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The effects of Korean hand acupressure on postoperative pain, nausea, vomiting, and retching after thyroidectomy: A randomized controlled study protocol

Sevgi Gür, Seher Deniz Öztekin¹, İlhan Öztekin², Orhan Yalçın³

Abstract:

BACKGROUND: The aim of this study is to determine the effect of Korean hand acupressure applied after thyroidectomy on postoperative pain, nausea, vomiting, and retching of number and severity.

MATERIALS AND METHODS: The type of study is a randomized study with a post-test-control group. The protocol was prepared according to the SPIRIT (Standard Protocol Items: Recommendations for Interventional Trials) 2013 checklist. The CONSORT 2017 guideline was followed in reporting the protocol. The study was conducted with 42 patients (intervention/control group = 21) who underwent thyroidectomy in a hospital in Istanbul between February 2021 and June 2022, who met the inclusion criteria, and whose verbal and written informed consent was obtained. Korean hand acupressure was applied for 3 min using mung bean seeds 30 min before anesthesia was given to the patients in the intervention group. The application was continued every 2 h after the operation. The application was terminated at the eighth hour. The control group (patients) received routine post-operative treatment and care. Pain severity, nausea, vomiting, and retching number and severity, antiemetic use, and Rhodes nausea, vomiting, and retching index score at the end of the 24th hour were evaluated at the 2nd, 6th, and 24th hour postoperatively. Data analysis was done with the SPSS 25.0 program.

CONCLUSION: For the patients in the intervention and control groups, it was found that the number and severity of nausea and vomiting were highest in the 6th hour after surgery. The application of Korean hand acupressure was an effective nursing intervention on the retching state (number/severity) that developed at the 6th hour after thyroidectomy and reduced the use of antiemetics.

Keywords:

Acupressure, postoperative nausea and vomiting, postoperative pain, thyroidectomy

Introduction

After thyroidectomy, in addition to specific surgical complications (such as airway obstruction, tetany, hoarseness, thyroid storm, etc.), general complications such as nausea, vomiting, and retching can also occur.^[1] The incidence of postoperative nausea and vomiting (PONV) is reported to be 20-30%, but after thyroidectomy, this rate can increase to the 70% range.^[2-5]

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Post-thyroidectomy nausea, vomiting, and retching can lead to complications (pulmonary aspiration, fluid – electrolyte imbalances, increased intracranial pressure, etc.), prolong the patient's discharge time, increase costs, and result in hospital readmission.^[2,4,6] The guidelines recommend the use of evidence-based practices to prevent and reduce PONV and retching.^[7-9] To identify and reduce risk factors associated with

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Selçuk University Faculty of Nursing, Department of Surgical Nursing, Konya, Turkey, ¹Doğuş University School of Health Sciences, Department of Nursing, Istanbul, Turkey, ²Department of Algology, Yeditepe University, Koşuyolu Hospital, Istanbul, Turkey, ³Istanbul Prof. Dr. Cemil Taşcıoğlu City Hospital, Istanbul, Turkey

Address for correspondence:

Dr. Sevgi Gür,
Department of Surgical Nursing, Selçuk University, Faculty of Nursing, Yeni İstanbul Street 299/A, 42250- Selçuklu-Konya, Turkey.
E-mail: sevgi_baran86@hotmail.com

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PONV in the preoperative period, use of pharmacological and/or non-pharmacological treatment methods prophylactically is recommended.^[9,10]

Among non-pharmacological treatment methods, the most commonly used ones include acupressure, aromatherapy, herbal therapy (e.g., ginger), and other practices.^[2,5,10-12] Acupressure is also included in the “Nursing Interventions Classification” (NIC) as a nursing intervention.^[13] Although “acupressure” is a nursing intervention that nurses can independently perform, its use is not widespread due to possible reasons such as nurses and patients not being familiar with this treatment method, unclear usage recommendations, and the perception of drug administration as more practical.^[14,15]

