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ACUPUNCTURE AND RELATED TECHNIQUES FOR POSTOPERATIVE PAIN : A SYSTEMATIC REVIEW

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Abstract

Background: *Eastern medicine has traditionally employed acupuncture to treat pain. Western medicine has increasingly embraced various types of acupuncture to manage pain. It relieves surgery pain. No study of acupuncture approaches used to alleviate surgery pain and their efficacy exists.*

Aim: *This article explore about acupuncture and related techniques for postoperative pain.*

Methods: *This study showed that it met all of the requirements by looking at the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 guidelines. So, the experts could make sure that the study was as current as possible. The search method used a number of electronic reference databases, such as Pubmed and SagePub, to look for papers that were published between 2000 and 2023. We didn't look at review papers, articles that had already been published, or articles that were only half done.*

Result: *In the PubMed database, the results of our search brought up 371 articles, whereas the results of our search on SagePub brought up 211 articles. The results of the search conducted for the last year of 2013 yielded a total of 152 articles for PubMed and 98 articles for SagePub. In the end, we compiled a total of 33 papers, 23 of which came from PubMed and 10 of which came from SagePub. We included eight research that met the criteria.*

Conclusion: *Research shows the benefits of laser or electric acupuncture in reducing pain. This is indicated by the lower VAS level than controls and the need for analgesic use in post-abdominal surgery and neurosurgery patients. In addition, acupuncture provides minimal side effects.*

Keyword: *Acupuncture; Postoperative pain; Somatic pain; VAS*

INTRODUCTION

The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[1] Effective assessment and treatment of pain is critical because it can interfere with daily life as we age. Pain can be broadly grouped into four categories: nociceptive, neuropathic, mixed, and pain of unknown origin. Postoperative pain is generally a nociceptive type of pain.[2]

The goal of postoperative pain control is to reduce the negative impact associated with acute postoperative pain and help patients make a smooth transition back to normal function. Traditionally, opioid analgesic therapy has been the mainstay of treatment for acute postoperative pain. However, the recent increase in morbidity and mortality associated with opioid abuse has led to an increasing demand for more investigative efforts to develop pain treatment strategies that place greater emphasis on using a multimodal approach.[3]

This endeavor has proved challenging because the subjective nature of pain perception further complicates the ability to achieve satisfactory pain control. Furthermore, certain patient comorbidities and social factors may predispose patients to experience increased pain perception. About 75 percent of patients undergoing surgery experience acute postoperative pain, which is often of moderate to high severity. Less than half of patients who undergo surgery report adequate postoperative pain relief.[4]

This percentage presents a significant problem as inadequate postoperative pain control can lead to adverse physiological effects among patients in the immediate postoperative period and place them at increased risk of developing chronic pain associated with the procedure. Severe and persistent postoperative pain affects 2 to 10 percent of adults. Among the problems that make pain control difficult is the lack of pain level monitoring protocols or intervention guidelines that would help provide more efficient ways to adapt therapy to provide better pain relief.[5,6]

Acupuncture is a way to relieve pain that has been used for a long time in Eastern medicine. In recent years, different types of acupuncture have been used as part of integrated pain treatment in Western medicine. It has even been used to ease the pain of surgery patients. At the moment, there is no review of the different acupuncture methods used to treat pain during surgery and the data that shows how useful these techniques are.[7] In this session, we will discuss acupuncture and other pain management procedures that are similar to acupuncture.

METHODS

The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 checklist served as the foundation for establishing the criteria used to supervise the process of conducting this systematic review. These standards were utilised to ensure that all pertinent data was gathered and analysed. This systematic review focused on "acupuncture and related techniques for postoperative pain"-related articles. The purpose of this review was to investigate them. These are the many facets of the topics that were investigated during the research that is currently under consideration.

