

# Post CABG Osteopathic Considerations and Treatment

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# Financial Disclosures

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None.

# Objectives

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Overview of dysfunctions post CABG

Discuss osteopathic goals of treatment

Review common osteopathic techniques

Discuss evidence based medicine on OMM post CABG

# Delay

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“You’ve got six months, but with aggressive treatment we can help make that seem much longer.”

# What happened?

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Anesthesia

Sternotomy with closure device, Rib dysfunction due to sternotomy

Graft site

Positioning both intraoperative and postoperative

Atelectasis

Status post being put on bypass, Requiring ventilation and pressors

# What happened?

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Anesthesia – nervous

Sternotomy with closure device, Rib dysfunction due to sternotomy – musculoskeletal, circulatory/respiratory

Graft site – circulatory/respiratory, musculoskeletal and nervous

Positioning both intraoperative and postoperative – circulatory/respiratory, musculoskeletal, nervous

Atelectasis – circulatory/respiratory

Status post being put on bypass, Requiring ventilation and pressors – nervous, metabolic, circulatory/respiratory

# Goals of OMM

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## **Remove restriction**

Musculoskeletal - Return normal compensatory pattern to increase function and reduce pain

- Indirect myofascial treatment of the diaphragms

Nervous - Normalize parasympathetics and sympathetics

- Treat Occipitoatlantal, Lumbosacral, and the levels (mostly posterior ribs) of affected sympathetics

Improve circulatory, respiratory, and GI function

- Already treated with the above

Treat any other large areas of dysfunction?

# Musculoskeletal

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## Postoperative pain is expected

- “incision, rib cage retraction-related osteoarticular hypermobilization and rib trauma, tissue dissection, puncture and cutdown for vessel cannulation and harvest, chest tube entry sites and pleural irritation, and muscle spasm from operative positioning and prolonged bed rest” Krakowski et al.
- Worst for the first week, starting in incision and moving to shoulders, back and harvest sites

## Loss of strength due to hospitalization

- Associated musculoskeletal dysfunctions and pain due to this



# Osteopathic Manipulative Treatment Improves Heart Surgery Outcomes: A Randomized Controlled Trial, Racca et. Al.

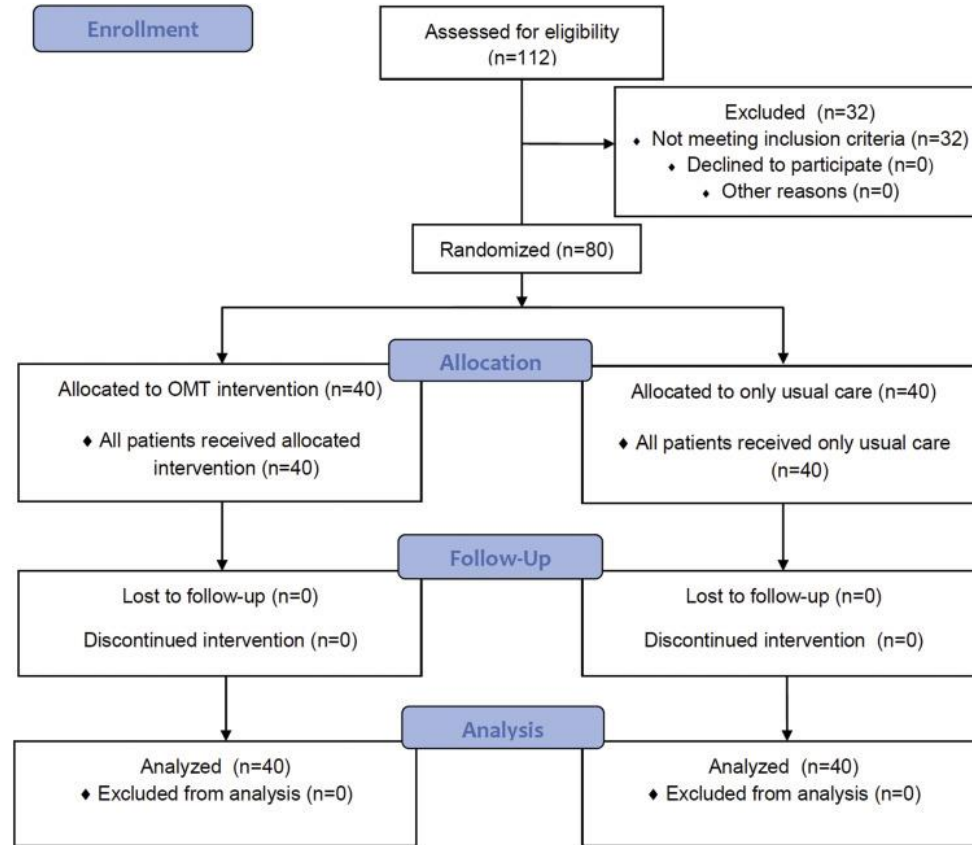
“open, randomized, partly blinded, controlled parallel trial” performed in Milan, Italy, Oct 2013-Nov 2015