The Chinese acupressure is the most commonly used in the prevention and/or management of PONV.^[16] The Chinese acupressure is an effective treatment method, and alongside it, there is a relatively new treatment method called Korean hand acupressure, which is stated to be at least as effective. The method was discovered and developed by South Korean scientist Prof. Park Jae Woo. In the method, the similarity between the human body and the hands and feet is taken as the basis, and the reflex points on the hands and feet are treated by massaging, using fingers, diagnostic sticks, plant seeds, etc.^[17]

The Korean hand acupressure is a treatment method that has a strong effect, is easy to apply, and has no side effects. It can easily be used by nurses as a nursing intervention. There are a limited number of studies in the literature related to the Korean hand acupressure,^[18-22] but no national or international research investigating its effect on the prevention and/or treatment of PONV has been found. Therefore, it is a new research that will make a significant contribution to the field of nursing. Since this nursing research is the first to examine the effect of Korean hand acupressure on postoperative nausea, vomiting, and retching, it is thought to make an important contribution to evidence-based nursing practices.

Materials and Methods

Study design and setting

The study was a randomized controlled trial. The study aims to determine the effect of Korean hand acupressure applied after thyroidectomy on postoperative pain, nausea, vomiting, and retching of number and severity. The study protocol was prepared following SPIRIT (Standard Protocol Items: Recommendations for Interventional Trials) and reported following the CONSORT 2017 (Consolidated Standards of Reporting Trials of Nonpharmacologic Interventions) guidelines.^[23,24]

SPIRIT is presented in Table 1.

Study Participants and sampling

The study was conducted with 42 patients who underwent thyroidectomy at a city hospital in Istanbul between February 1, 2021, and June 1, 2022.

The sample size was calculated using the G*Power (Version 3.1.9.4) package program. A total of 64 patients were evaluated during the data collection process. Twenty-two patients who did not meet the inclusion criteria or did not consent to participate in the study were not included. The sample size for the research was determined as 42 patients.

Inclusion criteria

- Being between the ages of 18 and 65;
- having an American Society of Anesthesiologists (ASA) scores of I and II;
- undergoing a planned thyroidectomy;
- having two or more risk factors out of five risk factors determined in the Koivuranta PONV risk factors;
- proficient in reading, writing, and speaking Turkish;
- not having any physiological, psychological, or mental problems that would impede verbal communication;
- not having any physical conditions that would Korean acupressure application to the hand;
- not participating in any other clinical study during the same period;
- not experiencing any significant complications during the surgical procedure and postoperative period;
- patients who verbally and in writing consented to participate in the research were included in the study.

Exclusion criteria

- Undergoing emergency surgery;
- using antiemetics, steroids, or opioids within 24 hours before the surgery;
- experiencing a change in consciousness or acute confusion after the surgical procedure;
- patients with an unstable postoperative condition were not included in the study.

The CONSORT 2017 flowchart of the study is presented in Figure 1.