In order for your submission to be considered, the following prerequisites must be met: 1) Articles must be written in English; 2) Articles must be fully accessible online; and 3) Articles must have been published after 2013, but before this systematic evaluation was conducted. The following forms of written submissions will under no circumstances be considered for inclusion in the anthology: 1) Editorial letters, 2) submissions without a DOI link, and 3) comparable article reviews and submissions.

The search for papers to be included in the systematic review began on July 20th, 2023 using the PubMed and SagePub databases with the search terms on "acupuncture"; “techniques”; and “postoperative pain”. Where *(("acupunctural"[All Fields] OR "acupuncture"[MeSH Terms] OR "acupuncture"[All Fields] OR "acupuncture therapy"[MeSH Terms] OR ("acupuncture"[All Fields] AND "therapy"[All Fields]) OR "acupuncture therapy"[All Fields] OR "acupuncture s"[All Fields] OR "acupunctured"[All Fields] OR "acupunctures"[All Fields] OR "acupuncturing"[All Fields]) AND ("methods"[MeSH Terms] OR "methods"[All Fields] OR "technique"[All Fields] OR "methods"[MeSH Subheading] OR "techniques"[All Fields] OR "technique s"[All Fields]) AND ("pain, postoperative"[MeSH Terms] OR ("pain"[All Fields] AND "postoperative"[All Fields]) OR "postoperative pain"[All Fields] OR ("postoperative"[All Fields] AND "pain"[All Fields]))) AND ((y_10[Filter]) AND (clinicaltrial[Filter]))* is used as search keywords.

The author of the study revised the inclusion and exclusion criteria after conducting a literature review and reviewing the titles and abstracts of previously published studies. The author made these modifications after considering what should not be included in the study. During the development of the systematic review that we conducted, we took into account only those research studies that met all of our criteria. Information about each study's title, author, publication date, study origin, research study design, and research variables can be gathered during the compilation process.