Indirect myofascial techniques for 5 days starting on DC from surgery to cardiac rehab

Evaluating “sternal pain relief and improved postoperative outcomes”

- Outcomes measured at discharge

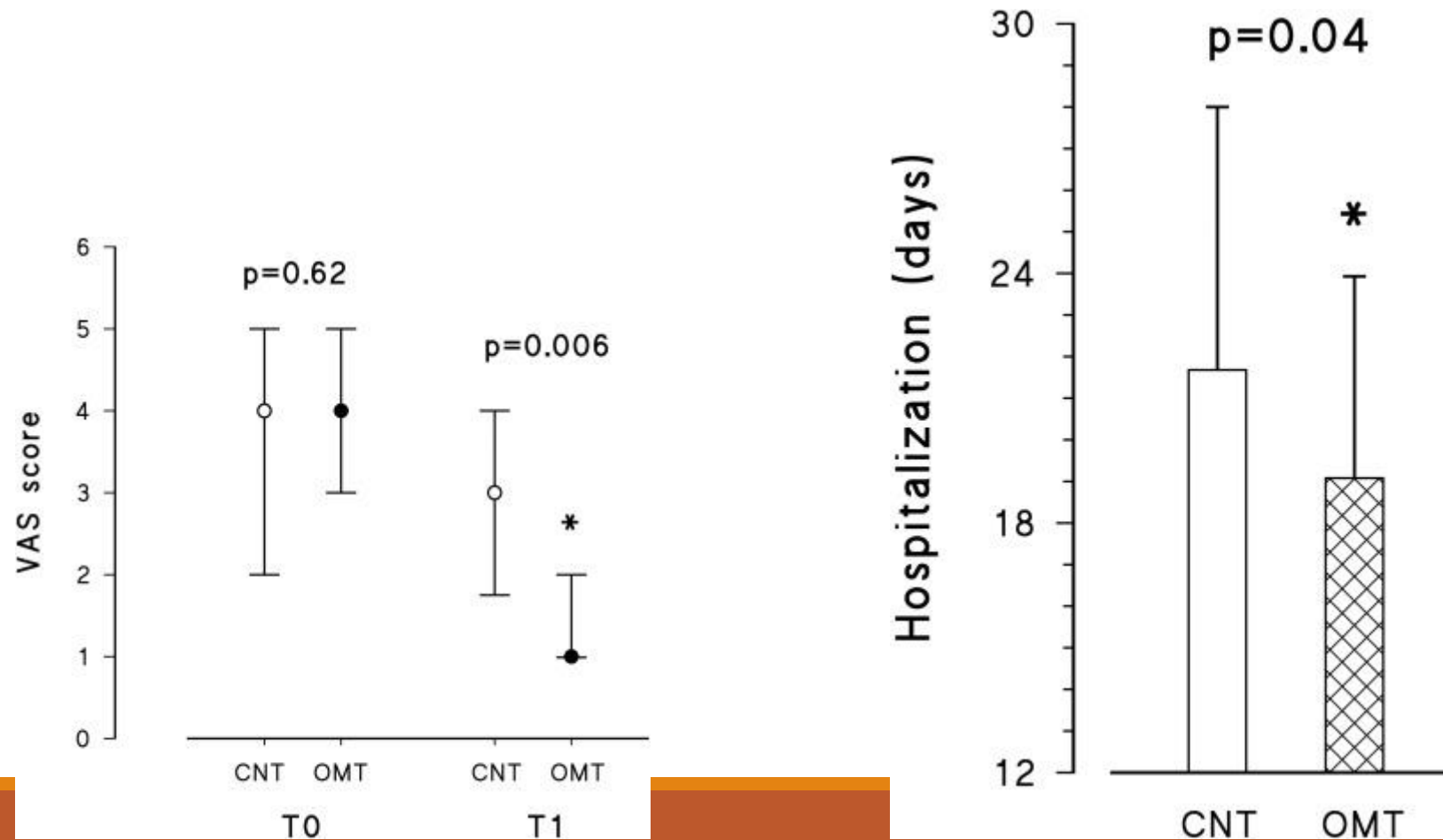
# Osteopathic Manipulative Treatment Improves Heart Surgery Outcomes: A Randomized Controlled Trial, Racca et. Al.



