

Chiropractic and Pregnancy

What is chiropractic?

- Chiropractic is a healthcare discipline that emphasizes the inherent recuperative power of the body to heal itself without the use of drugs or surgery.
- The practice of chiropractic focuses on the relationship between structure (primarily the spine) and function (as coordinated by the nervous system) and how that relationship affects the preservation and restoration of health.

Why is chiropractic care important during my pregnancy?

Throughout the course of your pregnancy, there will be many physiological and hormonal changes as your body prepares for the birth of your baby:

- Center of gravity moves forward increasing the lumbar curve and placing extra strain and force through the lumbar spinal joints.
- The hormone relaxin loosens joints; increasing mobility and decreasing stability which creates aggravation of previous joint injuries and amplifies pelvic imbalances.
- Growing baby and increased fetal movement creates expansion of lower rib cage which can be aggravating to mid back joints that connect to ribs.
- Modified gait becomes wide, creating a variation in skeletal joint and muscle mobility, aggravating the pelvic joints, hip joints and sciatic nerves.
- Modified posture through shoulders to offset change in center of gravity causes loss of cervical curve leading to headaches.
- Pelvic misalignment alters pelvic opening and creates tension through the soft tissues which support the uterus.
- Sacral subluxation disrupts neurobiomechanics of the pelvic region which may contribute to dystocia (difficult labor).

Chiropractic can help you better manage these changes as your pregnancy progresses.

Chiropractic: The foundation of your wellness

Chiropractors are wellness experts and can advise you on many components of living a wellness lifestyle. As part of your wellness lifestyle, it is important to be checked regularly by your family chiropractor for the presence of vertebral subluxations. Your chiropractor is an expert in the detection and correction of subluxations, removing nervous system interference and allowing your body to express its full healing potential.



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The Foundation Series

Chiropractic and Pregnancy

Supporting Healthy Pregnancy and Natural Birth



The Foundation Series

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What are the benefits of chiropractic care prior to pregnancy?

- Promotes regular menstrual cycles
- May help optimize uterine function
- Prepares body for healthy implantation
- Ensures proper nerve supply to reproductive organs

What are the benefits of chiropractic care during pregnancy?

- Pelvic alignment and balance
 - Reduction in preeclampsia
 - Less back labor
 - Reduced need for pain medication
 - Less back pain
 - Shorter labor times
 - More comfort while breastfeeding
 - Greater production of breastmilk
 - Less incidence of postpartum depression

In a hospital study that incorporated chiropractic adjustments during the pregnancy, there was a 50% decrease in the need for painkillers during delivery.

“Women who received **chiropractic adjustments** in their **third trimester** were able to **carry and deliver their child with much more comfort.**”

- Irvin Henderson, MD

Is chiropractic safe for pregnant women?

- Chiropractic is a non-invasive, drug-free discipline meaning that the risks associated with it are very low. Adverse events are very rare and your chiropractor will assess you individually for any risks before commencing care.
- In general, there are no increased risks or side effects with chiropractic for pregnant women.
- Your prenatal chiropractor may use special techniques or table modifications to avoid unnecessary pressure on the abdomen.

Are all chiropractors trained to work with pregnant women?

- Yes! Chiropractors are all adequately trained to handle the needs of pregnancy; however some chiropractors have a special interest in serving pregnant women and have taken additional training.
- Chiropractors with the designation CACCP, DACCP or Webster Certification have taken additional training and achieved certification through the International Chiropractic Pediatric Association (ICPA).

Difficult labor (dystocia) for mothers may be the result of pelvic contraction, inadequate uterine function and baby malposition; **correction of sacral subluxation** by a Chiropractor may have **a positive effect on all of these causes** of dystocia and **lead to a better birth.**

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Can chiropractic contribute to optimal fetal position in the womb?

- Larry Webster, founder of the ICPA, developed a specific technique known as the “Webster Technique” which has been shown to allow for optimal pelvic alignment during pregnancy by correcting sacral subluxation.
- One study showed a reported 92% of babies turning to a vertex position following use of the Webster Technique by a chiropractor. The study also suggests that the Webster Technique may be beneficial to use in the 8th month of pregnancy when breech presentation is unlikely to spontaneously change and when external cephalic version technique is not effective.
- It is important to realize that chiropractors are not turning babies or assessing and managing any fetal conditions or positions directly, but rather ensuring balance in a pregnant woman’s body which may result in the fetus achieving an ideal position for birth.
- The ICPA recommends that pregnant women receive chiropractic care throughout pregnancy to achieve pelvic balance, giving babies a better chance of moving into a correct position for birth. Optimal baby position at the time of birth also results in an easier labor and thus safer delivery for both mother and baby.



Chiropractic and the 4th Trimester

What is chiropractic?

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What is the 4th Trimester?

- Just as it sounds, the 4th trimester is the three month period from birth to when the newborn baby reaches three months old.
- This three month period is a time of rapid change and development for the newborn baby as they adjust to life outside the womb. It's also a time of major change for mom as her body will once again undergo many changes towards her pre-pregnancy state.

Is chiropractic care safe to receive soon after having a baby?

- Chiropractic is a non-invasive, drug-free discipline meaning that the risks associated with it are very low. Adverse events are very rare and your chiropractor will assess you individually for any risks before commencing care.
- In general, there are no increased risks or side effects with chiropractic for postpartum women.
- Your prenatal chiropractor may use special techniques or table modifications to avoid unnecessary pressure on the abdomen during the postpartum period.



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Chiropractic and the 4th Trimester

Achieving a healthy postpartum recovery



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Chiropractic and the 4th Trimester

Achieving a healthy postpartum recovery

Why is chiropractic care important for mom during the 4th trimester?

- During pregnancy and birth the body has undergone many physiological and hormonal changes in preparation for baby. Now that baby has arrived there are another set of changes as the body returns to its pre-pregnancy state:
 - Modified posture due to ergonomics of taking care of a newborn causes loss of cervical curve leading to neck pain and headaches.
 - Increased breast size from the body preparing for lactation along with breastfeeding posture adds additional strain to the mid back and upper back.
 - Center of gravity moves backward rapidly following birth, leading to altered biomechanics in the lumbar spine and pelvis
 - The weight of the baby, in addition to labor and delivery, can cause injury and weakness to the pelvic floor muscles.
 - After effects of the hormone relaxin are still being felt via increased laxity of joints and tendons, which can amplify spine and pelvic imbalances.
 - Weakened core muscles and possible diastasis recti can lead to frequent back pain and spinal misalignment.
- Sudden changes in gait following birth can create irritation in the lower limbs, hips and pelvis.

- Chiropractic can assist with these issues as the changes progress through the postpartum period.



Newborn babies benefit from a chiropractor's gentle approach as well.
Please have your infant's spine checked in their first weeks of life!



“Imagine what might happen if women emerged from their labor beds with a renewed sense of the strength and power of their bodies *and of their capacity for ecstasy through giving birth”* - Dr. Christiane Northrup

What are the benefits of chiropractic care during the 4th trimester?

Less neck, back and pelvic pain

Quicker recovery time from labor and delivery

Restoring proper spinal and pelvic biomechanics

Postural and ergonomic **advice**

Reduced need for pain medication

More comfort while breastfeeding

Greater production of breast milk

Less incidence of postpartum depression

Referrals to other healthcare providers to assist in postpartum recovery

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Chiropractic and the 4th Trimester

Achieving a healthy postpartum recovery

Taking care of both mom and baby

- The arrival of a new baby is an exciting and wonderful time, but can also be a time of high stress.
- Sleep deprivation, lack of exercise, postpartum physical changes and taking care of a newborn baby (potentially in addition to other children) can quickly add up and make for a challenging few months.
- During this critical time it's natural to focus every bit of time and attention on taking care of baby, however it's also important to address any postpartum issues that require attention.
- Chiropractic care can help correct spinal and pelvic biomechanics, reducing pain and increasing ability to heal, which can have a significant effect on the entire body.

Expectations for recovery and healing

- The changes during pregnancy took months to develop and will not immediately all disappear as soon as baby arrives.
- The hormone related effects of breastfeeding, combined with inadequate rest and potentially inconsistent nutritional choices will all contribute to delays in weight loss in the 4th trimester.
- Rest assured that almost any lingering challenge from the changes of pregnancy can be overcome, however some will take more time than others.
- Regular chiropractic along with care from other trusted healthcare professionals can assist in an easier return to pre-pregnancy state.





ELSEVIER

Chiropractic care of a 70-year-old female patient with hip osteoarthritis

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Abstract

Objective: The purpose of this case report is to describe the response to chiropractic care of a geriatric patient with left hip pain, a history of repetitive falls, poor balance, myofascial dysfunction, and hip osteoarthritis.

Clinical Features: A 70-year-old, white, female patient presented for chiropractic care with a chief complaint of left hip pain of 1 year's duration and a history of 2 falls within the past 5 years. The patient's initial Lower Extremity Functional Index score was 42%. Important initial examination findings include a body mass index of 45.0, a One Leg Standing Test of 4 seconds, a Timed Up and Go test of 17 seconds, decreased active range of motion findings, and degenerative radiological findings of the left hip joint.

Intervention and Outcome: Chiropractic treatment primarily consisted of hip and spinal manipulation, mobilization, and passive stretching. The patient was seen 16 times over a 12-week period. After 12 weeks of care, the patient had a significant decrease on the Lower Extremity Functional Index and had demonstrated improvements in left hip internal rotation and in Timed Up and Go and One Leg Standing Test times. The Patient Global Impression of Change scale indicated that the patient was "very much better."