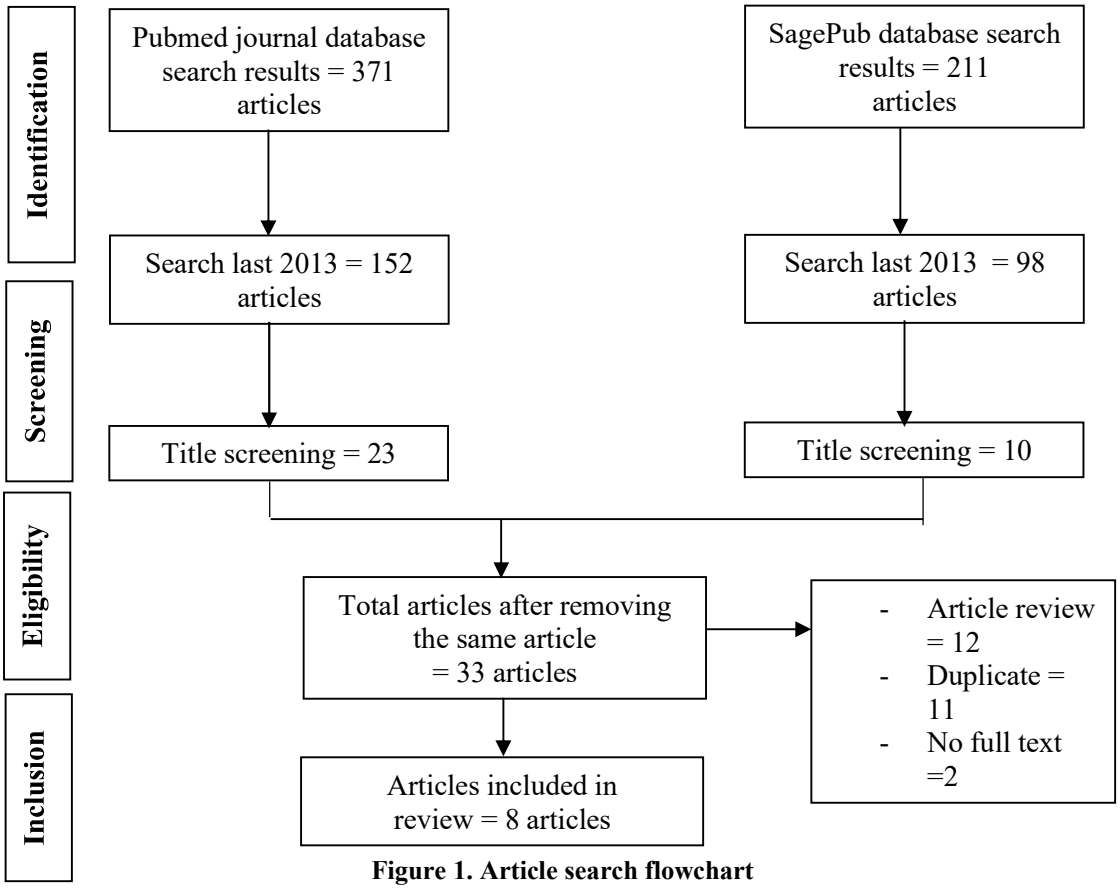

Figure 1. Article search flowchart

The authors conducted their own independent evaluations of a subset of the research presented in the titles and abstracts of the articles to identify which studies should be considered. This gave them the ability to select which studies should be included. As a result, they were able to determine which studies should be taken into account. The next step is to examine the full texts of the studies that can be included in the systematic review since they meet the criteria. The goal of this analysis is to determine whether or not particular pieces of research are relevant to the review's goals. This will be done to ensure that the evaluation is as thorough as possible.

RESULT

In the PubMed database, the results of our search brought up 371 articles, whereas the results of our search on SagePub brought up 211 articles. The results of the search conducted for the last year of 2013 yielded a total of 152 articles for PubMed and 98 articles for SagePub. In the end, we compiled a total of 33 papers, 23 of which came from PubMed and 10 of which came from SagePub. We included eight research that met the criteria.

Brase, et al (2022)[8] showed 80 of the 95 included patients were examined. On the first postoperative day after caesarean section, there was no statistical difference between the two groups in terms of pain severity at rest (Mann-Whitney U test, $p = 0.850$, verum group [mean ± standard deviation]: 3.3 ± 2.1 vs. placebo group: 3.2 ± 1.9). Secondary outcome measures regarding analgesic consumption revealed no difference between the treatment and placebo groups for NSAID or opioid consumption. There was no effect of laser acupuncture on time to mobilisation or duration of stay.

Table 1. The litelature include in this study

Author	Origin	Method	Sample Size	Result
Brase, 2022[8]	Germany	Randomized, controlled trial	95 women	In the study, the use of laser acupuncture to treat postoperative pain in patients who had undergone caesarean section did not exhibit any substantial positive results.
Huang, 2022[9]	Taiwan	Randomized, controlled trial	82 patients postoperative pain after total knee arthroplasty	After undergoing total knee arthroplasty (TKA) for osteoarthritis, older patients who received low-level laser acupuncture (LA) experienced gradually less postoperative pain and used less morphine within the first three days after the procedure. A low-level form of LA could be useful as an adjunctive method for the management of pain in clinical settings.
Lam, 2022[10]	China	Randomized, controlled trial	72 patients post laparotomy	Acupuncture treatments after surgery can be performed without risk and are technically viable, however there is little evidence to support the claim that acupuncture is effective.