5 days, 15 minutes



# Pain and hospitalization length



# Effect of OMT on postop medical and functional recovery of CABG patients - Wieting

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Jan 2003-Jun 2005 prospective, randomized, double blinded, placebo controlled pilot

53 patients (17 OMT, 18 placebo OMT, 18 control)

CABG with sternotomy

OMM performed by students and physicians

8 minute protocol

# Wieting

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Soft tissue of cervicals with suboccipital release (direct inhibitory OA/cranial base decompression)

Thoracic inlet indirect myofascial release

Rib raising continued to L2 level

Trends toward shorter length of stay, less time to bowel movement, improved functional status

- None statistically significant, discussed regarding further standardization and proposed sample size for further in the article (175 per group for length of stay and 57 per group for time to first BM)

# OA/Cranial Base Decompression

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“Stay away from the OA” – No osteopath ever

# Supine

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Pads of bilateral 3<sup>rd</sup> and 4<sup>th</sup> fingers in groove between occiput and atlas with occiput in physician's palms.

Indirect myofascial treatment is gentler in a postoperative patient.

- Gently palpate to induce bind into position of ease
- Find this in at least 2 planes, 3 preferable (cephalad/caudad, left/right, clockwise/counter)
- Gently follow as unwinds until palpable release
- Can assist with patient respiration or eye motion





# Seated

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Utilize thumb and forefinger to create fascial sling across same groove

Hand on forehead to feel ease and stabilize, not to provide significant force

Can either inhibit or release indirectly as other position



# Thoracic Inlet

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Can be performed with direct inhibition of Sibson's fascia

Gentler with indirect myofascial release as previous

- Hands contacting clavicle, first rib, and trapezius on Patient's left and right
- Gently palpate to induce bind into position of ease
- Find this in at least 2 planes, 3 preferable (cephalad/caudad, left/right, clockwise/counter)
- Gentle compression
- Gently follow as unwinds until palpable release
- Can assist with patient respiration
- Performed seated or supine





# Diaphragm release

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Perform supine or seated

Readily modifiable to global diaphragm or individual crura

- Hands on anterior/posterior attachments
  - Xiphoid/lower ribs and T-L junction
- Similar indirect procedure performed

Greatly accelerated through respiratory assist







# Rib Raising

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Multiple methods, seated/supine

Can be combined with soft tissue bowstringing, articulation of the spine

Helps with costal motion, lymphatics, and sympathetic tone

Can spread down through upper lumbar for renal and GI somatovisceral effect (sympathetics)  
(taught to us by Dr. Graham, but used in some study protocols as well)

# Supine

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Pads of both hands along costotransverse junctions

Easiest to lock wrists and hands, utilizing forearms as fulcrums against table/bed

Rhythmically lift area, can be modified to direct inhibition or gentle lateral traction with a more myofascial component/intent for patient complaint and tolerance

Performed until feel freedom/release



# Seated

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Patient places both arms on your shoulder