Conclusion: This case illustrates a patient who had increased range of motion, improved balance and gait speed, and decreased disability after a 12-week course of chiropractic care.

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Introduction

Hip osteoarthritis (OA) is a common musculoskeletal problem in older adults, with prevalence estimates

ranging from 3% to 7.4%.¹⁻³ It also is a frequent cause of disability and results in nearly 200 000 total hip replacements per year in the United States.^{4,5} Chiropractic care or manual therapy for hip OA consists of manipulation/mobilization and muscle stretching, which, according to a few studies, show a beneficial effect.⁶⁻¹¹ A controlled, prospective pilot study reported that 3 weeks of chiropractic care had a beneficial effect over sham treatment in the short term

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in a group of patients with hip OA.⁶ The positive effects of chiropractic care on hip OA were also shown in a case report of 2 patients.⁷ In other case reports and a case series, it was found that manual therapy with strengthening exercises offered beneficial results in hip OA patients.⁸⁻¹⁰ Furthermore, a randomized controlled trial on the conservative treatment of hip OA found that the patients in the manual therapy treatment group (manipulation and mobilization) had better outcomes on pain, stiffness, hip function, and range of motion (ROM) than the patients in the exercise therapy program.¹¹

Like hip OA, poor balance and falls in older adults are major problems as seen by the high frequency of falls in those individuals older than 65 years.¹² Falls are a leading cause of nonfatal injury in older adults and account for two thirds of all unintentional injury deaths in this population.¹³ The cause of falls is a complex issue consisting of many factors, but impairments in balance and gait represent some of the most important modifiable risk factors.¹⁴⁻¹⁶ Clinical research shows a potential link between pain/dysfunction of the neuromusculoskeletal system and poor postural control/balance and gait.^{17,18} In a recent randomized controlled trial, improved gait (as measured by walking speed) was seen in hip OA patients after 5 weeks of manual therapy.¹¹ Improved balance and walking speed were seen in a case report where manual therapy was combined with exercise.¹⁰

The effect of chiropractic care on poor balance, gait, and chronic pain has some preliminary research; but more research is needed to determine the different conditions/patients that might respond to chiropractic care with improved balance and gait.¹⁹⁻²³ The purpose of this case report is to describe the response to chiropractic care of a geriatric patient with left hip pain, a history of repetitive falls, and examination findings of poor balance and gait, hip OA, and myofascial dysfunction.

Case report

A 70-year-old, white, female patient presented for chiropractic care with a chief complaint of insidious left hip pain of 1 year's duration. The patient localized the hip pain to the left greater trochanter area and described it as deep and achy. According to the numeric pain scale, the patient's pain was 3/10 on average, 0/10 at best, and 7/10 at worst. The numeric pain scale is commonly used and has shown to be reliable and valid.^{24,25} The patient's hip pain was temporarily

decreased with ice, Tylenol, and non-weight-bearing activities of daily living (ADLs) and made worse with weight-bearing ADLs. She used a cane to help her ambulate in her ADLs. The patient's initial Lower Extremity Functional Index (LEFI) score was 42%, indicating a severe level of disability. The LEFI, which measures the patient's ability to perform common activities of daily living by self-report (walking etc), was abstracted and modified from a complete upper, lower, and trunk neuromuscular index. It is reported to be reliable as a general index for lower extremity disorders.²⁶ Her medical history revealed that she was taking several medications for cardiovascular health (4), depression (1), and irritable bowel syndrome (1). Her medical history also revealed she has had recurrent low back pain and 2 falls within the past 5 years. One of her falls occurred 4 months before her initial visit to our clinic; and the other occurred when she was 65 years old, with both requiring either emergency care or physical assistance.

The patient's physical examination revealed her height as 5'9.5" and weight at 309 lb (body mass index = 45.0). The result of her neurological examination was unremarkable. Examination of hip active ROM showed decreased internal and external rotation of the left hip with internal rotation more pronounced than external (Table 1). Active ROM of the hip joints was measured by a 2-arm plastic goniometer that has been shown to have very good reliability in healthy patients and has been reported to have the same intrarater reliability as the inclinometer in measuring hip movements.^{27,28} Active internal and external ROMs were the 2 planes measured because of their role in diagnosing hip OA. The patient's balance

Table 1 Patient outcomes at baseline and follow-up intervals

	Baseline	4 wk	12 wk
LEFI (%)	42	24	20
TUG (s)	17	13	12
OLST (s) ^a	4	8	5
Int rot AROM-left (°)	22	30	33
Int rot AROM-right (°)	30	32	40
Ext rot AROM-left (°)	32	33	37
Ext rot AROM-right (°)	36	36	36

LEFI, Lower Extremity Functional Index (the percentage disability score is out of 100): higher scores indicate greater disability; TUG test, Timed Up and Go test: higher times indicate lower functioning; OLST, One Leg Standing Test: higher times indicate higher functioning. Int rot AROM, Internal rotation active range of motion; Ext rot AROM, external rotation active range of motion (degrees using a goniometer instrument).

^a Averaged time between left and right legs.

was measured by the One Leg Standing Test (OLST), which measures the length of time a patient can stand on one leg. Her average OLST (for both legs) was timed at 4 seconds, indicating a low level of balance function. The OLST has been shown to have good interrater reliability and to be sensitive to clinical interventions.²⁹⁻³¹ The Timed Up and Go (TUG) test, which measures the time it takes a patient to stand, walk 3 m and back, and sit down, was timed at 17 seconds. The TUG test has been reported to be highly reliable and a sensitive and specific measure to assess risk of falls, with older adults taking greater than 14 seconds being at risk.³²⁻³⁴ Sharp pain of the left greater trochanter was produced during the Iliac Compression test. Other significant findings included mild loss of passive left hip flexion, loss of passive left hip internal rotation, and hypertonicity of the hip flexors. Evaluation of accessory joint movements of the left hip demonstrated decreased motion in posterior to anterior (P-A) glide, long-axis distraction, and internal rotation. Accessory joint motion evaluation is used to determine the presence of joint dysfunction in the hip joints.³⁵ Plain film radiographs of the left hip and anteroposterior pelvis showed left acetabular osteophyte formation and mild to moderate superior joint space narrowing (greater in left hip vs right) of the left femoral acetabular joint. The radiographs were reviewed by a local medical radiologist. Because of her history (1-year history of left hip joint pain), physical examination findings such as decreased active and passive internal left hip joint rotation, and the degenerative radiological findings, her diagnosis was hip OA with associated myofascial/capsular dysfunction.

The hip treatment consisted of manipulation, mobilization, and passive stretching focused on improving the loss of hip motion found on the examination and subsequent visits.^{35,36} Because the patient was taking the blood thinner warfarin (Coumadin) 20 mg/wk, a conservative, low-force approach was applied with the goal of maximizing recovery while also ensuring safety. Gentle, prone P-A manipulation³⁵ of the left hip using drop table technique and instrument-assisted spinal manipulation were performed at each visit. Flexion, internal rotation stretches/mobilization,³⁶ and long-axis distraction mobilization³⁵ were performed on most of the visits (15 visits). Long-axis distraction, flexion, and internal rotation were gentle, low-velocity maneuvers where the end range position was typically held for 10 seconds. On average, the P-A drop manipulation was usually performed 3 times per visit, whereas the other flexion, internal rotation, and long axis distraction stretches/mobilizations were usually done 3 to 5 times

per visit. Flexion distraction technique³⁵ was performed on 5 visits to the lower lumbar spine when the patient had increased low back pain. In addition to the treatment, the patient was counseled at the beginning of care on the benefits of weight loss and was given dietary and exercise recommendations based on the results of a physical activity and nutrition questionnaire completed on the initial examination visit. The recommendations included reducing or eliminating daily soda and weekly fast food intake, increasing daily fruit and vegetable intake to 3 serving per day, and increasing exercise frequency to tolerance up to 5 times per week. All treatment and counseling were performed at a chiropractic college health clinic by a chiropractic intern who was trained in the treatment techniques before beginning care. The patient signed an informed consent form giving us permission to publish the patient's information.

The LEFI, TUG, OLST, and active hip internal and external ROM were administered at follow-up intervals of 4 and 12 weeks.

The patient was seen 16 times over a 12-week period. After 4 weeks of care, the LEFI score decreased to 24%, the TUG time improved to 13 seconds, and the OLST time doubled to 8 seconds. Furthermore, active internal rotation of the left hip joint showed the largest increase (8°) among all of the active ROMs (Table 1). After 12 weeks of care, the patient had a LEFI score of 20%, indicating a "minimal/moderate" functional disability rating, and had demonstrated a small increase in left hip active internal rotation. At the same assessment period, the patient's TUG time decreased to 12 seconds, and her OLST time decreased to 5 seconds (Table 1). The Patient Global Impression of Change scale (PGIC) indicated that the patient was "very much better" after 12 weeks of care. The PGIC is a self-reported 7-point Likert scale where patients assess their degree of change since starting treatment, ranging from very much better to very much worse. The PGIC has been well validated and has been commonly used by pain researchers as a standard outcome instrument.³⁷⁻⁴⁰ Furthermore, the patient reported that she was able to ambulate better, was using her cane less often, and began shopping for herself. When asked about any new lifestyle modifications she made since she began care at our clinic, the patient stated she began to follow some of our initial recommendations such as reducing her fast food intake to 1 to 3 times a week, decreasing her weekly soda intake, and using meditation as a way to relax. The patient also reported no changes in exercise levels, no ergonomic changes either at work or home, and no

other treatment(s) from other health care providers during the 12-week period. The dietary changes may account for her 6-lb weight loss since beginning care especially because her aerobic exercise frequency did not change (0 times a week).

