

# Chiropractic care and the Situs Inversus patient: Modifying technique to match anatomy. A case report.

Jason Zablotney and Charles Blum

**Abstract:** In situs inversus totalis the heart chambers, lung lobes, abdominal organs and colon are all found in a mirror image arrangement of normal. The purpose of this paper is to present a novel case report of a patient with situs inversus treated by chiropractic care involving chiropractic manipulative reflex techniques (CMRT) modified to the patient's condition. **Assessment:** This patient was a 60 year old mother of 4 with sinus inversus who has been a chiropractic patient for over 20 years receiving spine-only chiropractic care. The patient began care in this office in and was seen for 16 office visits utilizing Blair Upper Cervical (BUC) x-ray spinography protocols, Sacro Occipital Technique (SOT) categorization, and CMRT procedures. **Treatment/Intervention:** Her response to Blair and SOT protocols was good and as expected however CMRT protocols needed to be modified in novel ways to compensate for her situs inversus presentation. Occipital fiber analysis found an active visceral reflex on 13 out of her 16 visits. On visits that necessitated treatment to the ileocecal or pancreas reflex arc the reflex patterns were opposite to normal. **Results:** The outcome to treatment involved reduction in pain and increased function in various areas of the spine, pelvis, and right shoulder as well as reduction of prior sleep disturbances and constipation. **Discussion:** While the response to BUC and SOT Category Two protocols were as anticipated, the CMRT evaluation and treatment was unusual based on the patient's situs inversus presentation. The patient's immediate response to treatment suggests that further investigations may be indicated. **Conclusion:** Future studies could compare a blinded evaluation of patients with situs inversus and normal organ anatomy to determine if side of CMRT reflex and referred pain patterns is consistent. Greater research is needed to investigate what subset of patients may respond to viscerosomatic/somatovisceral chiropractic reflex treatment.

**Indexing Terms:** Chiropractic, sinus inversus, chiropractic manipulative reflex techniques, sacro-occipital technique.

## Introduction

**M**atthew Baillie described situs inversus in the mid 1700s. In situs inversus totalis the heart chambers, lung lobes, abdominal organs and colon are all found in a mirror image arrangement of normal. Situs inversus is a congenital condition affecting genders and races equally (1) and found in less than 1 in 10,000 people.