Randomization

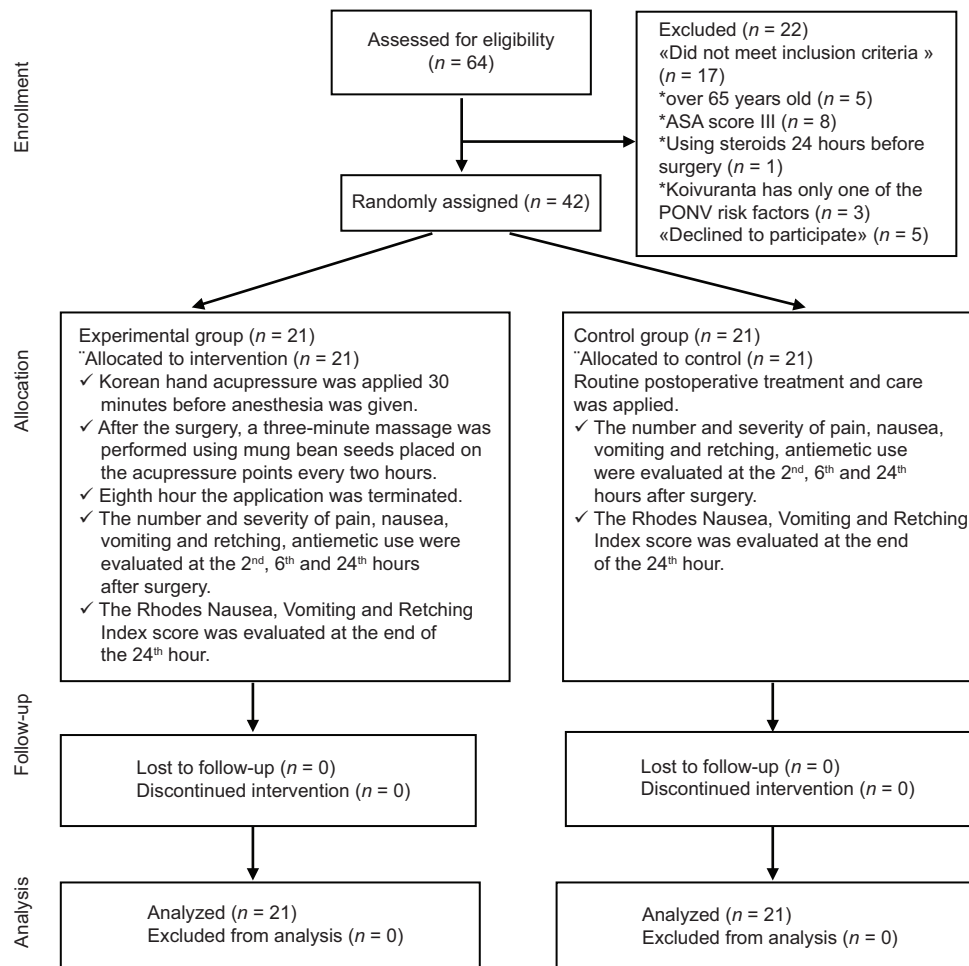
The participants were allocated to the intervention and control groups using block randomization. Since the researcher was the person who applied Korean hand acupressure to the patients, collected the data, and managed the process, blinding the researcher could not be achieved.

Data collection tools

The data collection form prepared following the literature consists of three sections.^[25,26] The first

Table 1: Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT)

Time Point	Enrollment	Allocation	Postallocation		
			2 nd h	6 th h	24 th h
Enrollment					
Eligibility screen	X				
Informed consent	X				
Allocation		X			
Interventions					
Korean hand acupressure			X	X	X
Traditional care					
Assessments					
Introductory characteristics of the patient	X				
Assessment of health status					
Assessment with Koivuranta PONV risk scale					
Pain intensity			X	X	X
Number of nausea, vomiting, and retching			X	X	X
Number of nausea, vomiting, and retching			X	X	X
Antiemetic use			X	X	X

**Figure 1: CONSORT 2017 flow chart**

section includes nine questions related to the patient's identifying characteristics (age, gender, height, weight, body mass index, educational level) and general health status (history of chronic illnesses, use of antiemetic, steroid, or opioid drugs 24 hours before surgery,

and ASA score). The second section consists of eight questions regarding the surgical procedure and anesthesia (type of anesthesia, duration of anesthesia and surgery, anesthetic drugs used during surgery, use of antiemetics, and the presence of complications during

surgery). The third section includes 10 questions related to the post-surgical period (pain intensity, number and severity of nausea, vomiting, and retching episodes, use of antiemetic drugs, timing of administration, and presence of complications after surgery). In addition to the data collection form, the “Koivuranta Postoperative Nausea and Vomiting Risk Scale,” “Visual Analog Scale” (VAS), and “Rhodes Index of Nausea, Vomiting, and Retching” (RINVR) were used.

Koivuranta postoperative nausea and vomiting risk scale

The scale includes five risk factors (female gender, non-smoking status, duration of surgical procedure, previous experience of PONV, and motion sickness history).^[27]

Visual analog scale

The scale typically consists of a 10-cm line, horizontally or vertically, with “0” at the starting point indicating “no pain” and “10” at the endpoint indicating “unbearable pain.”^[28]

Rhodes index of nausea, vomiting, and retching

The scale consists of eight questions to assess the number and severity of nausea, vomiting, and retching episodes experienced by individuals in 24 hours.^[29] The index was adapted to the Turkish population by Genç and Tan and comprises three subdimensions: symptom experience, symptom occurrence, and symptom distress. The highest score that can be obtained from the index is 32 points, and it is also considered the most severe symptom occurrence experience score.^[30] In this study, the Cronbach’s alpha coefficient for the index was found to be 0.919, and the reliabilities of the subscales ranged from 0.800 to 0.919, indicating high reliability.