Discussion

The results of the assessments showed that the patient had reduced functional disability and increased hip ROM in internal rotation and improved balance and gait speed after a 12-week course of chiropractic care. The patient was initially scheduled to receive chiropractic care 2 times per week for 4 weeks, and then was scheduled for an additional 8 weeks. The frequency and duration of the treatment were chosen because of the patient's age, obesity, comorbidities, and 1-year history of symptoms before treatment. The literature reports that older age patients,⁴¹ patients with comorbidities (eg, psychosocial issues), and patients with a long duration of symptoms (greater than 6 months) need more time to recover than patients without these factors.^{41,42} Furthermore, studies not only have shown that obesity is a risk factor for hip OA⁴³⁻⁴⁵; but it has also been shown that obesity is a factor that is consistently associated with progression of OA (functional decline).⁴⁶⁻⁴⁹

It is difficult to identify which factors played the greatest role in our patient's recovery; but because of the patient's history and self-report on lifestyle changes and other treatments, we believe that a good part of our patient's reduced hip pain and increased function was due to the 12-week course of chiropractic care (manipulation, mobilization, and stretching). Because the patient reported not seeing other health care providers or participating in other types of self-care (strengthening/aerobic exercise), or making any ergonomic changes at work or at home during our care, it is more likely that chiropractic care was a significant factor in her recovery. Other factors that might have played an important role in the patient's recovery are her dietary changes and meditation,⁵⁰ the natural history of her OA, and her social interactions and confidence in her intern and the care.⁵¹⁻⁵³ Given that the natural history/course of hip OA is very variable between individuals,¹ consisting of exacerbation and remission periods, it is possible that our patient had a spontaneous remission during the same period the chiropractic care was administered.

To help minimize bias in diagnosing our patient, we confirmed the patient's diagnosis of hip OA using the

combined clinical and radiographic diagnostic criteria as developed by the American College of Rheumatology. The presence of femoral and/or acetabular osteophytes and of superior hip joint space narrowing on radiographs, together with hip pain for most days of the prior month (found in this patient), has a high degree of validity in confirming hip OA (sensitivity, 89%; specificity, 91%).⁵⁴ Although not recorded at the required cutoff points, our patient also had decreased active and passive internal rotation of the affected hip that has been associated with hip OA.⁵⁴ Given the results of the examination, it is likely that this patient had pain-generating hip myofascial and/or joint capsule dysfunction with hip OA.

Limitations

One of the limitations of this case report was not having any long-term follow-up measurements. The results of this case report would have been more meaningful if the outcome assessments used were performed several weeks after the treatment ended to see if the results attained at 12 weeks would be similar over a longer period. Furthermore, the use of specific hip tests during the initial visit (eg, FABERE Test, measured passive ROM) would likely have strengthened the accuracy of the diagnosis and have provided additional valuable measurements. In addition, the use of the numerical pain rating scale at the 4- and 12-week follow-up assessments would have provided more quantitative information on the patient's level of pain during and after care. In our case, the patient could have improved through natural history, her social interactions with her intern, her dietary changes, her meditating, the biomechanical/neurological effects from the chiropractic care,^{55,56} or a combination of all these factors. Because this was a single case report, it is not appropriate to generalize the effects from this patient to other patients with hip pain related to hip OA and balance problems. Further research with larger sample sizes is needed to determine what effects chiropractic care has on hip pain and balance problems in the geriatric population.

Conclusions

This case is important because it illustrates a patient who attained improved balance and gait speed after a 12-week course of chiropractic care. Hip OA, poor balance/gait, and falls in the elderly are common problems. More research is needed to examine the

relationship between chiropractic care and hip pain (hip OA and its associated myofascial dysfunction) and poor balance/gait and falls in the elderly population.

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Pregnancy and chiropractic: a narrative review of the literature

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Abstract

Objective: The purpose of this article is to review the literature on the topic of chiropractic care during pregnancy.

Methods: A PubMed search was performed using the terms *pregnancy* and *chiropractic*. Sources were cross-referenced to obtain further articles and research information after reviewing the articles obtained through the search.

Results: Thirty-three references were used for this review. The current literature reports favorable results on the use of chiropractic care throughout pregnancy.

Conclusions: Chiropractic evaluation and treatment during pregnancy may be considered a safe and effective means of treating common musculoskeletal symptoms that affect pregnant patients. The scarcity of published literature warrants further research.

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Introduction

Chiropractic care has typically included the care of pregnant patients to assure the patient a comfortable pregnancy and to help facilitate an uncomplicated labor and delivery. The literature describing the rationale for characteristics of care for this group of patients is sparse but growing. A few conducted studies support the care

of pregnant patients, but the paucity of definitive literature has resulted in a lack of consensus in approaches to chiropractic care within the profession. This article provides a narrative review of the use of chiropractic care for women during pregnancy and labor in an attempt to summarize the chiropractor's role in the comanagement of the pregnant patient.

Methods

A search of relevant articles published in the English language was conducted using a PubMed (1987-2006) search. Medical subject headings used

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were the terms *pregnancy* and *chiropractic*. Key phrases searched were *low back pain in pregnancy* and *Webster Technique*. Bibliographies of all pertinent articles, after reviewing the current research articles obtained through this search, were then searched for additional references in older or non-indexed literature, and to obtain further articles and research information. In addition, standard chiropractic textbooks were searched for related citations. Thirty-three references were used for this review.

Discussion

It has been reported that approximately 50% of all pregnant women experience back pain during their pregnancy and 50% to 75% of women experience back pain during labor.¹⁻³ However, only 21% of pregnant women with back pain seek consultation with their medical physicians.^{2,4} According to the *2005 Job Analysis of Chiropractic*, surveyed chiropractors reported that they rarely treat pregnant women.⁵ However, of the pregnant population that the respondents did encounter in their practices, chiropractors reported that 72% were likely to have benefited from chiropractic care and were thus comanaged.⁵ In other research, a 2-part survey was mailed to 950 pregnant women and to 87 allopathic providers of prenatal health care. This survey reported that 31% of respondents used alternative therapies during pregnancy, and chiropractic was the third most common form of treatment sought (6%), behind massage (32%) and yoga (18%).⁶

Causes of low back pain during pregnancy

Structural adaptation in the gravid patient is a contributory source of low back pain throughout gestation. Spinal dysfunction related to changing load distributions within the motion segments of the lumbar spine and sacroiliac joints are also a factor in back pain.² Traction, pressure or stretch of the adnexa, parietal peritoneum, bladder, urethra, rectum, and pelvic structures can also cause referred pain and secondary muscle spasm.² Although the female sacrum has enough depth to enable fetal carriage, the displaced weight gain of 25 to 35 lb greatly increases the stress to the sacroiliac joints.^{7,8} As the fetus develops during gestation, this weight is projected forward and the lumbar lordosis is increased, placing extra stress on the intervertebral disks and facet joints. Through compensation, the sagittal curvature of the remainder of the spinal column increases as well. The lumbar lordosis,

designed to absorb some of the axial forces, loses integrity as a static support and may be a source of discogenic injury.⁹ In addition, the increase in circulating progesterone, estrogen, and relaxin throughout gestation, especially in the third trimester, brings about pelvic hypermobility and creates a decrease in spinal stabilization.⁹ Direct pressure of the fetus on the lumbosacral nerve roots may also be a cause of pain.⁴ Physically strenuous work and previous low back pain are factors that may also be associated with an increased risk of developing low back pain and sacroiliac dysfunction during pregnancy.³ All of these factors contribute to back pain experienced by the pregnant patient, leading some gravid patients to seek chiropractic care.

Clinical studies on chiropractic care during pregnancy

Shaw¹⁰ reports the results of a chiropractic and medical collaborative study indicating that 75% of pregnant patients who received chiropractic care during their pregnancies stated that they found relief from pain. In addition, a retrospective chart review of 400 pregnancies and deliveries investigated the relationship between pregnancy and low back pain.² The results of this survey support the hypothesis that back pain, pregnancy, and labor are associated, and emphasize the need for further studies. Findings indicated relief from back pain during the pregnancy in 84% of the cases. The authors also noted that chiropractic manipulation may significantly decrease the incidence of “back labor.” The relative risk of experiencing back labor was almost 3 times greater if back pain was experienced during the pregnancy.²

It has also been reported that there may be a relationship between back pain throughout pregnancy and a longer duration of the labor and delivery process.^{8,11} A retrospective review of statistics reported that primigravida women who seek chiropractic care throughout gestation have, on average, a 25% shorter labor time whereas multiparous women who seek chiropractic care throughout their pregnancy have, on average, 31% shorter labor times.^{8,11}

Literature within the osteopathic profession also includes evidence of improved outcomes in labor and delivery for women who receive prenatal osteopathic manipulative treatment.¹² Although the literature in the chiropractic profession dates back several decades, evidence of osteopathic manipulative treatment being used in pregnancy and labor is documented in the osteopathic profession back to the early 1900s.¹³⁻¹⁸ A

more recent retrospective case-control study using outcomes of meconium-stained amniotic fluid, preterm delivery, use of forceps, and cesarean delivery found a strong relationship between women receiving prenatal osteopathic manipulative treatment and a reduction of the occurrence of these outcomes of pregnancy, labor, and delivery, especially for meconium-stained amniotic fluid and preterm delivery.¹² An increasing number of practitioners and obstetricians are realizing the benefits of manual therapy for their pregnant patients,¹⁰ and inclusion of chiropractic or osteopathic care during patient's pregnancies and labors is becoming more widely accepted.