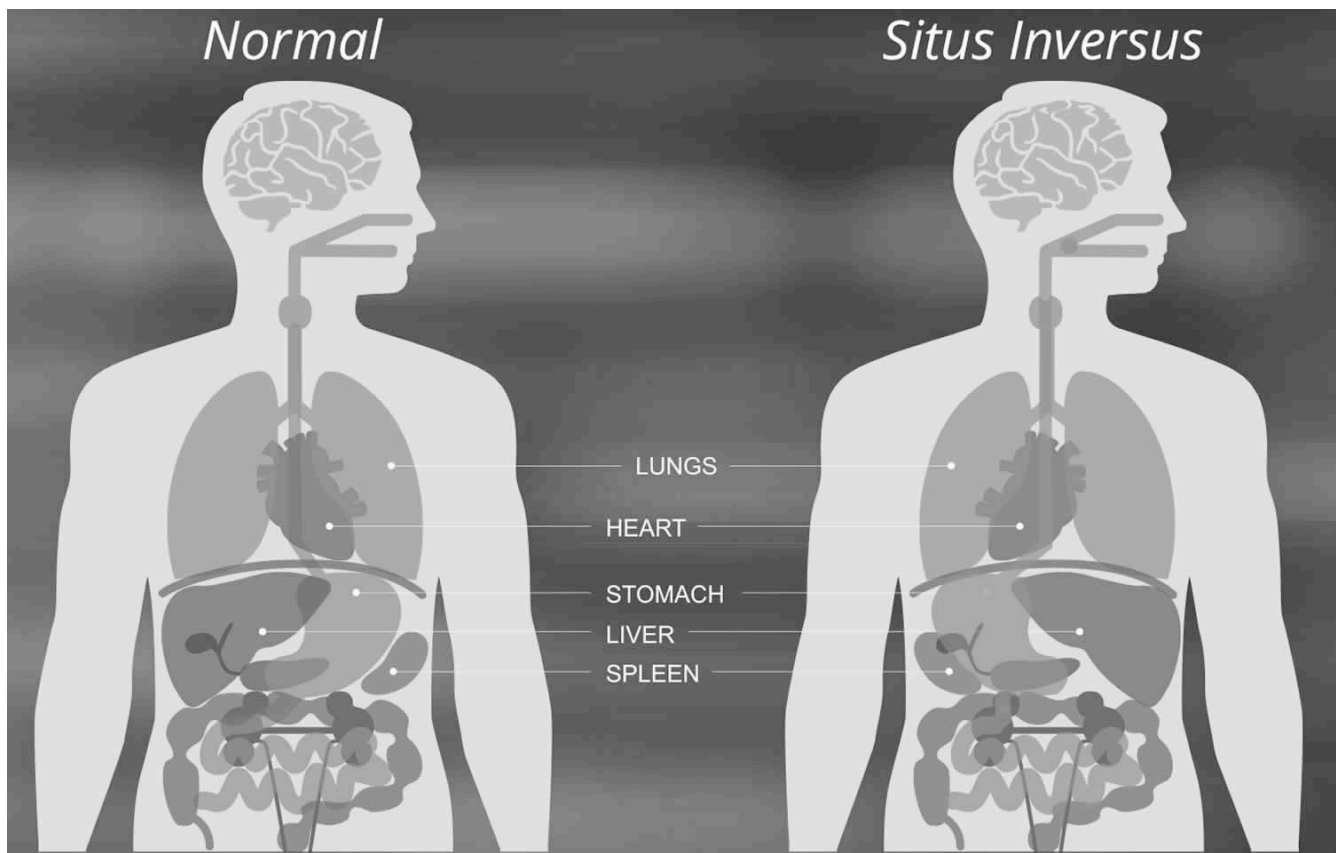
Typically, patients with situs inversus have a normal life expectancy; however life expectancy may be reduced depending on the severity of a heart defect (2, 3, 4). Patients with Kartagener syndrome have situs inversus with associated primary ciliary dyskinesia and pulmonary infections (5, 6, 7) yet, have a normal life expectancy if bronchiectasis is treated adequately. (8).

Literature reviewed on situs inversus was from searching PubMed, MANTIS,

... this case report demonstrates positive outcomes in a patient with situs inversus treated by chiropractic care including chiropractic manipulative reflex technique (CMRT)



ChiroIndex.org, and GoogleScholar which found one paper (9) discussing chiropractic and situs inversus.



Many patients with situs inversus totalis are unaware of their unusual anatomy until they seek medical attention for an unrelated condition. The reversal of the organs may then lead to some confusion, as many signs and symptoms will be on the ‘wrong’ side. For example, with appendicitis a patient might have left lower abdominal pain (10, 11) or left upper quadrant pain could be associated with a biliary cholic. (12, 13, 14)

The purpose of this paper is to present a novel case report of a patient with situs inversus treated by chiropractic care involving chiropractic manipulative reflex (visceral) techniques (CMRT) modified to the patient’s condition.

## Case Report

### *Assessment*

This patient was a 60 year old mother of 4 who has been a chiropractic patient for over 20 years receiving spine-only chiropractic care. She had a long history of upper respiratory problems such as asthma and allergies. Her gallbladder was removed at 22 years of age and during the surgery it was discovered she had situs inversus. She had been coping with a spastic colon for 35 years and an anal fissure following a traumatic labor and delivery for her second child during which she iatrogenically dislocated her hip joint.

The patient noted numerous neck and back injuries and her radiographs demonstrated advanced cervical degeneration and pelvic imbalance. As a result of her injuries she reported chronic neck, upper back, right shoulder, and low back pain; necessitating chiropractic care for nearly 20 years. She had been under the care of family physicians and specialists, taking a large number of medications,

including Glucophage, Coreg, Prednisone, Celebrex, Synthroid, Amaryl, Cardizem CD, Accolate, Actos, Claritin, Diovan, Advair, Lasix, and Klor-con.