Can induce patient to lean forward for extension by moving slightly back

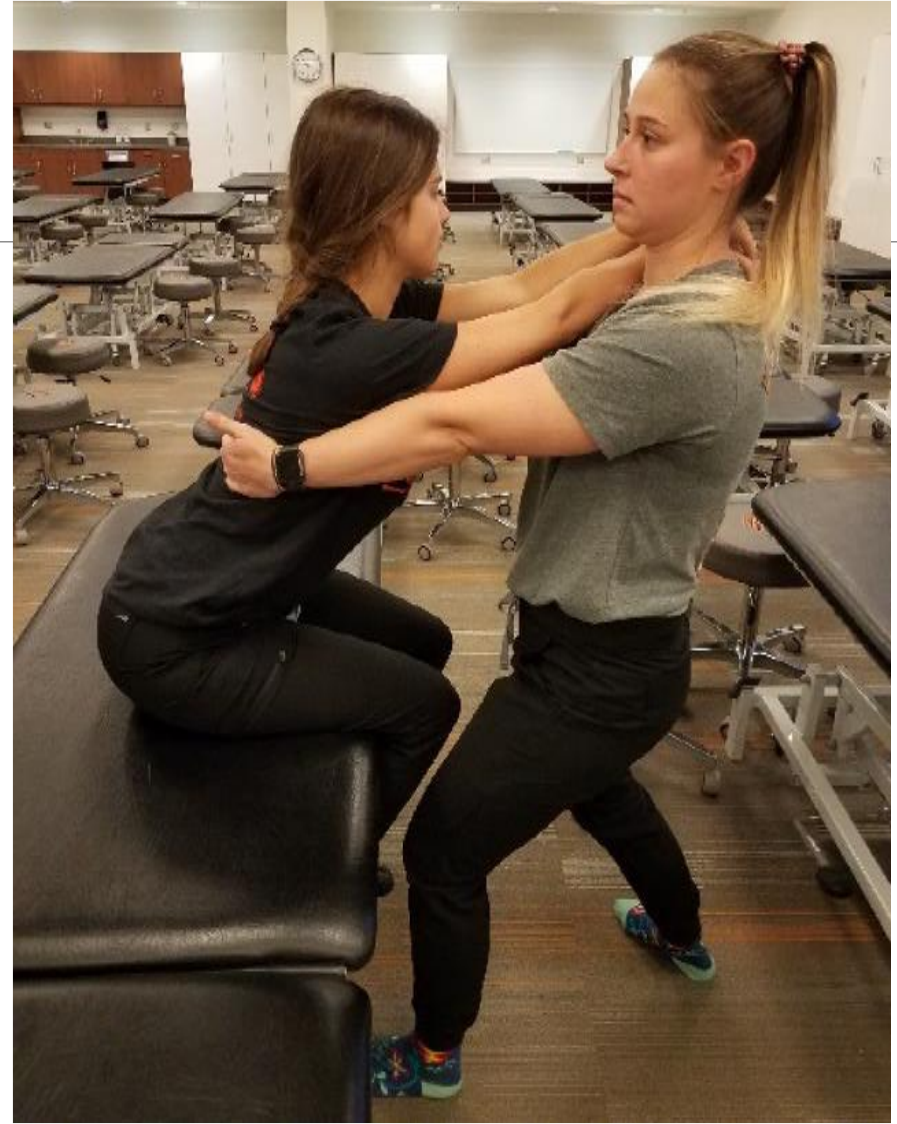
Similar rhythmic motion or inhibitory

Lock hands and utilize body mechanics (leaning)

Can induce sidebending and rotation as well

May need to change which shoulder they are on to do the other side





# Nervous

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2021 Kania – activation of parasympathetic anti-inflammatory reflex with OA decompression

Autonomic dysfunction is very common

- Ileus – estimated \$750 million to \$1 billion cost yearly
- Mediation of all other systems
- Treated at sites of parasympathetics and sympathetics