Mechanisms of relief of low back pain during pregnancy

Low back pain is often described as an inevitable complication of pregnancy.¹⁹ Fascial constraint and spinal pelvic subluxation may be the cause of low back pain in pregnancy.¹⁹ As the growing uterus expands, it pulls the sacral base anterior, causing an anterior tilt of the pelvis and flexion of the hips. This orientation of the pelvis causes an increase in the lumbar lordosis, which increases the activity of the iliopsoas muscles. The piriformis muscle remains in a contracted state to maintain the external rotation of the legs, which compensates for a lack of balance as the center of gravity shifts as the pregnancy progresses.²⁰ However, gentle myofascial relaxation of the piriformis and iliopsoas can greatly aid in the reduction of pain and tension. Also, improving the strength of the transversus abdominus muscle is thought to prevent some of the typical postural alterations that are seen in the third trimester that come with anterior pelvic tilt.¹⁹ Anterior translation of the cervical spine and extension of the occiput on the atlas can occur and be related to muscle spasms and suboccipital headaches to compensate for the laxity experienced as gestation progresses.²⁰ Release of these spasms can be quite beneficial in alleviating continuous cephalgia. Also, exaggerated thoracic kyphosis, anterior translation of the head, and the increased weight of the breast tissue may cause cervicothoracic pain, thoracic outlet syndrome symptoms, or myofascial pain syndromes.²¹ The hormone relaxin is found circulating in greater quantities in a woman in her third trimester.²²

In addition, a specific chiropractic adjustment called the Webster Technique has been reported by chiropractors who use it to correct potential musculoskeletal causes of intrauterine constraint.²³ *Intrauterine constraint* is defined as any force external to the developing

fetus that obstructs the normal movement of the fetus. The technique is focused particularly on women in the eighth month of pregnancy with breech presentation. To evaluate the Webster Technique, surveys were mailed to chiropractors of the International Chiropractic Pediatric Association, an organization that offers training in this specialized technique, and 82% of responding doctors reported using this technique. The doctors reported that they found favorable results in relieving the constraints that may be contributory to the malposition of the fetus, and 92% of cases resulted in resolution of the breech position.²³ These results are especially meaningful because 3% to 4.6% of all pregnancies result in a breech position.²⁴ If uncorrected, many of these presentations require cesarean delivery. The highest acceptable limit, described by the World Health Organization in 1985, for cesarean delivery rates in the United States was 15%, and in the year 1999, 22% of deliveries were performed by cesarean delivery, and 13% of these were due to breech presentation.²⁵ The increase in rates of cesarean delivery should be of concern to those providing care to the pregnant patient, especially because chiropractic has been associated with a reduction of the number of cesarean deliveries. Although some fetuses in the breech position will convert before 34 weeks of gestation, data indicate that only about 9% will do so spontaneously.²³

The chiropractor's role in breech presentation is to balance the pelvis and corresponding muscles and ligaments to remove the constraint to the patient's uterus to allow the fetus to assume the correct presenting position.²⁶ At no time does the chiropractor attempt to change the position of the fetus, as is done with external cephalic version; the chiropractor only attempts to correct a potential cause of intrauterine constraint.²³ The authors of the International Chiropractic Pediatric Association survey have suggested that this technique be further investigated regarding its role in the care of this population.²³

Evidence also exists that women who exercise during pregnancy have more energy, fewer mood swings, are able to manage stress more effectively, and achieve more restful sleep compared with sedentary pregnant women.²⁷ Women who exercise gain 21% less weight throughout gestation; enjoy shorter, easier labors (decreased by an average of 2 hours); experience fewer medical interventions (24% fewer cesarean deliveries and 14% reduction in use of forceps); experience less fetal distress; and enjoy a faster recovery.²⁷ With their training, chiropractors can also help the pregnant patient manage an exercise routine compatible for her changing body throughout pregnancy.²⁸

Safety of chiropractic care during pregnancy

A retrospective case series was performed to describe the results of chiropractic treatment offered to a sample of pregnant women.²⁹ Of 17 patients, 16 demonstrated clinically important improvement. The average time until relief was found to be a mean of 4.5 days after the initial treatment. The average number of treatments when substantial relief was achieved was 1.8 treatments. No adverse effects of treatment were reported. This observed evidence supports the hypothesis that chiropractic treatment may be effective in reducing the intensity of low back pain during pregnancy.²⁹

Although, typically, it is quite safe to perform adjustment to a pregnant patient, caution should be exercised.¹⁰ Circumstances may arise indicating that chiropractic care is not appropriate and warrant a referral. Contraindications to adjusting may include vaginal bleeding, ruptured amniotic membranes, cramping, sudden onset of pelvic pain, premature labor, placenta previa, placenta abruption, ectopic pregnancy, and moderate to severe toxemia.¹⁰ Also, the use of electrical modalities, including stimulation and ultrasound, and radiodiagnostic imaging are contraindicated during pregnancy and should be avoided.¹⁰

Adjustive procedures of the pregnant patient

The ligamentous laxity brought on by pregnancy often makes adjusting comparatively easy using the gentlest of movements.¹⁰ A patient who is comfortable will relax more completely and require a less forceful adjustment to be applied.³⁰ As it becomes uncomfortable for the pregnant patient to lay prone after about the fifth month of pregnancy, the use of tables with abdominal pieces that can be lowered may be beneficial for prone adjusting,³⁰ especially for targeting troublesome pelvic portions with the drop component of the table. In addition, as pregnancy typically causes the breast tissue to enlarge throughout the course of gestation, the use of commercially made pillows may allow proper positioning and comfort to the patient.²⁰ Side posture techniques can still be used, but the flexed leg will likely not be positioned as far cephalad toward the chest as usual.³⁰ One author has suggested that left lateral decubitus adjustments should be used.¹⁰ When the patient is supine, the head and shoulders should be elevated enough to avoid cardiovascular stress and the knees should be supported in a flexed position.³⁰ The chiropractic adjustment can be beneficial and, with proper patient positioning for

comfort and relaxation, only the slightest force need be applied to safely and successfully correct misalignment and fixation in the spine and pelvis of the pregnant chiropractic patient.³⁰

Care for the baby and mother postpartum

The normal birthing process is a potential source of trauma to the infant's spine. Some chiropractors extend their understanding of spinal segmental dysfunction, or *subluxation* in chiropractic terminology, to apply to newborn spinal function, with the resultant concern for the health of the infant. The induced vector of force that may cause trauma to the newborn includes traction of the cervical spine coupled with hyperextension during the birth process.³¹ Forceps, cesarean, and suction or vacuum extraction can also cause trauma to the newborn's cervical and thoracic spine and spinal cord³¹ and may warrant chiropractic evaluation. Brachial plexus and cervicothoracic nerve root damage, such as Klumpke's paralysis and Erb's palsy, are a potential result of applying common birthing methods.³¹ In a review of 1000 infants, Gutmann suggested that birth trauma frequently affected the atlanto-occipital joint, causing blockage or vertebral subluxation.³¹ Correction of such a presentation may be accomplished through a light, precise, biomechanical adjustment, using various gentle techniques.³²

Regarding the postpartum patient, previous research has indicated through a prospective cohort study that in patients with moderate to severe pregnancy-related pelvic pain, sacroiliac joint asymmetry laxity is predictive of persisting complaints postpartum in 77% of women.³³ The implementation of chiropractic care as part of the treatment protocol for the pregnant patient may reduce the likelihood of in utero constraint and its associated risks after parturition. Such care may also prevent or reduce the incidence of common prenatal conditions seen with neurologic and physiological involvement postpartum.³¹ Likewise, the postpartum patient faces physiological changes as the body begins to return to prepregnancy status. After delivery, rehabilitative exercises should be used for weakened spinal and abdominal muscles.²¹ Continued chiropractic care may also be beneficial in assisting proper restoration of normal spinal biomechanics.²¹

Conclusion

Although chiropractic care typically includes the care of pregnant patients, the research literature is

sparse. Biomechanical changes and stress to the neuromusculoskeletal system are present during and immediately after pregnancy. Chiropractic evaluation and treatment during this period may be warranted and considered a safe and effective means of treating common musculoskeletal symptoms that many pregnant patients encounter. The published evidence even suggests that regular chiropractic care may improve the probability of successful natural parturition.¹⁹

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ELSEVIER

Chiropractic treatment of a pregnant patient with lumbar radiculopathy

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Abstract

Objective: The purpose of this report is to describe chiropractic treatment of lower back and unilateral leg pain in a pregnant patient.

Clinical Features: A 26-year-old woman in her second trimester of pregnancy had severe pain in her lower back that radiated to her hips bilaterally and to her right leg. She reported tingling down her right lower leg to the dorsum of her foot. Although no diagnostic imaging was performed, her differential diagnoses included lumbalgia with associated radiculopathy.