The patient began care in this office in January of 2007 and was seen for 16 office visits utilizing Blair Upper Cervical (BUC) x-ray spinography protocols, (15), Sacro Occipital Technique (SOT) categorization, (16) and CMRT (17) procedures.

Some outcome assessment measures were utilized for clinical measurements which included an algometry exam that revealed an above average pain threshold. Range of motion testing found her lumbosacral and cervical range of motions significantly decreased with the exception of lumbosacral flexion. The initial rolling thermal exam revealed sympathetic dystonia in her lower cervical spine and would be performed at the start of each visit in order to establish a cervical subluxation pattern.

Though used in chiropractic clinical practices, BUC technique has not yet been extensively studied for reliability or validity. (18) In one study by Brown et al (19, 20) comparing Blair to Grostic, agreement of C1 laterality between the two techniques was only slightly more than would be expected due to chance alone. One theory was a lack of C1 laterality agreement due to the possibility of asymmetrical structures in this area (21) and the difference between an articular misalignment versus orthogonally based method. (19, 20)

Category two protocols and CMRT analysis and treatment have not been studied for reliability and validity extensively, however some preliminary studies have been performed. SOT's arm fossa test to evaluate SI joint hypermobility syndrome (category two) was studied. *'Two intraexaminer reliability studies of sacro occipital technique tests both scored greater than 80% (88% and 100%). One study that examined the arm-fossa test demonstrated excellent agreement...'* (22) *'For interexaminer reliability, four tests have been evaluated, scoring 75% to 100%. Two scored greater than 80%'* (22) *'Two studies were found of the validity of the arm-fossa test (80% and 90%), both demonstrating some validity of the method.'* (22) Another pilot study assessing for sacroiliac joint fixation (Gillet Test) versus hypermobility (arm fossa test) found some consistency between the examiner's findings. (23)

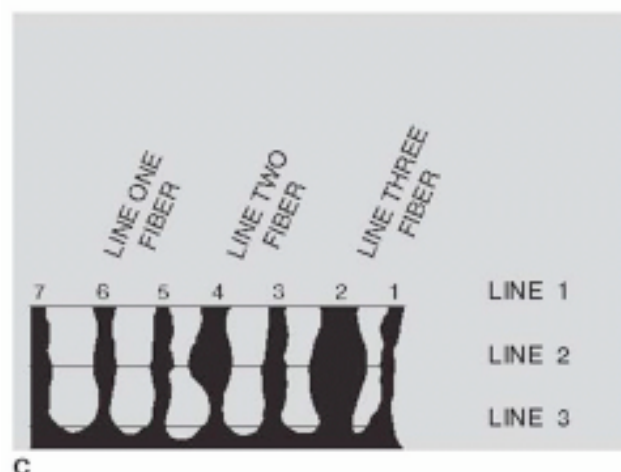
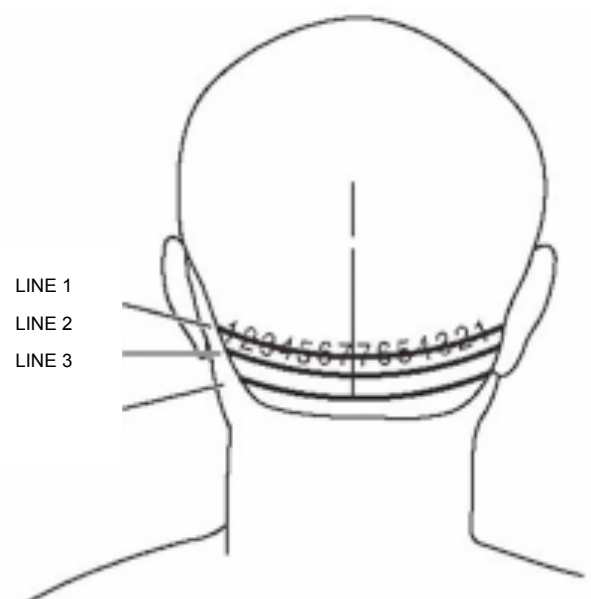
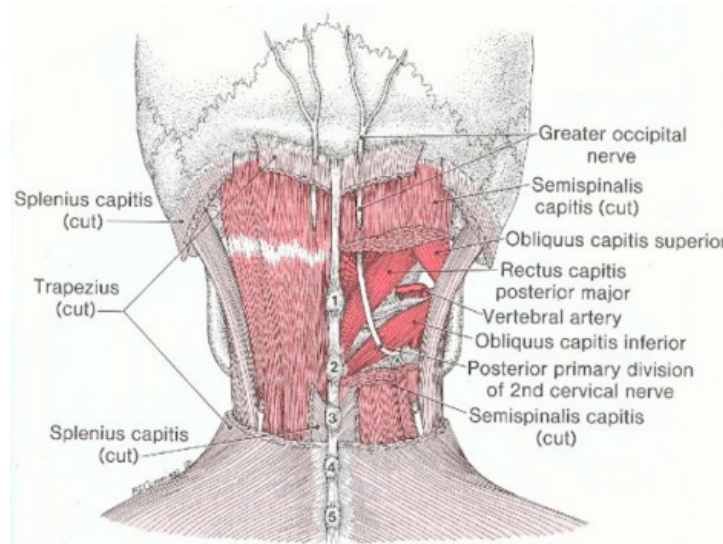
A small scale pilot study was undertaken of occipital fiber analysis (a portion of CMRT). They concluded: *'(i) The practitioner with greater experience had significantly greater intra examiner reliability, and (ii) In an actual SOT practice, the most clinically significant fiber is selected based on a variety of findings, these additional clues were not permitted in our study in an attempt to maximize blinding of the examiners.'* (24)