# Effect of OMT on incidence of postop ileus and hospital LOS in general surgery patients - Baltazar

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Retrospective study

69 patients with major GI operations Jan 1-Dec 31, 2011

8 excluded for incomplete data set, 6 excluded for death

17/55 received OMT

# Effect OMT incidence postop ileus and LOS gen surg - Baltazar

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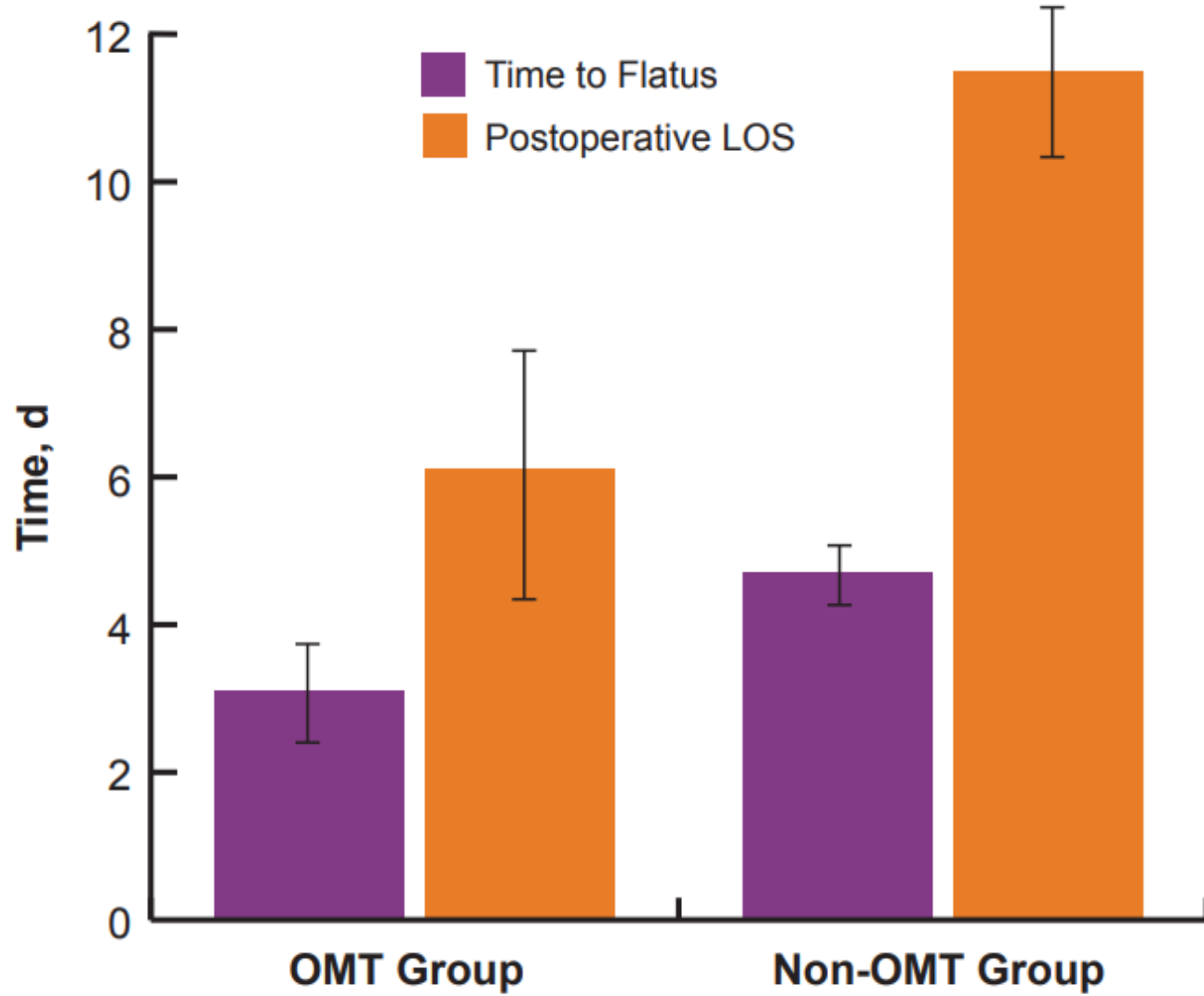
Single 15-35 minute treatment by surgical resident within 48 hours postop

No standardized treatment

- Cranial to direct myofascial
- Costophrenic, costovertebral, cervical spine commonly treated

Improved time to clear liquid, flatus, BM, and LOS (5.4 day average)





**Figure 2.** Mean (standard deviation) postoperative days to flatus and postoperative hospital length of stay (LOS) for general surgical patients who did or did not receive postoperative osteopathic manipulative treatment (OMT).