Intervention and Outcome: Treatment consisted of manual traction in the side-lying position using a specialized chiropractic table and treatment technique (Cox flexion-distraction decompression) modified for pregnancy. Relief was noted after the first treatment, and complete resolution of her subjective and objective findings occurred after 8 visits.

Conclusion: When modified, this chiropractic technique appears to be an effective method for treating lower back pain with radiation to the leg in a pregnant patient who cannot lie prone.

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Introduction

Up to 90% of pregnant women will experience back and pelvic pain at some point during the course of their

pregnancy,¹⁻⁹ and one third of these women will describe the pain as disabling or severe.^{1,2,5} This condition may be due in part to the increased biomechanical stresses placed on the lumbopelvic region throughout pregnancy, as well as the widening of the pelvis in preparation for birth.¹⁰

Unfortunately, many pregnant women go without care for their pain. Skaggs et al⁹ demonstrated that 85% of women surveyed perceived that they had not been offered treatment of their musculoskeletal disorders. In

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a 2004 study by Wang et al,¹¹ 32% of pregnant women with low back pain informed their prenatal care provider of their pain; but only 25% of the providers who were informed recommended any type of treatment. A further study by this group of investigators determined that 62% of surveyed pregnant women with low back pain would try complementary and alternative medicine for their back pain during pregnancy.¹² Chiropractic care appears to be a safe and viable option for pregnant women with back pain.^{13,14}

The purpose of this case report is to describe the outcome of the application of a form of complementary and alternative medicine therapy, more specifically a modified chiropractic technique, to a pregnant patient with lower back pain and symptoms radiating down her lower extremity.

Case report

A 26-year-old pregnant woman presented to a private chiropractic clinic with complaints of severe, unremitting pain in her lower back for approximately 1 month. The pain radiated to her buttocks and hips bilaterally and to her right lower leg. She had tingling down to the dorsum of her foot. She reported no precipitating incident; however, she stated the complaints were probably due to being 24 weeks pregnant. Although she reported a history of occasional lower back pain before this pregnancy, it typically resulted from improper or heavy lifting, was self-limiting, and did not radiate to her hip or extremity. Because of her pregnancy, no diagnostic imaging was performed nor medication prescribed by her primary care physician; and her obstetrician prescribed at-home stretches. However, the pain worsened progressively.

This normally athletic woman had guarded ambulation due to pain that she described as severe and debilitating. Initial visual analog scale¹⁵⁻¹⁷ for pain was 59 out of 100; and her low back Oswestry Disability Index¹⁸⁻²¹ was 55 out of 100, indicating severe disability.¹⁸ She demonstrated a mild to moderate left antalgic stance with obvious distress when arising from a seated position. All lumbosacral ranges of motion were limited because of pain; extension elicited the most pain, causing radiation from her lower back to her lower right leg.

Results of the Bechterew test,²² which is a seated nerve tension sign, and the supine straight leg raise at 45°²³⁻²⁵ were positive on the right for increased pain in her lower back and leg with an increase in intensity of the tingling to the dorsum of her foot. The result of the Bechterew test performed to the left, or unaffected side,

was positive for right lower back and thigh pain. The result of the Kemp test^{22,25} was positive on the right for lower back, thigh, and lower leg pain. Her lower extremity strength, sensation, and deep tendon reflexes were all within normal limits. Palpation revealed hypertonicity of bilateral lumbar erector spinae, gluteus maximus, piriformis, and quadratus lumborum muscles. Tenderness was noted specifically at the L4/5 and L5/S1 levels. No radiographs or advanced imaging was performed on this patient because of pregnancy.²⁶ Working diagnoses included lumbalgia, lumbar radiculopathy, and possible disk pathology.

Treatment consisted of Cox flexion-distraction decompression performed with the patient in the right lateral recumbent position facing the physician. This procedure is normally performed with the patient prone.²⁷ The flexion-distraction adjusting table was not modified; however, the position of the patient and the application of the technique by the physician were modified. Treatment was performed with the physician's cephalic hand contacting and tractioning, or distracting, the L4 spinous process in the cephalad direction and the caudal hand tractioning the base of the sacrum in the caudal direction. These contacts (Fig 1) were used to decompress the L4/5 and L5/S1 levels. From this neutral position (Fig 2), the caudal piece of the treatment table was laterally flexed toward the doctor (Fig 3), thus causing flexion of the desired spinal segments and a corresponding reduction in the patient's pain. The standard Cox protocol I for radicular pain²⁷ was performed consisting of 3 sets of 5 flexion motions, with each flexion motion taking approximately 4 seconds and with a 20-second break between sets. The treating physician was in constant control of the motions applied and remained in contact with the



Fig 1. Physician contacting the patient's spine above and below the spinal levels treated.



Fig 2. Adjusting table in neutral position.

patient. All procedures were always performed within the patient's comfort level. No other form of treatment was rendered.

Immediately after the first treatment, the patient reported feeling a reduction in the severity of pain. During the third visit, the electronic axial distraction feature on the treatment table was used to increase the distraction force. In effect, the caudal section was slightly separated from the thoracic section of the table, effectively accentuating the separation and decompression of the lumbar segments being treated. This was done to correlate with the point of maximum flexion of the caudal piece of the table. Clinically, the patient's progress and tolerance to the increased distractive force allowed for the addition of axial distraction in combination with the flexion motion.

Progressive relief was reported with each visit, and a complete reduction of radicular symptoms occurred after 4 treatments. Low back pain continued to be present when getting up from a seated position; however, the patient had returned to all activities of daily living. During the fourth visit, active exercises were prescribed in the form of pelvic tilts and pelvic lifts. During the seventh treatment, the VAS for pain was rated at 7 out of 100; and the Oswestry Disability Index was 13 out of 100. The patient reported only transient and mild low back pain precipitated by prolonged sitting or lying on one side.

During the eighth visit, the patient reported a complete absence of pain with activities of daily living; and her examination was completely normal. Her Oswestry and VAS scores were 0 out of 100, representing no disability. She was treated a total of 8 times over a period of approximately 6 weeks. She was treated 3 times the first week and twice a week for the next 2 weeks. The treatment frequency was then decreased to one time the subsequent week, and her final visit occurred 2 weeks later. During that ninth and final visit, the patient was assessed for any

change in status and was given an additional treatment before being discharged from care. She was instructed to call as needed. At 1-year follow-up, she remained symptom-free.

Discussion

The reported prevalence of lower back pain during pregnancy ranges from 50% to 68%.¹⁻³ Approximately 1 in 10 000 cases of low back pain in pregnant women can be attributed to a herniated lumbar disk.²⁸ Wang et al¹¹ reported that 34% of the women they studied presented with sciatica or a radicular component to their back pain. LaBan et al^{29,30} demonstrated disk herniations in 7 pregnant women through the use of magnetic resonance imaging; however, most pregnant women will not receive any form of imaging for a definitive diagnosis because of concern of fetal injury.²⁶

Conservative manual treatment of low back pain in the pregnant patient can be challenging with evidence lacking. A systematic review assessing physical therapy for prevention and treatment of pregnancy-related back and pelvic pain demonstrated that only 3 of 9 trials were found to be of high quality.³¹ Of these trials, 2 demonstrated no difference in change in pain or function between exercise and control groups,^{32,33} whereas the third study showed a reduction in sick leave in favor of water gymnastics compared with no treatment.³⁴ A more recent trial for pregnancy-related low back pain demonstrated a significant decrease in low back pain with exercise including lumbar extension movements and strengthening of abdominal, hamstring, iliopsoas, and paravertebral muscles.³⁵ This study also demonstrated a positive correlation between increased flexibility and low back pain, suggesting that when weight increases, some instability may occur in the sacroiliac joint. This correlation is in alignment with



Fig 3. Adjusting table with caudal piece laterally flexed.

Ritchie, who described the mechanical strain on the low back and sacroiliac joints during pregnancy due to the anterior shift in the center of gravity.¹⁰

Chiropractors commonly treat low back and sacroiliac joint dysfunction leading to low back pain. Wang et al reported that 37% of prenatal care providers recommended chiropractic care for patients with low back pain.^{11,12} In a retrospective case series of 17 patients, Lisi³⁶ reports that 94% of the women had improvement in pain and no reported adverse effects after spinal manipulative treatment. However, no patients in this study presented with lumbar disk herniation.

Cox flexion-distraction decompression adjusting, a specific form of chiropractic treatment, has been shown to be an effective and safe technique for low back pain and radiculopathy.³⁷⁻⁴⁶ In a randomized clinical trial comparing chiropractic treatment to physical therapy, patients with radiculopathy did significantly better with flexion-distraction treatment than with physical therapy.^{39,40,47} In a cadaveric study, flexion-distraction in the lumbar spine was shown to create an increase in posterior disk height, thereby opening the vertebral canal and facet joints, reducing posterior disk stress and intradiscal pressure, and increasing the intervertebral foramen area by up to 28%, giving more space for the nerve or dorsal root ganglion.⁴⁸⁻⁵¹ The authors feel that the physiological effects from this technique may also be beneficial in counteracting the effects of pregnancy-related hyperlordosis.

The treating physician used flexion on this patient because it caused centralization of the patient's pain and provided the most relief. The application of the ranges of motion and force of distraction used with Cox technique relies heavily upon careful tolerance testing of the patient. Patients are only treated in the position and range(s) of motion that relieve symptoms, more specifically those that lead to centralization. The Cox technique consists of 2 broad protocols.²⁷ Protocol I is used on patients with symptoms that radiate below the knee (generally considered radicular). Protocol II is used when a radicular component is not present, and the diagnosis is primarily one involving the facets. Therefore, protocol I was performed on this patient because the treating physician felt clinically that a radicular component was present.