The occipital fiber analysis involves palpation for pain at of suboccipital muscles, specific related vertebra, and associated reflex/referred pain points. The CMRT protocol uses palpation of painful regions associated with viscerosomatic reflexes and their reduction following treatment. Palpation for pain has been found to have reliability. (22) The patient's diagnosis involved multiple parameters but focused on cervical intersegmental dysfunctions, sacroiliac joint hypermobility, and multiple viscerosomatic/somatovisceral reflex imbalances.

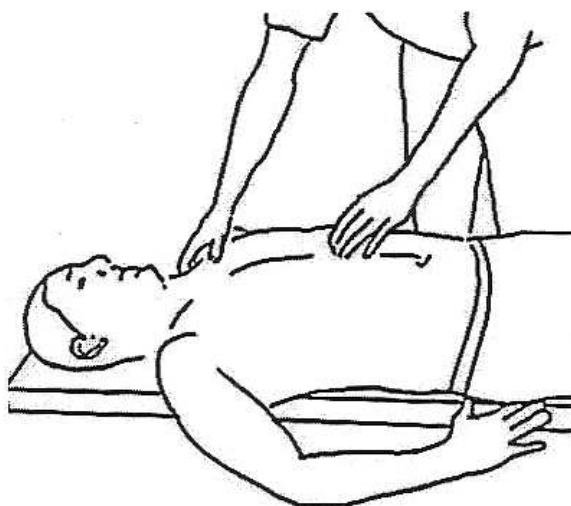
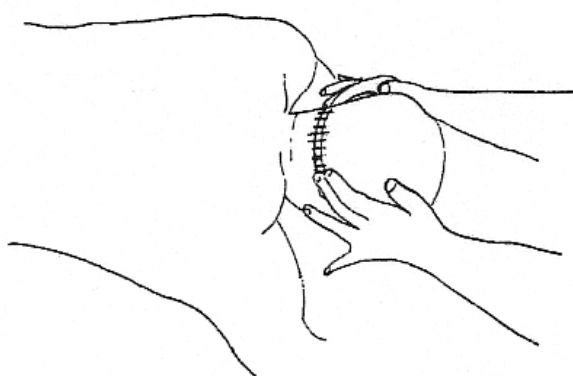
### *Treatment/Intervention*

BUC treatment using three dimensional lateral stereoscopic x-rays of her cervical spine revealed multiple misalignments. SOT categorization procedures (25) revealed a Category II (sacroiliac joint hypermobility syndrome). Her response to Blair and SOT protocols was good and as expected however CMRT protocols needed to be modified in novel ways to compensate for her situs inversus presentation. Occipital fiber analysis, an assessment process used with CMRT protocols, was performed on each visit, and an active visceral reflex was identified on 13 out of her 16 visits.