# Sacral decompression

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Performed supine

Cephalad hand on L3-5 cupping spine

Caudal hand heel at sacral apex with fingers going cephalad

Apply similar indirect engagement in 3 planes

Add upwards force through forearm fulcrum

Respiratory assist highly recommended

Continue until release felt



# Cardiopulmonary

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All the previous treatments are treating this as well

2021 Roberts – increased cerebral blood flow following OA decompression

1993 Kelso – Thoracic pump effective compared to incentive spirometry toward FVC and FEV1 in cholecystectomy patients

# Manipulative Treatment Immediately After Coronary Artery Bypass Graft Surgery – O-Yurvati

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Pilot clinical trial

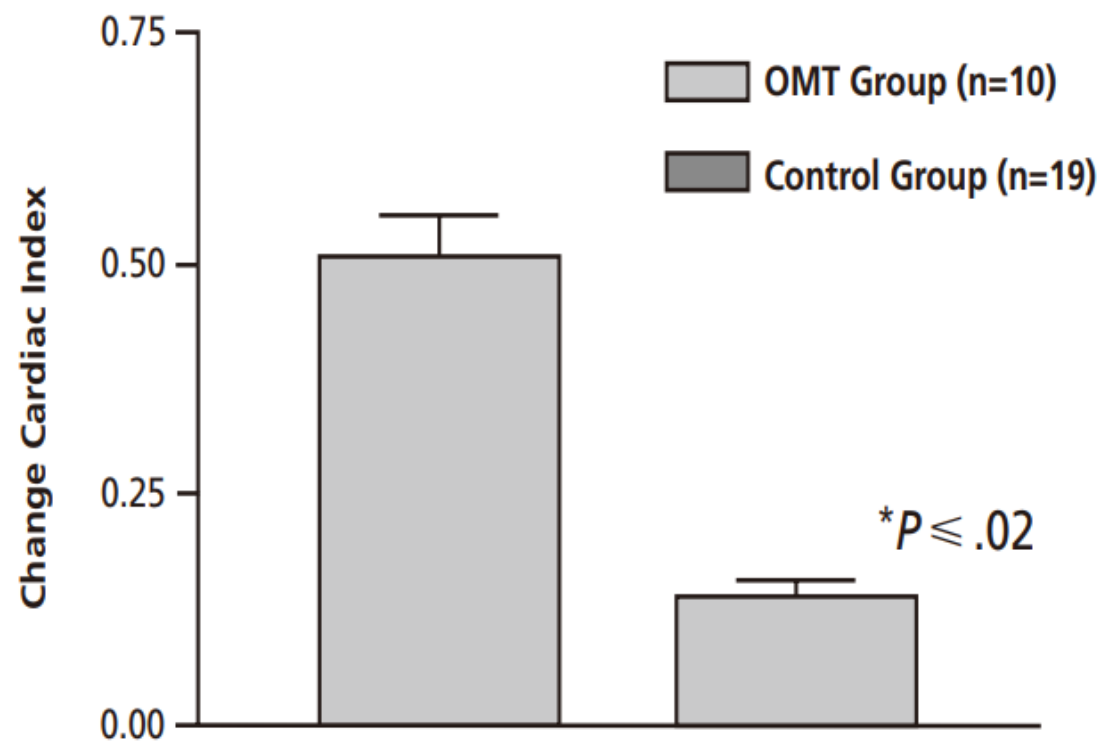
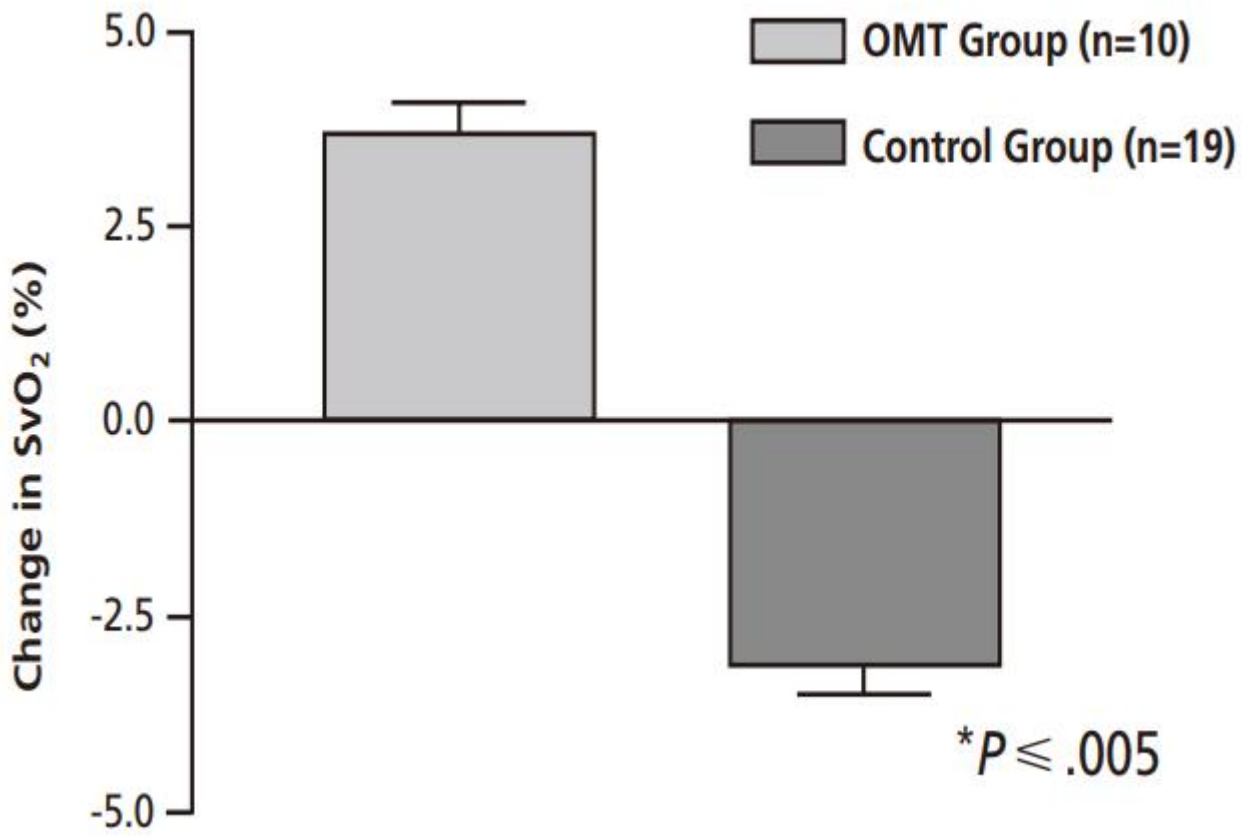
10 OMT treatment, 19 control