In this case, the examining physician felt the primary differential diagnosis most likely included a radicular component. Although there were no objective neurologic signs to support this, there were subjective and objective findings supporting the inclusion of this clinical diagnosis. Subjective complaints included

symptoms below the knee to the foot and a sensation of tingling, both of which support a radicular component, rather than sclerotogenous pain.^{22,27,52,53} Objectively, there was antalgia, evidence of ipsilateral and contralateral nerve root tension,^{22,25} and orthopedic tests that increased her lower back and extremity symptoms. The authors understand that other etiologies for her symptoms are possible. Although the authors believe the treatment rendered was responsible for the resolution of her complaints, they realize that other factors may have been responsible and that a case study does not prove effectiveness.

Conclusion

A significant number of pregnant women experience low back pain, and some are burdened with associated radiculopathy. There are no currently defined treatment strategies for these women; and therefore, many go untreated. This case report demonstrates a treatment for a pregnant woman with the clinical presentation of lower back pain and unilateral leg pain and tingling, which included the use of Cox flexion-distraction decompression. The authors hypothesize that flexion-distraction treatment may be beneficial for other women with similar case presentations, without compromising safety or comfort. Future randomized and controlled studies are needed to determine clinical efficacy in a larger population of pregnant women.

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TECHNIQUE

The Webster Technique: Definition, Application and Implications

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Abstract

Background: Developed by Larry Webster DC [1945-1997] over 30 years ago, the Webster Technique has been observed clinically to be associated with improved pregnancy outcomes since that time. The International Chiropractic Pediatric Association (ICPA) was founded by Webster to promote and defend the chiropractic care of children, pregnant women and general family wellness care through patient advocacy, post-graduate education and research. The ICPA is the oldest free-standing organization in the chiropractic profession to teach and certify chiropractors on the Webster Technique.

Objective: To clarify the philosophical, theoretical and clinical framework of the Webster Technique by providing a historical perspective while clarifying its clinical utility in the context of caring for pregnant women. A definition of the Webster Technique as promoted and taught by the ICPA is reviewed and the "hands-on" technique as originally taught by Webster is reviewed and described.

Discussion: Due to the empirical observations that pregnant women under chiropractic care with breech fetal pregnancies were reporting correction of fetal position to vertex following the use of the Webster Technique, the technique was inappropriately described in its early days as a "breech turning technique" by both patients and some chiropractors.

Conclusion: The ICPA holds that the Webster Technique is a specific assessment and diversified adjustment for all weight bearing individuals and is utilized to enhance neuro-biomechanics in that individual. The ICPA does not endorse the use of Webster's as a treatment for fetal malposition or in-utero constraint.

Key Words: *Chiropractic, pregnancy, Webster Technique, subluxation, ICPA*

Introduction

Over 30 years ago, Dr. Larry Webster, DC [1945-1997] shared his namesake technique to address sacral subluxation with the chiropractic profession.¹ Since then, the Webster Technique and/or its clinical effects have been described in a number of papers including case reports,²⁻⁸ case series,⁹⁻¹² survey studies,¹³ and commentaries.¹⁴⁻¹⁷

Our understanding of the science, art and philosophy of chiropractic has evolved since the profession's inception and such is also the case with the Webster technique.

Alterations and/or modifications have been made to the technique. Following a re-examination of the technique as originally taught by Dr. Webster, and in consideration of the clinical utilization of the Webster Technique in today's practice milieu, we wish to comment on the definition of the technique and its hands-on application.

Webster Technique: History

The technique was taught by Dr. Webster as involving a specific sacral analysis, diversified adjustment and related soft tissue release to be used on all weight bearing individuals including the pregnant population throughout pregnancy.¹⁸ Due to the empirical observations that pregnant women under

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chiropractic care with breech fetal pregnancies were reporting correction of fetal position to vertex following the use of the Webster Technique, the technique was described in its early days as a “breech turning technique” by both patients and chiropractors.¹ This is reflected in the 1990’s Reference Manual by Peet, where the technique is described as a “breech turning technique.”²⁰ Also in the 1990’s, Anrig²¹ and Forrester and Anrig²² described the Webster Technique as an “in-utero constraint technique”. Founded by Dr. Webster, the International Chiropractic Pediatric Association (ICPA), is the largest free-standing chiropractic post-graduate provider for chiropractors on the care of children, pregnant women and general family wellness care.²³ In 1999 Connie Webster, then ICPA Executive Director and Jeanne Ohm DC, implemented the ICPA Webster Technique Proficiency Certification class.

By the following year, the terms “in-utero-constraint” and “breech” were eliminated from the “language” describing the technique and simply called, “The Webster Technique.” The reasoning behind this position was that both terms implied the treatment of a condition - the intentional focus of care on an unborn malpresented/ malpositioned fetus rather than focusing on the correction of sacral subluxation to restore normal function.

The ICPA Webster Technique Certification was incorporated into what is now the ICPA 180 Hour Certification program. True to Webster’s original intent, this Perinatal Class, taught by Ohm has always defined the Webster technique as a specific and valuable diversified adjusting technique to be used on all weight bearing individuals including the pregnant population throughout pregnancy to reduce the pelvic subluxation.

As the primary instructor of the ICPA Webster Technique Certification program since its inception, Ohm has diligently explained to chiropractors the reasoning behind the dissociation of the descriptive words “breech” and “in-utero constraint” from not only in the name of the technique, but from the explanation of the theoretical and clinical framework of the Webster Technique to patients, other healthcare professionals, uninformed chiropractors, and the general public. Old habits die hard, and since the chiropractic profession itself remains in debate as to the role and function of chiropractic in the care of patients,²⁴ some chiropractors have not yet grasped the essence of this perspective with respect to the Webster Technique or management of subluxation in general.

As commented upon by Pickar,²⁵ a thread common in many of the chiropractic theories is that changes in the normal anatomical, physiological or biomechanical dynamics of contiguous vertebrae or in extra-spinal joints can adversely affect function of the nervous system. The Webster Technique, a chiropractic technique, is consistent with this statement. The Webster Technique incorporates a chiropractic analysis followed by a chiropractic adjustment. Common to the theoretical and clinical framework with all chiropractic adjustments, physiological and/or biomechanical changes are thought to occur in the person receiving the care. Furthermore, these changes are unique and particular to the person receiving the adjustment.

Current Concerns

In this age of evidenced based practice,²⁶ given the lack of higher-level research design scrutinizing the technique's effectiveness in ameliorating the consequences of a dysfunctional pelvis, we depend on our clinical experience and clinical expertise while respecting the needs and wants of our patients to inform our clinical application of the Webster Technique. As explained by Alcantara²⁷ on what it means to practice in an evidence-based fashion in a recent issue of this Journal, external clinical evidence from randomized controlled clinical trials can inform, but can never replace, individual clinical expertise, and it is this expertise that decides whether the external evidence applies to the individual patient. The ICPA is actively involved in pursuing additional external evidence on the use of the Webster Technique through its Practiced Based Research Network (PBRN) projects.

As a caveat, the chiropractor should be aware that if explaining or advertising the Webster Technique as “breech turning” or an “in-utero constraint technique”, two issues arise:

1. You as a chiropractor are claiming a clinical outcome that has not yet been supported by higher levels of evidence (i.e., randomized controlled clinical trials) in the EBM hierarchy.²⁸
2. You as a chiropractor are making claims to treat a condition (i.e., breech fetus and/or fetal in-utero-constraint), which is insofar as we know, outside the scope of chiropractic practice. Essentially, this approach to patient care (i.e., “breech turning” or addressing an “in-utero constraint”) may be considered the practice of obstetrics.

With over 3000 chiropractor members worldwide, it is imperative that ICPA members be reminded that any use of inaccurate and incorrect descriptions of the technique be rectified in practice related materials and representations. The ICPA holds that the Webster technique is a specific assessment and diversified adjustment for all weight bearing individuals and is utilized to enhance neuro-biomechanics in that individual.²⁹ This is consistent with how the Webster technique has been taught in the ICPA Perinatal class by Ohm. The ICPA does not endorse the use of Webster’s as a treatment for fetal malposition or in-utero constraint.

As taught to students in the ICPA Webster Technique Certification program, the ultimate responsibility of practice intent and representation rests solely upon the provider in the use of the Webster Technique. One should note that:

1. Oregon allows for chiropractic specialty certification in obstetrics.³⁰
2. If you are claiming breech turning technique or treating in-utero constraint in the pregnant patient, you may be accused of practicing obstetrics.
3. The theoretical and clinical framework of the Webster Technique, as taught by the ICPA Webster Certification program, is for the restoration of neurobiomechanical balance of the pelvis with a sacral adjustment.²⁹

Chiropractors have expressed frustration with pregnant patients attending the chiropractor to have "Webster's" performed and following auto-correction of the fetus from abnormal positioning, the patient discontinues care. "Breech turning" is neither the intention of Webster's Technique nor the intention of chiropractic care in general and the solution is based on proper communication of the chiropractic objective.

Pregnant patients, as all others, should be educated on why they may want to continue with their chiropractic care throughout their pregnancy and following the birth of their child. In regards to the Webster Technique, Ohm recommends educating pregnant patients similar to all patients on the objectives of chiropractic care on the first visit for consultation and possible care of a pregnant patient.