CMRT involved occipital fiber neutralization, vertebral adjustment and reflex manipulations to balance reflex arcs between the organ, spine, and the autonomic nervous system. CMRT's 7 occipital fibers are located on each side along the nuchal line, from the occipitomastoid junction (number 1) to the most medial number seven, lateral to the external occipital protuberance (number 7). These muscle fibers are located in 7 vertical fibers on each side of the occiput and are near the aponeurosis of the cervical musculature where they attach to the occiput.



Generally there will be swelling at the fiber along with sensitivity when active. CMRT diagnosis involves testing for occipital fiber analysis and vertebral transverse process sensitivity as well as, referred pain patterns associated with the dysfunctional organ. Once the occipital reflex is determined and corroborated by, history, examination, and possibly laboratory tests, then treatment can begin.



Fiber neutralization is accomplished by cross fiber manipulating the specific occipital fiber at line two while contacting the sensitive vertebral transverse process, in the reflex arc. Once moisture or warmth is palpated at the transverse process the occipital fiber manipulation is ceased and the vertebra is adjusted. Following the vertebral adjustment the visceral reflex arc is treated with CMRT procedures.

On one office visit, the patient noted three consecutive days of constipation. Tenderness to palpation was found at occipital line fiber 3, right L1 transverse process, over the ileocecal valve region and left anterior shoulder. Normally CMRT reflexes for ileocecal syndrome would be in the right inguinal region and right shoulder. The CMRT procedure for ileocecal valve was performed opposite to the normal pattern with stimulation to her left shoulder and left lower abdomen.

At another office visit, occipital fiber 4 was tender and she had sensitivity at her left T6 transverse process. While the usual CMRT reflex pattern for an active pancreas reflex is a tender



right thenar pad, this patient had a tender left thenar pad. Typically there are two CMRT pancreas referred pain reflexes at the base of the rib cage, one on the left just above the lower border of the costal cartilage, and one on the right just below the lower border of the costal cartilage. This patient demonstrated the opposite reflex pattern.

## Results

Following each treatment the patient noted a reduction in neck pain and an increase in range of motion. After 5 visits, SOT protocols indicated an improve capability in bilateral supine leg lift capacity. (16, 26) The arm fossa test results were continually improving. Also, her right shoulder pain subsided completely and her thoracolumbar junction pain subsided.

Following CMRT treatment for the L1/ileocecal reflex the patient experienced 'gurgling and rumbling' within her abdomen. Ten minutes later she experienced a large and urgent bowel movement, which was significant based on her prior three days of constipation. Following CMRT treatment for T6/pancreas reflex the patient noticed global symptomatic improvement. Of significance, for one month following this office visit, the patient was able to sleep through the night without having to rise to urinate, which had not been the case for years.

Side effects or risks associated with the treatment rendered would be limited to the possibility of treating a serious condition without making the appropriate referral for allopathic co-treatment. In treatment of patients with normal variants it is not uncommon for there to be other types of variants making treatment complex and warranting caution.

Short-term outcome to treatment involved reduction in pain and increased function as well as reduction of sleep disturbances and constipation. Due to her long-term disabilities and complex presentations it may not be reasonable to anticipate a 'permanent' long-term solution to her conditions. Ideally infrequent treatment that allows her to function at home and maintain a good quality of life might be her best long-term option.

