



RESEARCH REPORT

Osteopathic intervention for chronic pain, remaining thoracic stiffness and breathing impairment after thoracoabdominal oesophagus resection: A single subject design study

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KEYWORDS

Osteopathic manipulative treatment;
Thoracotomy;
Postoperative pain;
Range of motion;
Dyspnoea

Abstract *Background:* Thoracic surgery can cause negative effects such as chronic pain, impaired thorax movement and/or impaired breathing. There are indications that manual therapies, such as osteopathy, may be beneficial for these conditions. *Objective:* To investigate effects of osteopathic intervention on chronic pain and remaining limitations to thoracic range of motion and breathing in patients who had undergone thoracoabdominal resection of the oesophagus. *Design:* In a single-subject research design (Aa-B-Ab), 8 participants with chronic postoperative thoracic pain, stiffness and/or breathing impairment after standardized oesophagus resection were given 10 sessions of osteopathic treatment of 45 min. Expiratory vital capacity, thorax mobility, pain experience, and subjective perception of treatment were measured on three occasions during each phase. The

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two-standard deviation band method was used to indicate significant change.

Results: A significantly increased range of motion in the thorax was observed in thoracic excursion and in lateral flexion. A positive change in pain was also noted. The results in expiratory vital capacity were contradictory. The participants were generally positive toward the treatment given.

Conclusion: Osteopathic intervention may affect thoracic impairment and pain among people with chronic pain and impaired thoracic range of motion after thoracoabdominal resection of the oesophagus.

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Implications for clinical practice

- Osteopathic treatment may be beneficial in managing post-thoracic stiffness and pain.
- Due to the lack of previous research of osteopathic manipulation in the surgical context, it is difficult to draw any further conclusion of clinical effectiveness.
- Before adopting these findings in clinical practice, future research is needed and should include larger populations of patients, be collaborative between international surgical centres and also evaluate the osteopathic treatment protocol used in this trial.

Introduction

A common surgical access in the treatment of oesophagus cancer is through incision between two ribs (costae), i.e. thoracotomy. The procedure is considered to be among the most painful surgical incisions.¹⁻³ Long-term follow-ups have reported postoperative chronic pain, breathing restriction, dyspnoea, decreased chest expansion and impaired physical performance.^{4,5} There is currently no evidence of effective treatment to offer these patients. However, there are indications that manual medicine, i.e. "treatments given by hand", may be effective against pain associated with thoracotomy.⁶

One of the manual disciplines is osteopathic medicine, founded in the late 19th century and often seen as the origin of Western manual medicine. The basic concept in osteopathic philosophy is the self-healing and self-regulating capacity in the human body, which is thought to be dependent on the integrity and interrelatedness of structure and function at all levels in the body.⁷ The model emphasizes the use of a variety of manual techniques to improve physiological function.⁸ Little research has focused on effects of osteopathic interventions in the postoperative phase. However, smaller studies have shown positive results in patients undergoing gynaecological⁹ or cardiac surgery,¹⁰ or in patients with pancreatitis.¹¹ Osteopathic intervention guidelines have also been suggested for postoperative pain.¹² Two

clinical studies have presented positive results of an osteopathic intervention for pneumonia.^{13,14}

There is consequently an indication that osteopathic manual treatment can be beneficial for people suffering from pain, thoracic stiffness or breathing impairment after thoracotomy. Thus the aim of this study was to investigate the effects of osteopathic intervention on chronic pain and remaining limitations to thoracic range of motion and breathing in patients following thoracoabdominal resection of the oesophagus.

Methods

Study design and instrumentation

A single-subject research design, with Aa-B-Ab phases, was used.^{15,16} "A" represents a nontreatment phase, where "a" is before the intervention and "b" is after the intervention. "B" refers to the ten weeks intervention phase. All three phases consisted of three measurement sessions: Aa once a week for 3 weeks, B every second to third week for 10 weeks, and Ab every second to third week for 8 weeks. Each measurement session consisted of physical measurements, a period of rest when the participants filled out questionnaires and, after 60 min, re-performance of the physical measurements.

The quantitative objective measurements (physical) were:

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