Discussions pertaining to the chiropractic subluxation, how the chiropractic adjustment corrects subluxation and its relationship to restoration of normal body function should be addressed. If patients inquire why claims are made that the Webster Technique "turns breech babies," it is recommended to explain the chiropractic biomechanical theories related to pregnancy as is taught in the ICPA Webster Certification program. This relates the sacral adjustment to the expectant mother's neurobiomechanical pelvic function.

The importance of regular chiropractic care vis a vis the Webster Technique during their pregnancy and the evidence pointing toward the potential for safer, easier births as a result of improved neurobiomechanical function may be expressed. This evidence-informed discussion is based on the positive experiences of pregnant patients under chiropractic care, the clinical experience of the practitioners, academic studies on the subject of sacral subluxation and its consequences to proper pelvic function. In addition, it is recommended that the chiropractor offer patients lifestyle suggestions for them to implement in their everyday life in order to improve postural and biomechanical pelvic function.

Insofar as we are aware, United States chiropractic licensing in all 50 states allows chiropractors to perform the chiropractic adjustment to address neurobiomechanical dysfunction.³¹ Performing the Webster Technique, as taught within the ICPA Certification program, and defined on the ICPA website is within the scope of practice of chiropractic.²⁹ Communicating our intent through patient education and our approach in clinical practice clarifies our adherence to scope of practice.

We recommend that chiropractors refrain from defining or using titles regarding the Webster Technique such as "breech" technique, or "breech turning technique" or as an "in-utero constraint technique" in marketing materials, websites and other forms of communication with patients or potential patients. It is each practitioner's responsibility to make certain their written and spoken patient educational materials are consistent with their scope of chiropractic practice.

The Webster Technique Definition

The ICPA definition for the Webster Technique²⁹ is as follows:

The Webster technique is a specific chiropractic analysis and diversified adjustment. The goal of the adjustment is to reduce the effects of subluxation and/or SI joint dysfunction. In so doing neuro-biomechanical function in the sacral/pelvic region is improved.

The ICPA recognizes that in a theoretical and clinical framework of the Webster Technique in the care of pregnant women, sacral subluxation may contribute to difficult labor for the mother (i.e., dystocia). Dystocia is caused by inadequate uterine function, pelvic contraction, and baby mal-presentation.³² The correction of sacral subluxation may have a positive effect on all of these causes of dystocia.

In this clinical and theoretical framework, it is proposed that sacral misalignment may contribute to these three primary causes of dystocia via uterine nerve interference, pelvic misalignment and the tightening and torsion of specific pelvic muscles and ligaments. The resulting tense muscles and ligaments and their aberrant effect on the uterus may prevent the baby from comfortably assuming the best possible position for birth.

The presentation of this definition and hypothesis to obstetricians, medical doctors and osteopathic physicians, as well as midwives and scientists ensures that they understand that the Webster Technique does not encroach upon the practice of obstetrics. In the chiropractic profession however, we are still left with the residue of outdated, erroneous representation by previous instructors, textbooks, marketing materials, etc. from years past.

To reiterate, the ICPA does not endorse the terms "breech turning technique" and/ or "in-utero constraint technique" in reference to the Webster technique. Additionally, the ICPA does not approve or endorse the instruction of Leopold's maneuver as part of the Webster Protocol in its sponsored post-graduate classes or the application of Leopold's maneuver by chiropractors.

As stated in the beginning of this paper, our understanding of the science, art, and philosophy of chiropractic evolves and it is imperative that our practice activities reflect this.

The Webster Technique Clinical Clarification

Dr. Webster graduated from Logan College of Chiropractic in 1959 and developed the technique in the 1980's. Logan Technique³³ practitioners, along with students and colleagues of Dr. Webster, knew that he had great respect for the correction of the sacral subluxation. With his passing in 1997, the Webster Technique was taught by various instructors in accordance with both written and classroom instruction.

Following a review of Dr. Webster's class materials and Jennifer Brandon Peet's *Chiropractic Pediatric & Prenatal Reference Manual*,²⁰ it has come to light that this instructional manual describes both the sacral and abdominal contact points

consistent with Dr. Webster's teachings and corroborated by his instructions on the technique in the 1990's.³⁴

In terms of performing the adjustment, Webster recommended a low force, posterior-anterior drop technique as the preferred mode of adjustment. In accordance with his teachings, Webster recommended that the attending chiropractor stand ipsilateral to the involved side of heel to buttock resistance.

He taught that the patient contact point is specific to the sacral notch where the sacrum narrows, just lateral and inferior to the second sacral tubercle.

Webster recommended a side posture adjustment in the instance where the patient is not able to assume the prone position. Therefore, when drop pieces or segments are present on the chiropractic table and pregnancy pillows are available for use, the patient should lie prone for the analysis and adjustment a la the Webster Technique.

In the female patient, Webster instructed on an anterior abdominal soft tissue contact. The anterior contact point on the opposite round ligament is applied to support the efficiency of the sacral adjustment. It is proposed that as the sacrum rotates; the corresponding utero-sacral ligament stretches accordingly, resulting in aberrant tension to the uterus. This rotational tension then pulls unilaterally on the opposite round ligament.

The ICPA Webster Technique Certification class has been taught for over 12 years. To reiterate, the technique has been taught to chiropractors worldwide as a specific chiropractic analysis and adjustment to establish neuro-biomechanical balance and function in the pelvis via the correction of sacral subluxation.

Due to the effects of relaxin (i.e., ligamentous laxity with possible association to biomechanical instability) during pregnancy and its possible contribution to sacral instability,³⁵ the Webster Technique should be instituted throughout a woman's pregnancy.

Also in accordance with Webster's teachings while an instructor at Life Chiropractic College, the technique can be applied in the care of any weight bearing person (i.e., pregnant or not, males and females, and children) as a valid sacral analysis and adjustment.

Two ICPA PBRN studies on the use of the Webster Technique in clinical practice have been approved for implementation by an ethics review board. We encourage your participation if you are certified in the Webster Technique and if you implement the Webster Technique in your practice in the care of both pregnant and non-pregnant patients. Practice-based research networks are a pragmatic approach to research where "real-world" data, your data, form the foundation of external evidence in evidence-based chiropractic practice.

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CASE SERIES

Resolution of Breech Presentations Following Adjustment of Subluxations Utilizing the Webster Technique: A Case Series

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Abstract

Objective: To describe outcomes in five cases of women undergoing successful chiropractic care utilizing Webster's Technique.

Clinical Features: This case series involved five females with pregnancy related musculoskeletal complaints.

Intervention & Outcomes: Each patient was adjusted using the Webster Technique which has at its core, the detection and adjustment of lumbar and sacral subluxations. Each patient reported favorable changes in fetal presentation while undergoing chiropractic care during their pregnancies.

Conclusion: The successful chiropractic care of five women during pregnancy is described. This case series contributes to the evidence base that pregnant patients may derive benefits from chiropractic care beyond low back pain and advocate for further research in this area.

Key Words: *Chiropractic, pregnancy, breech, Webster Technique, subluxation*

Introduction

Since the study by Eisenberg et al.¹ in the mid-1990s documenting the popular use of complementary and alternative medicine (CAM), this trend has continued as indicated by estimates of approximately 72 million US adults using CAM by 2002.² Of all the different types of CAM therapies, chiropractic remains the most popular.³ According to the most recent Job Analysis of Chiropractic 2010,⁴ with respect to patient gender, females account for approximately 60% of the chiropractic patients.⁴ Furthermore, based on the rank order of patient age categories, these women are of child bearing age.⁴

Therefore, it is not surprising that given the myriad of health disorders that this specific population group may face, and when one considers specifically the consequences of pregnancy such as low back pain, the chiropractic care of the pregnant patient is not without precedent in chiropractic.

Of interest in the case series presented is the use of the Webster Technique.⁵ More specifically, the reported use by those trained in this technique in addressing lumbosacral subluxations during pregnancy and its reported empirical effects on fetal malpresentation (i.e., breech). Suffice it to say, fetal malpositioning has adverse consequences for both the mother and the fetus. The Webster Technique may provide a possible alternative approach to patient care. This is even more significant when one takes into consideration recent findings that women with previous Cesarean delivery have increased maternal and neonatal morbidity.⁶

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In the interest of evidence-based care on the safety and effectiveness of chiropractic care for pregnancy, we provide a case series presentation on the successful use of the Webster Technique in patients with lumbosacral subluxations concomitant with breeched pregnancies.

The Webster Technique

The Webster Technique was developed by Dr. Larry L. Webster, DC [1945-1999]⁷ to address lumbopelvic subluxations and related biomechanical improprieties. There are variations to the technique and we stress to the reader that the description below is not all inclusive in performing the technique.

Following a thorough history and physical examination (i.e., to determine sites of vertebral subluxations and contraindication to care), the patient undergoes the Webster Technique. As with all approaches in chiropractic care, the history and physical examination provides clinical direction. Accommodation to the special needs of the pregnant patient (i.e., patient positioning to accommodate the growing fetus and the known effects of relaxin on ligamentous laxity) is of paramount importance not only for patient comfort but also for the delivery of a safe and effective adjustment.

The Webster Technique begins with the patient in the prone position. Pillows are designed and constructed to allow the woman's belly to be protected and cushioned. They also allow for the safest and most comfortable positioning for clinical encounter. It is recommended that the patient be positioned so that her anterior superior iliac spines (ASIS) are evenly supported therefore allowing her weight to be evenly distributed on the chiropractic table.