## Discussion

While the response to BUC and SOT Category II protocols were as anticipated, the CMRT evaluation and treatment was unusual based on the patient's situs inversus presentation. In one study (N=37) they found 'the normal spine of humans with a situs inversus totalis shows a pre-existent pattern of vertebral rotation opposite of what is seen in humans with normal organ anatomy'. (27) Another study found that, 'reversal of the mesenteric vascular relationship was observed in situs inversus with normal rotation ...' (28)

Referred appendix and gallbladder pain patterns of patients with situs inversus (totalis) have been found opposite to what is seen with normal human organ anatomy. (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14) Therefore it was assumed that treatment of this patient's ileocecal and pancreas visceral reflex pattern would be the opposite of what is commonly seen. A possible mechanism for the observed changes could be related to CMRT, (17, 29) a method of treating vertebral visceral syndromes associated with viscerosomatic/somatovisceral reflexes (30, 31, 32, 33) spinal joint complex dysafferentation, (34) and visceral mimicry type somatic relationships. (35) Treatment involves location and analysis of an affected vertebra in a reflex arc by way of occipital fiber muscular palpation, similar to trigger point analysis or Dvorak and Dvorak's spondylogenic reflex syndromes. (36) If indicated, when a vertebral dysfunction is chronic or unresponsive to chiropractic spinal manipulation then a viscerosomatic or somatovisceral component is evaluated. (17, 29, 37) CMRT is listed as a chiropractic technique throughout the chiropractic literature. (38, 39, 40, 41, 42) CMRT has been used clinically for years, and an evidence base is slowly developing. (43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54)

Various flaws in this study could relate to the lack of gold standard reliability and validity of the procedures used which complicate the clarity of the results. Outcome assessment forms

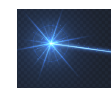
should have been used for pre and post treatment analysis. Optimally it could be illuminating to have this type of treatment evaluated in a hospital clinical setting to monitor and evaluate any related viscerosomatic/somatovisceral effects to treatment.

It is possible that the patient's response to the treatment could have been placebo; however its temporal nature and the positive clinical response make further investigations indicated. Limitations associated with applying this study to other patients relate to the rarity of situs inversus in the general population.

## Conclusion

The purpose of the case report is to present an unusual patient presentation of situs inversus and how treatment was modified for the patient's condition. While CMRT referred pain and reflex patterns need greater study it is of interest that their opposite presentation and related treatment appeared to affect a positive outcome. Future studies could compare a blinded evaluation of patients with situs inversus and normal organ anatomy to determine if side of CMRT reflex and referred pain patterns is consistent. Further research is needed to investigate what subset of patients may respond to viscerosomatic/somatovisceral chiropractic reflex treatment.

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Informed consent to chiropractic care, signed by the patient's parent, and parental consent to the publication of this case including the images of the patient, is held by the practitioner.

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## Poster ...

# Chiropractic Care and the Situs Inversus Patient: Modifying Technique to Match Anatomy

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## INTRODUCTION

In situs inversus totalis the heart chambers, lung lobes, abdominal organs and colon are all found in a mirror image arrangement of normal. Many patients with situs inversus totalis are unaware of their unusual anatomy until they seek medical attention for an unrelated condition.

The reversal of the organs may then lead to some confusion, as many signs and symptoms will be on the “wrong” side. For example, with appendicitis a patient might have left lower abdominal pain<sup>1</sup> or left upper quadrant pain could be associated with a biliary cholic<sup>2</sup>. The purpose of this paper is to present a novel case report of a patient treated with situs inversus treated by chiropractic care involving chiropractic manipulative reflex (visceral) techniques (CMRT) modified to the patient’s condition.

## CASE REPORT

**The Assessment:** This patient was a 60 year old mother of 4 who has been a chiropractic patient for over 20 years receiving spine-only chiropractic care. The patient began care in this office in January 2007 and was seen for 16 office visits utilizing Blair Upper Cervical (BUC) x-ray spinography protocols, Sacro Occipital Technique (SOT) categorization, and CMRT procedures.

**Treatment/Intervention:** Her response to Blair and SOT protocols was good and as expected however CMRT protocols needed to be modified in novel ways to compensate for her situs inversus presentation.

Occipital fiber analysis found an active visceral reflex on 13 out of her 16 visits.

