

An Evidenced Based Evaluation on the Outcome of Osteopathic Manipulative Treatment on Postoperative Coronary Artery Bypass and Sternotomy Patients

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INTRODUCTION

The recent COVID-19 pandemic has caused a widespread strain on healthcare systems around the world, including the United States. With limited resources, such as healthcare staff and available beds in intensive care units (ICU), consideration must be placed on effective solutions. The goal of our study is to find evidence supporting the effectiveness of osteopathic manipulative treatment (OMT) on ICU length of stay for post-operative patients that have undergone coronary artery bypass graft (CABG) surgery via sternotomy. We believe our findings will increase awareness of application of the beneficial effects of OMT in critical care patients.

METHODS

We consulted multiple biomedical and health science databases including:

- PubMed/Medline
- CINAHL Complete
- Cochrane Library

We identified search terms using the PICO method:

- CABG
- OMT
- Post-operative care
- Length of stay

We attempted to refine our search results by applying filters related to publication date and publication type. These filters restricted our search results and were removed.

We constructed search strategies using Boolean operators; the most effective strategies are outlined below:

- Coronary artery bypass OR sternotomy AND length of stay AND United States
- Coronary Artery Bypass AND (length of stay) OR Osteopathic Manipulative Treatment AND decreased pain AND postoperative

Initial search results from each search string were identified and recorded separately with their corresponding search string in an Excel file. All searches were compared, and duplication of articles were removed. Original searches were then screened for relevant content. Final results compared length of stay/hospitalization post-operative sternotomy patients having received Osteopathic Manipulative Treatment during their in-hospital recovery.

RESULTS

Our search across all databases using 11 original search strings yielded 391 articles. After removing all duplicate findings, we identified 167 articles meeting our search criteria. Among these results, 10 were identified as highly relevant, 2 met all criteria with 1 article reporting significance (Study A) in the length of stay. Both studies were clinical trials. Study A reported consisted of 55% males, mean age of 67.8 (\pm 11.8) in the treatment (T) group and 60% males, mean age of 64 (\pm 12.9) in the control (C) group compared to 75% (T) males, mean age 65.1 (\pm 1.7) and 78% (C) males, mean age 63.3 (\pm 7.7) in the respective study. Study A did not provide specific osteopathic techniques; however, the authors referenced diaphragmatic excursion and a preordained sequence of 3 sessions which resulted in a significant decrease in length of stay. Study B described 3 techniques: Thoracic inlet (indirect) myofascial release, rib raising with continued stretch of the paraspinal muscles to the L2 vertebral level, and soft tissue cervical paraspinal muscle stretch with suboccipital muscle release that were performed by either physicians or trained medical students which showed no significant difference in length of stay.

SUMMARY & CONCLUSION RESULTS

The search results identified one study demonstrating significant difference in length of hospital stay in patients treated with OMT plus standard of care therapy versus standard of care therapy alone. Although both studies were randomized controlled trials, Study B reported no difference in length of stay, consisted of disproportionately male participants, OMT performed by either licensed DOs or trained students, and evaluated less than 50% of the patients than the comparison trial. OMT has previously been shown to reduce pain for inpatient and outpatient care; however, this review of the literature showed OMT can be used successfully in critically ill patients and warrants further study to determine the positive impact on patient care.

Limitations of this study include a lack of published research in the field of osteopathy and the associated benefits it provides post-operative patients. There were limited articles evaluating relevant parameters and/or outcomes of our PICO question which resulted in the aggregation of patient demographics, severity of disease being treated, presence of comorbidities and standardization of post-operative care irrespective of osteopathic manipulative techniques used to compare effectiveness. Potential for future studies should include prospectively controlled cohorts for effective modifiers to determine if age, gender, or disease status correlate to effectiveness of OMT in reducing the length of stay for CABG patients in the ICU and to ensure all post-operative recovery protocols are consistent to limit the impact of any unforeseen confounding variables.

Evidence assessing length of stay in the ICU for patients following CABG and sternotomy receiving osteopathic manipulation



Study A



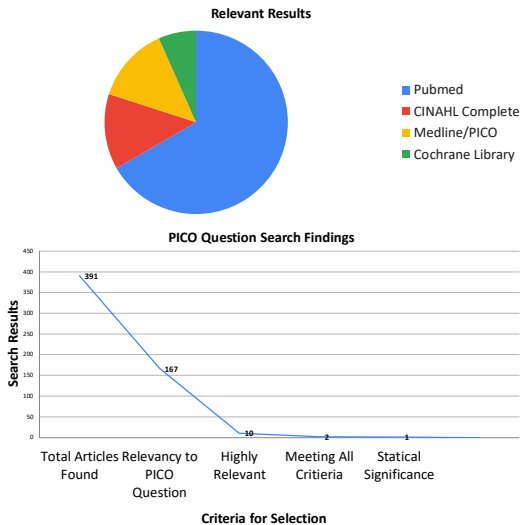
Study B

Fig. 1 PICO criteria for clinical scenario

PICO Criteria	
Patient	Patients Receiving CABG with Sternotomy
Intervention	Osteopathic Manipulative Treatment
Comparison	Control Group – Patients Receiving Standard Post-surgical Care without OMT
Outcome	Shortened ICU Length of Stay

Fig. 2 Relevant results of search strings with respect to database

Database	Relevant Results
Pubmed	11
CINAHL Complete	1
Medline/PICO	2
Cochrane Library	1



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