Hendawy, 2020[11]	Egypt	Randomized, controlled trial	56 women post hysterectomy under spinal anesthesia	Postoperative analgesia can be achieved by the use of electric ear acupuncture, which also decreases the need for morphine and, as a result, its adverse effects.
Plunkett, 2018[12]	United State of America	Randomized, controlled trial		In many contexts, acupuncture is not only cost-effective but also risk-free and safe. In this particular trial, the use of perioperative battlefield auricular acupuncture did not result in a reduction in postoperative pain or opiate intake.
Levy, 2018[13]	Israel	Randomized, controlled trial	425 patients	There were no serious adverse effects reported. Conclusion In the postoperative environment, incorporating acupuncture into the regular care that is provided may result in improved pain control.
Gilbey, 2015[14]	Israel	Randomized, controlled trial	60 patients posttonsillectomy	In conjunction with more traditional methods of analgesic treatment, post-tonsillectomy pain can be effectively managed with the use of acupuncture. Children and their parents both feel comfortable and have positive reactions to acupuncture treatments.
An, 2014[15]	China	Randomized, controlled trial	88 patients post intracranial tumor resection	Electro-acupuncture (EA) lowers various painful feelings, such as dizziness and a feeling of fullness in the head, in patients who have had neurosurgery. This enhances the quality of postoperative analgesia, increases the recovery of the patients' appetite, and helps them recover faster.

Huang, et al (2022)[9] showed generalised estimating equations revealed significant between-group differences in pain intensity ($P = 0.01$), as well as trend differences in pain intensity for the LA group between hours 10 and 72 ($P < 0.05$) and morphine consumption between hours 48 and 72 ($P < 0.05$). At 72 h, the alterations in pain-related interference in daily life were significant ($P < 0.05$), with the exception of the worst pain, mood, and sleep parameters. The morphine-induced adverse effects of nausea and vomiting differed significantly between groups at 10 and 24 hours ($P < 0.05$).

Study conducted by Lam, et al (2022)[10] with data from 72 of the patients who were randomly assigned. The pain score at rest after 22 hours was lower in the acupuncture group (mean = 2.6) compared to the sham control group (mean = 4.0). Other outcomes did not reveal any differences between the groups that might be considered statistically significant. There was not one single instance of a significant adverse occurrence. Acupuncture treatments after surgery can be performed without risk and are technically viable, however there is little evidence to support the claim that acupuncture is effective. Hendawy, et al (2020)[11] conducted a study with 56 patients. The total amount of morphine consumed in the first 24 postoperative hours was significantly lower in the electro-acupuncture (EA) group compared to the control group (6.214 ± 2.1319 mg vs 15.714 ± 3.3428 mg, d = -3.3886, 95% confidence interval [CI] = - 4.2061, -2.5712, p-value =0.000). In the electro-acupuncture (EA) group, postoperative pain scores were substantially lower than in the control group, and the first request for postoperative analgesia was delayed.

Plunkett, et al (2018)[12] showed there was no discernible difference, either statistically or qualitatively, between the control group and the treatment group in terms of the amount of morphine equivalent opioids used, and there was also no discernible difference in terms of the pain scores. In many contexts, acupuncture is not only cost-effective but also risk-free and safe. In this particular trial, the use of perioperative battlefield auricular acupuncture did not result in a reduction in postoperative pain or opiate intake.

Levy, et al (2018)[13] reports of effects from acupuncture. After acupuncture, the average amount of pain in the acupuncture group went down by at least 40% both when they were at rest (1.8 ± 2.4, $p < 0.001$) and when they were moving (2.1 ± 2.8, $p < 0.001$), while the control group didn't change much ($p = 0.92$ at rest and $p = 0.98$ when they were moving). The pain-relieving effect of acupuncture was even stronger for moderate to severe pain at baseline (VAS = 4), with a decrease of 49% at rest and 45% in motion (p 0.001), compared to no significant improvement in the control group ($p = 0.20$ at rest and $p = 0.12$ in motion).

Gilbey, et al (2015)[14] conducted a study with sixty youngsters participation and then assigned at random to either the study group or the control group. According to the findings of the research, participants in the study group experienced significantly less pain, consumed significantly less analgesic medication, and reported greater levels of patient and parent satisfaction with analgesic treatment. There were no detrimental consequences that were observed. In conjunction with more traditional methods of analgesic treatment, post-tonsillectomy pain can be effectively managed with the use of acupuncture. Children and their parents both feel comfortable and have positive reactions to acupuncture treatments.