2 hours post CABG while still under anesthesia

BLT of thoracic spine and ribs, indirect myofascial of sternum and diaphragm, OA decompression, rib raising T1-5, Sibson's fascial release

Improvement of cardiac function

- Thoracic impedance, SvO<sub>2</sub>, cardiac index improved



# Chronic Pain

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Lasting greater than 3 months

Post Sternotomy Pain Syndrome (PSPS)

Approximately 30% of patients in most studies

Increase in sensory dysfunction (central sensitization) at surgical site and other areas

# How to treat PSPS with OMM

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Italian case studies with indirect myofascial diaphragm based treatments done daily over 5 days to improve 1 and 4 year PSPS (although one was not from CABG)



# Costs

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Estimates based on source vary, but around 200,000-400,000 CABG's per year in the US.

Estimated cost per day \$2,500-\$4,000

1 year incidence death 4.6%/disability 3.5% for just CABG

- Up to 13.1%/14.1% for CABG with multiple valve

# Summary

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OMM as a standard of care is safe and beneficial postoperatively

Techniques performed are preferred indirect

Treatment can be performed in a timely fashion with general osteopathic training

Treatment focuses on autonomic nervous balance and overall muscular strain

# The Five Models

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“As such, OMT must be part of a comprehensive treatment plan, which includes early postoperative and long-term cardiac rehabilitation. Similarly, patient education must be emphasized. This includes advice and support concerning nutrition, smoking cessation, hypertension and diabetes control, and management of other risk factors. In addition, psychological support for the patient and spouse is an important component in this overall treatment plan.” Rogers and Starzinski, JAOA 1989

# Special Thanks

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# Special Thanks

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- Other than seated OA, obviously. Those are copyright me.

# Questions?

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