive days.
Results: The similarities between two groups were in postoperative pain and the onset of postoperative nausea and vomiting (PONV) at the baseline. Following acupressure, significant differences were found in postoperative pain ($P = .03$) and time of first flatus ($P = .04$); but not PONV ($P = .49$), nor the time of first defecation ($P = .34$).
Conclusions: Acupressure is a simple, noninvasive, safe, and economical procedure for improving the comfort of patients who undergo surgery for gastric cancer. Acupressure at the P6 and ST36 acupoints can improve postoperative comfort by alleviating pain and decreasing the time until first flatus. However, additional research is necessary to elucidate how acupressure can improve postoperative outcomes.

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Introduction

Gastric-cancer-related deaths are predicted to rank seventh worldwide by 2030.[1] Gastric cancer ranks sixth among the leading causes of cancer-related deaths, causing a mortality rate of 5.5% in Taiwan.[2] The guidelines for treating gastric cancer recommend using multimodality algorithms to select surgery, chemotherapy, and radiation therapy regimens, and surgical resection is typically suggested.[3,4] However, postoperative pain remains a concern. Gastrointestinal surgery alters the structure and physiological function of the gastrointestinal system, causing extensive tissue damage to the abdominal region and increasing production of inflammatory mediators such as cytokines and neuropeptides.[5,6] Consequently, the pain receptors of the skin, muscles, and internal organs transmit signals to the central nervous system (CNS), which, upon cognition, increases the severity of postoperative pain.[5,6] Approximately 86% of patients experienced moderate, severe, or extreme pain.[7] More details, 26% of patients reported experiencing moderate pain, 33% complained of severe pain at rest, and 8—13% experienced persistent severe pain despite receiving postoperative analgesics.[8]

In addition, 20—30% of patients exhibited postoperative nausea and vomiting (PONV) after undergoing anaesthesia and surgery.[7] Four crucial predictors are associated with an increased incidence of PONV, namely the female sex, a history of motion sickness or PONV, being a nonsmoker, and the use of postoperative opioids.[9,10] Treating PONV involves using antiemetic drugs that can cause various side effects, including headache, extrapyramidal disturbance, and tachycardia.[11] These conditions are typically treated by correcting fluid levels, electrolyte levels, or nutritional deficiencies[12]; however, treatment increases the cost and length of hospital stays.[13] Because a subtotal gastrectomy reduces stomach volume and gastrointestinal motility, yielding postoperative discomfort, nonpharmacological remedies, such as acupoint stimulation, can be used as complementary interventions.

According to traditional Chinese medicine (TCM) principles, the meridian system comprises a network of conduits through which *qi* and blood circulate, connecting the internal organs with the external environment and transmitting *qi* between them. Specific acupoints can be stimulated along the meridians to treat diseases; thus, acupoint stimulation has become a popular mode of postoperative care.[14] Similar to acupuncture, acupressure is categorised as a type of acupoint stimulation, but the manipulation is performed by pressing acupoints with the finger or thumb instead of a needle.[15] This treatment is not limited by time, location, or the environment. Stimulating acupoints can release neurotransmitters and improve physical function.[16] Numerous studies have reported the benefits of acupoint stimulation in relieving the pain of postoperative patients who underwent spine surgery[17,18] and in for reducing the need for opioid consumption following surgery.[19,20] However, certain studies have yielded inconclusive findings regarding how acupoint stimulation affects the intensity of postoperative pain.[20,21]

A review paper concluded that acupuncture and electroacupuncture improved gastrointestinal motility and gastric emptying.[22] One study reported that acupressure also yielded such improvements, but some of the findings were questionable because the patients' symptoms were evaluated using only a stethoscope.[23] The time of the first flatus and first defecation are recommended times for assessing gastrointestinal motility following abdominal surgery.[24] A meta-analysis[25] and other studies[26,27] have supported the position that jointly administering antiemetic drugs and stimulating the P6 acupoint can prevent the onset of PONV. Numerous studies have indicated that stimulating the P6 acupoint within 24 h of surgery can reduce the incidence of PONV.[27—29] However, certain studies have yielded inconclusive findings regarding PONV.[18,30]

This study investigated various methods of acupoint stimulation. Invasive acupuncture may cause hematomas, and acupuncture needles should not be inserted by a nurse.[31] Receiving noninvasive acupressure while wearing a wristband may cause discomfort, red indentations, itching, blistering, and swelling of the wrist,[11,25] and a capsicum plaster may cause skin irritation at applied sites.[32] Therefore, to minimise the risk of complications, acupressure was performed manually in this study. This pilot study evaluated whether acupressure affected the comfort of gastric cancer patients following a subtotal gastrectomy. Specifically, postoperative pain, gastrointestinal motility, and PONV were hypothesised to significantly differ between the control and acupressure groups.

Methods

Research design and participants

This study was a randomised controlled trial. Participants were randomly assigned to either the control group or experimental group. The control group received regular postoperative care, whereas the experimental group received acupressure for 3 days in addition to regular care. An independent statistician used a computer programme to randomly generate numbers and information regarding the allocation and provided opaque, sealed envelopes to the researcher.

Patients who were diagnosed with gastric cancer and scheduled for subtotal gastrectomy were consecutively recruited from the 141-bed general surgery ward at a 3000-bed medical teaching hospital in Northern Taiwan. The inclusion criteria stipulated that patients (1) be at least 18 years of age; (2) be capable of receiving general anaesthesia; (3) be classified as I—III according to the American Society of Anesthetists (ASA); and (4) had no impairment, infection, bruising, or bleeding at acupressure sites. Patients were excluded if they previously underwent abdominal surgery, were receiving concurrent chemotherapy or radiotherapy, were diagnosed with other types of cancer, or participated in similar studies.

Based on the primary outcome of pain intensity with an effect size of $f = 0.33$[18] and 80% power at a 5% level of significance using repeated measures, an estimated minimal total sample size of 56 was required for a pilot trial. Fig. 1 shows a flowchart of the participant recruitment process and the research design. Of the 183 patients eligible for participation in this study, 60 were recruited; all of them provided written informed consent before the study and were randomly assigned to a group. One participant in the