Data collection

Data collection for preoperative information was conducted in both the intervention and control groups in the same manner. Patients who met the inclusion criteria for the study one day before surgery were visited, informed about the purpose and content of the research, and obtained verbal and written consent.

Patients in the intervention group received Korean hand acupressure 30 min before being taken to the operating room on the day of surgery. After surgery, a 3-min massage over mung bean seeds was performed every 2 hours for a total of 8 hours. The application was terminated at the end of the eighth hour. Patients in the control group received routine treatment and care after surgery.

For all patients in both groups, antiemetic and analgesic medications were routinely administered during thyroidectomy surgery. Data from the second section

of the data collection form (anesthesia and surgery duration, type of anesthesia, drugs used during surgery, etc.) were completed based on patient files and information obtained from healthcare professionals after the patients were admitted to the clinic. The researcher recorded data in the third section of the data collection form, including pain intensity, the number and severity of nausea, vomiting, and retching episodes at the 2nd, 6th, and 24th hour after surgery, the names, doses, frequencies, and timings of antiemetic drug administration, the RINVR score at the end of the 24th hour, the presence of complications after surgical intervention, and the length of hospital stay.

Application of Korean hand acupressure

Before the application, the necessary materials (ring, massage ball, and diagnostic stick) were cleaned with disinfectant. The application was carried out in three steps, which included massage, identification of pain points, and the placement of seeds at appropriate points.

During the first step, which is massage, the patient was physically and mentally relaxed while their energy was activated. Massage was applied to both hands for a total of 5 min. Techniques such as pressing and pulling, deep massage, massage of key energy points, and twist massage were performed. The massage ball and the ring were used to warm up and activate all receptors on the hands and fingers.

In the second step, the diagnostic stick was used for identifying painful points. Since the stomach is located on the left side in the main correspondence (similarity) system, the left hand was used to identify painful points. The thin end of the diagnostic stick was used to locate the painful point at the stomach reflection area, and a zigzag massage was applied.

In the third step, mung beans (white points touching the skin) were attached to the stomach reflection points with adhesive tape. A similar application was also performed in the insect system to find the stomach reflection point. Zigzag massage was applied, and mung beans were attached to the reflection points with adhesive tape. A 3-min massage was performed on the attached seeds. In addition to these points, the reflection points of the kidneys and adrenal glands on the Yang side were identified, and two kidney bean seeds were attached with adhesive tape in a way that their white parts faced each other. A 3-min massage was performed on the seeds.

The application took approximately 15 min to complete. The application was repeated every two hours after surgery. The application was terminated at the end of the eighth hour.

Statistical analysis

The data was analyzed using SPSS 25.0 (Statistical Packages for the Social Sciences, Armonk, NY: IBM Corp. 2017) software. Statistical significance was interpreted using an alpha value of 0.05 and 95% confidence intervals. Descriptive statistics were included in the study. Non-parametric tests were used for data analysis. For intergroup comparisons of numerical data, the Mann – Whitney U Test was employed, while the Friedman test was used for intragroup comparisons, and the Wilcoxon signed-rank test as a post-test. Bonferroni correction was applied to identify groups that made a difference, and the *P* value was set at $0.05/3 = 0.0167$. Values smaller than this ($P < 0.01$) were considered statistically significant. The Chi-square test was used for comparing categorical data. Spearman's rank-order correlation coefficient was used to examine relationships between different variables. Cronbach's alpha coefficient was calculated to determine the internal consistency of the scale.

Ethical aspects

Ethical approval to perform the study was obtained from the XXC Traditional and Complementary Medicine Practices clinical research ethics committee (07.08.2020 and E.34469). Institutional permission was obtained from the hospital where the research would be conducted (21.10.2020 and 2020/37). Patients were informed about the study and their verbal and written consent was obtained. The study was conducted by the Declaration of Helsinki. The researcher performing the Korean hand acupressure procedure attended training and received a certificate. The trial was registered on clinicaltrials.gov under the identifier NCT04516356.