An, et al (2014)[15] conducted a study with 88 patients. They showed electro-acupuncture (EA) group had decreased mean total bolus, effective patient-controlled intravenous analgesia (PCIA) bolus timings, and VAS scores in the first 6 hours

following surgery ($p < 0.05$). The EA group had fewer PONV, dizziness, and head fullness in the first 24 hours after surgery than the control group ($p < 0.05$). The EA group had a better appetite (51.2%) than group C (27.5%) ($p < 0.05$). EA improves postoperative analgesia, appetite recovery, and dizziness and head fullness in neurosurgical patients.

DISCUSSION

A patient's health can be negatively impacted in a variety of ways by inadequate management of acute pain, including a diminished capacity to carry out activities of daily life, an impaired ability to sleep, and a negative mood. Not only does ineffective management of acute pain have a detrimental influence on the patient's overall health, but it also can increase the likelihood of the patient developing chronic pain. The usage of opioid medications can also result in side effects such as sedation, sleepiness, respiratory depression, urine retention, nausea / vomiting, ileus, and pruritis. An overdose of an opioid can result in death or permanent disability.[16,17]

Patients who use opioid drugs run an elevated risk of developing an addiction as well as other substance use disorders. Anxiety, restlessness, lacrimation, runny nose, diaphoresis, runny nose, frequent yawning, sleeplessness, muscle aches, and frequent yawning are some of the early signs of opiate withdrawal. Late-stage opioid withdrawal may be accompanied by more severe symptoms, such as diarrhoea, stomach cramps, piloerections, nausea and vomiting, tachycardia, hypertension, pupil dilatation, and impaired vision. These symptoms may also occur in combination with one another. Both gabapentin and pregabalin have been linked to side effects including drowsiness and vertigo.[16,17]

When formulating an appropriate pain management strategy, it is important to take into account the risk of bleeding that is associated with the use of NSAIDs in patients who are in situations in which they are at an increased risk of blood loss. One example of this would be patients who are undergoing surgery on a highly vascular structure (such as tonsillectomy) as opposed to other patients. Drugs in the NSAID class have also been linked to an increased risk of bleeding in the gastrointestinal tract and kidney impairment. The use of treatments for peripheral regional analgesia can lead to a temporary blockade of motor function, which can raise the risk of falling.[17]

More common than any other method of pain management, acupuncture has been used for over 3000 years to treat a wide range of conditions. Diseases affecting the digestive tract, the genitourinary system, and the nervous system are just few of the many systems that acupuncture has been shown to help.[18] Acupuncture generally benefits patients undergoing abdominal, spine / neuro, and gynecologic pelvic surgery. Acupuncture treatments include dry needling, electroacupuncture, and intradermal acupuncture. Before, during, and after surgery, acupuncture treatment could be administered to surgical patients.[19]

Research has consistently shown that acupuncture has fewer side effects than opioids and non-steroidal anti-inflammatory medicines (NSAIDs).[13–15] This is an important consideration since the use of some adjunct analgesics may be limited due to the worry for bad effects caused by the use of NSAIDs. Benefits include enhanced analgesia and / or decreased narcotic requirements, a reduction in PONV, and a quicker return of gastrointestinal function. Acupuncture is a low-risk technique that has the potential to improve perioperative analgesia, decrease the need for opioids, and diminish nausea / vomiting associated with anaesthesia, surgery, and opioid administration. These adverse effects include bleeding and renal failure.[20,21]

Given the diversity of patient populations, the variety of acupuncture techniques, and the limited patient populations in the majority of recent studies, it remains challenging to determine which acupuncture technique would be most beneficial for specific patients.

CONCLUSION

Research shows the benefits of laser or electric acupuncture in reducing pain. This is indicated by the lower VAS level than controls and the need for analgesic use in post-abdominal surgery and neurosurgery patients. In addition, acupuncture provides minimal side effects.

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