CMRT involved occipital fiber neutralization, vertebral adjustment and reflex manipulations to balance reflex arcs between the organ, spine, and the autonomic nervous system. Once the occipital reflex is determined and corroborated by, history, examination, and possibly laboratory tests, then treatment can begin.

On one office visit, the patient noted three consecutive days of constipation. Tenderness to palpation was found at occipital line fiber 3, right L1 transverse process, over the ileocecal valve region and left anterior shoulder. Normally CMRT reflexes for ileocecal syndrome would be in the right inguinal region and right shoulder. The CMRT procedure for ileocecal valve was performed opposite to the normal pattern with stimulation to her left shoulder and left lower abdomen.

## DISCUSSION

While the response to BUC and SOT Category Two protocols were as anticipated, the CMRT evaluation and treatment was unusual based on the patient’s situs inversus presentation. It was assumed based on some clinical studies relating to situs inversus totalis<sup>1,2</sup> that treatment of this patient’s ileocecal and pancreas visceral reflex pattern would likely be the opposite of what is commonly found with a typical patient.

A possible mechanism for the observed changes could be related to CMRT, a method of treating vertebral visceral syndromes associated with viscerosomatic/somatovisceral reflexes<sup>3</sup>, spinal joint complex dysafferentation<sup>4</sup>, and visceral mimicry type somatic relationships<sup>5</sup>. With SOT protocols when a vertebral dysfunction is chronic or unresponsive to chiropractic spinal manipulation then a viscerosomatic or somatovisceral component is evaluated. CMRT is listed as a chiropractic technique throughout the chiropractic literature<sup>6</sup>. CMRT has been used clinically for years, and an evidence base is slowly developing<sup>7,8</sup>.

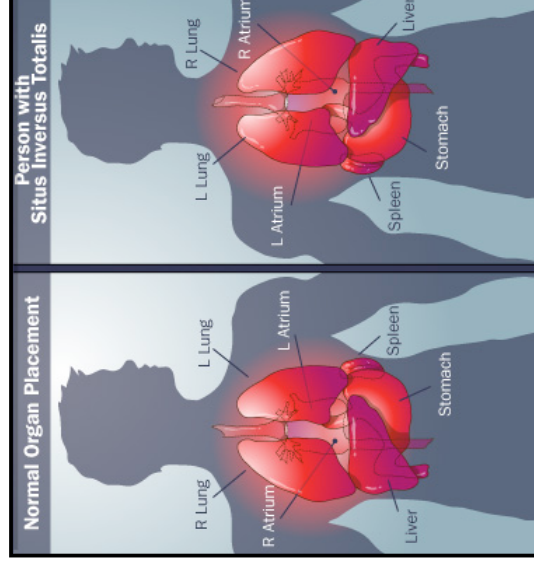
## CONCLUSION

Future studies could compare a blinded evaluation of patients with situs inversus and normal organ anatomy to determine if side of CMRT reflex and referred pain patterns is consistent. Greater research is needed to investigate what subset of patients may respond to viscerosomatic/somatovisceral chiropractic reflex treatment.

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At another office visit, occipital fiber 4 was tender and she had sensitivity at her left T6 transverse process. While the usual CMRT reflex pattern for an active pancreas reflex is a tender right thenar pad, this patient had a tender left thenar pad. Typically there are two CMRT pancreas referred pain reflexes at the base of the rib cage, one on the left just above the lower border of the costal cartilage, and one on the right just below the lower border of the costal cartilage. This patient demonstrated the opposite reflex pattern.



## RESULTS

The outcome to treatment involved reduction in pain and increased function in various areas of the spine, pelvis, and right shoulder as well as reduction of prior sleep disturbances and constipation. Following CMRT treatment for the L1/ileocecal reflex the patient experienced “gurgling and rumbling” within her abdomen. Ten minutes later she experienced a large and urgent bowel movement, which was significant based on her prior three days of constipation. Following CMRT treatment for T6/pancreas reflex the patient noticed global symptomatic improvement. Of significance, for one month following this office visit, the patient was able to sleep through the night without having to rise to urinate, which had not been the case for years.