Discussion

Acupressure is a treatment method that has been used in Traditional Chinese Medicine for over 3000 years. According to its working principle, applying pressure to specific points on the body's meridians using fingers, palms, or specialized stimulation bands ensures the smooth functioning of energy channels.^[31,32] Problems such as pain, nausea, and vomiting occur due to factors that affect the flow of energy in the meridians, causing it to slow down, accelerate, or become disrupted.^[32]

Acupressure is one of the commonly used non-pharmacological treatment methods for preventing and managing PONV and is also an independent nursing intervention included in the NIC.^[2,5,10-12,13] The most commonly used acupressure points in the literature are reported as Neiguan (PC6), Zusanli (ST36), Hegu (LI4), Zhongwan (CV12), Shangjuxu (ST37), Sanyinjiao (SP6), Taichong (LR3), Yanglingquan (GB34), Quchi (LI11), and Xiajuxu (ST39).^[33] In a study by Lee *et al.*,^[34] it is

mentioned that there was a significant reduction in PONV incidence and antiemetic use in groups where the PC6 acupuncture point was stimulated. In another study, in addition to PC6, the LI4 acupuncture point was also used, and it was reported that the frequency of PONV was lower in the group where both acupuncture points were applied simultaneously compared to the group where only the PC6 acupressure point was applied.^[35] There is only one nursing study that examines the effect of acupressure on PONV and retching in thyroidectomy patients. In the study by Kwon *et al.*,^[5] when the number and severity of retching were evaluated at different follow-up times, it was stated that the number and severity of retching were the highest in the group where acupressure was applied at 6 hours postoperatively, while it was highest in the placebo and control groups in the early postoperative period. This research found that the number and severity of retching were higher in the control group at 6 hours postoperatively. The result of the study does not show similarity to the study by Kwon *et al.*,^[5] In this research, it can be said that Korean hand acupressure applied to post-thyroidectomy patients is an effective intervention for the number and severity of retching observed after surgery.

In the study by Kwon *et al.*,^[5] it is stated that the highest use of antiemetics (ondansetron) was in the control group, at 25%. In the study by Na *et al.*,^[36] when the use of antiemetics was examined, it was reported that the highest use in the placebo group was 23.9% in the early postoperative period, while in the acupressure group, the highest use was 6.2% from the 1st to the 6th hour. In this research, it was determined that patients in the intervention group used fewer antiemetics than the control group. The results of the study show similarity to the outcome of reduced antiemetic use in groups where acupressure was applied.

Limitations of the study

The results are limited to our sample of patients who underwent thyroidectomy and cannot be generalized to the general population.

Conclusion

As a result, it was found that Korean hand acupressure is effective in reducing the number and severity of post-thyroidectomy nausea and vomiting that occur at the 6th hour, thus reducing the use of antiemetics. Furthermore, it was clinically significant that the intervention group had lower numbers and severity of nausea, vomiting, and retching at the 2nd, 6th, and 24th hour after surgery compared to the control group. Based on these results, it is recommended to plan research studies with different patient groups to determine its effectiveness on postoperative pain, nausea, vomiting, and retching.

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Ethics committee approval

Ethical approval of Istanbul Medipol University Traditional and Complementary Medicine Clinical Ethics Committee (Date: 07.08.2020, Decision No.: 34469) and Ministry of Health, General Directorate of Health Services, Department of Traditional, Complementary and Functional Medicine Applications (Date: 02.09.2020, Decision No.: 77979112) was obtained for the implementation of the study. Institutional permission was obtained from Istanbul Prof. Dr. Cemil Taşcıoğlu City Hospital where the research was conducted (Date: 21.10.2020, Decision No.: 2020/37). Verbal and written informed consent of the patients who agreed to participate in the study was obtained. The trial was registered at clinicaltrials.gov (NCT04516356).

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Nil.

Conflicts of interest

There are no conflicts of interest.

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