An alternative approach is the use of a hi-lo table with a stomach drop piece. With the clinician standing at the foot of the table, the doctor grasps both ankles and flexes both knees and attempts to bring the patient's heels to her buttocks. In the process of performing this procedure (commonly referred to as the heel-to-buttock test or the Webster Sign), the clinician notes for any restrictions on one leg or the other. The side with the greater resistance on the heel-to-buttock is the side indicating a posterior sacral subluxation (P-L [+θY] or P-R [-θY]).

Following the determination of sacral posteriority, the patient is adjusted accordingly for the sacral subluxation. The adjustments are with the patient in the prone position or with a specific side posture adjustment. During the side posture adjustment, the avoidance of torsion to the woman's lumbopelvic or respiratory diaphragm is of paramount importance. For such an adjustment, the segmental contact point is site-specific, lateral and inferior to the second sacral tubercle, and ipsilateral to the side of sacral posteriority. The force applied is a vectored thrust of posterior to anterior (+Z). Following the sacral adjustment, a re-evaluation is performed with the heel-to-buttock test to confirm the correction of sacral posteriority subluxation.

The patient is then placed in the supine position. Working opposite the side of sacral posteriority, an imaginary line is

noted from the umbilicus and directed approximately 45⁰ inferior and lateral. Another imaginary line is noted from the ASIS (on the side of interest) and directed 45⁰ in the inferior and medial direction.

A variation of the imaginary line (due to the size and shape of the patient's stomach) originates from the ASIS and its direction changing from inferior-medial to superior-medial. The intersection of the other two imaginary lines is approximately the region overlying the round ligament (i.e., the round ligament contact) as it joins the inguinal ligament. This is the point of contact for the next procedure.

At this intersecting point, the clinician palpates for "tension" or "tightness." Using a thumb contact point, the clinician applies an inferior-superior pressure contact to the region of "tension" or "tightness" and holds 1-3 minutes while gradually turning ("torque") 5⁰ in a clockwise or counterclockwise direction until the ligamentous tension is felt to subside. The amount of pressure varies from several ounces to indenting the abdomen. The patient should feel no pain or discomfort from this procedure.

Case Series

Case Report 1

The patient was a 21-yr-old Caucasian woman. She had one previous pregnancy that culminated in 5 hours of labor without medical assistance. She advised that during her second pregnancy, with only a day left prior to her predicted delivery, the unthinkable occurred. During the final check up with her obstetrician/gynecologist (OB-GYNE), she was informed that her baby had "somehow turned into a transverse breech position" and that without an immediate "external cephalic version" (ECV) procedure, she and her baby were at great risk.

She agreed to undergo the ECV procedure and a schedule was made. In the meantime, she had a chiropractic consultation. She asked for the possibility of a chiropractic option since the ECV procedure was scheduled the next day. The attending chiropractor apprised the patient of the Webster Technique and offered a trial of care which was to begin immediately following her consent.

Following Webster's protocol of performing the procedure only once every two or three days was not going to be acceptable due to the time constraint. The attending chiropractor decided to perform the procedure three times that day, once at 8 am, again at noon, and once more at 6pm. The first attempt determined a right posterior sacrum. While contacting the opposite round ligament and applying a medial (counterclockwise) torque with a sustained thumb pressure, the baby began to move.

On the second attempt a few hours later, the sacrum was in a neutral (unsubluxated) position (symmetric heel-to-buttock leg response). Only the round ligament contact on the left side was repeated. During the final attempt/visit, the chiropractor found that the sacrum was still in the neutral position and again, the round ligament contact procedure on the left side

was performed with a medial (counterclockwise) torque.

At a follow up visit, she reported that the following morning, she arrived despondently at the hospital for the scheduled ECV procedure and the possibility of submitting to a “C” section. According to her, she was scheduled for ultrasound to determine the exact position of the fetus’ head.

During the ultrasound procedure, the OB-GYNE began “flicking” his finger at the screen as if to test whether it was working or not. For some reason he could not find the head in its previous position just 24 hours prior. Instead, with a sense of disbelief, the medical doctor stated, “I don’t believe this; the baby is in the proper vertex position.” The doctor then asked the patient as to whether she felt the baby change positions. The OB-GYNE and his three assistants stood by while the patient described her chiropractic care with the Webster Technique. Within 5 days, the patient went into labor and delivered a healthy baby.

Case Report 2

The patient, a 21 year old woman, presented with her mother, for a chiropractic consultation and the possibility of receiving a trial of care with the Webster Technique. The patient’s mother had heard of the procedure from several other successful “breech to vertex” moms. The patient reported that this was her first pregnancy and that she had never received chiropractic care before.

According to the patient, 6 days prior, she was told by her OB-GYNE that she was in her 36th week of gestation . She was advised that her baby had unexpectedly turned into the oblique right breech transverse presentation. An ultrasound was to be performed on a subsequent visit, whereupon it would also be determined when to schedule the ECV procedure and a possible Caesarean Section. The patient agreed to undergo the Webster Technique, once on the day of her initial visit and twice the next day. The second visit would include once in the morning at 8 am and again that afternoon at 3:00 PM. Additional attempts were to be made if time permitted.

On the first visit using the Webster Technique, the sacrum was subluxated on the right side and adjusted in the side posture position. Contacting the left round ligament with the thumb and applying a medial (counterclockwise) torque, the baby began to move.

On the second visit, the sacrum was in a neutral position and the round ligament contact was performed on the left side as on the first visit. On the third visit, the patient was palpated on the abdomen and found that her baby had moved significantly toward the vertex position. The sacrum was still in the neutral position and again, pressure contact was made with the left round ligament, but without the applied torque. The young mom reported to her OB-GYNE and found that her baby had turned fully into the vertex position.

Case Report 3

Patient presented for a chiropractic consultation at 33 ½ weeks

of gestation. She had a breech presentation based on ultrasound imaging. The patient was scheduled every other day for chiropractic visits. Using the Webster Technique it was determined that she had a left posterior sacrum subluxation with the contralateral round ligament being palpable. According to the patient, the baby turned from breech to transverse and then assumed the correct vertex position. By the third visit, the baby assumed a normal position as confirmed by ultrasound imaging.

Case Report 4

The patient presented for chiropractic care at 38 weeks with a breech malposition. This was her second pregnancy. Her first pregnancy was also breech ending with a caesarean delivery. The current pregnancy was also breech according to the palpation findings of her OB-GYNE. Following consent to chiropractic care, she was scheduled at every two to three days. According to her chiropractor, she was diagnosed as having a left posterior sacrum and having a palpable round ligament on the contralateral side. After the second visit, the baby turned into the correct vertex presentation. Her OB-GYNE confirmed the correct position of the fetus, based again on palpation findings. The pregnancy resulted in a vaginal delivery.

Case Report 5

This patient was in her 39th week of gestation. A few hours before presenting for chiropractic care, her OB-GYNE confirmed a posterior breech presentation based on palpation. This was her second pregnancy and according to the patient, her first pregnancy was a prodromal labor with an epidural and vaginal birth. Following one visit using the Webster Technique, the baby turned into the correct position. The attending chiropractor found a right posterior sacrum and a palpable round ligament on the left side. Following her chiropractic visit, on the same day, the patient gave birth to a correctly positioned baby.

Discussion

The Webster Technique is a site-specific chiropractic technique intended to correct sacral subluxation, reduce interference to the nervous system, and balance the functioning of the pelvic muscles and ligament.⁸ In cases of malpositioned and malpresented pregnancies, the elimination of these subluxations and any resultant intra-uterine constraint allows for the best possible position for the fetus and facilitating the birthing process. This theoretical framework is supported by clinical observations among those who practice the Webster Technique wherein the correction of sacral subluxation (in conjunction with a soft-tissue procedure as described above) in women with breech pregnancies result in the correction to proper fetal positioning⁹.

In the vast majority of deliveries near term, the fetus presents by the head, with the best fetal positioning into the lower pelvis in the occipito-anterior position. When such is not the case, the fetus positioning is termed a malpresentation or a malposition.¹⁰ The cause of malposition and malpresentation

is not exactly well known. However, associated factors indicate that prematurity, uterine abnormality, polyhydramnios, placenta praevia, multiple gestation, cornu-fundal implantation of the placenta and from a chiropractic perspective, lumbosacral subluxation.

Malposition

By far the most common malposition is the occipito-posterior fetal position.¹⁰ This occurs when the fetal head engages in the left or right occipito-transverse position that results in the occiput rotating posteriorly rather than into the more favorable occiputo-anterior position. The reasons for the incorrect fetal rotation are unclear. However, a flat sacrum or a fetal head that is poorly flexed have been theorized. Poor maternal posture affecting pelvic alignment as a cause of occiputo-posterior fetal position has been observed and taught in the midwifery community for over 10 years.

Additionally, it is thought that poor uterine contractions may not provide a strong enough push to the head into the pelvis to produce correct rotation. An epidural injection may relax the pelvic floor muscles to such an extent that the fetal occiput sinks into the pelvic floor rather than being pushed to rotate in an anterior direction. In the occiputo-transverse position, the fetal head engages in the left or right occiputo-transverse position with a failure in rotation to the occiputo-anterior position. The head remains in the transverse position and hence its name. In a few cases the head is grossly deflexed so that the brow or even the face can present.

Malpresentation

The most common malpresentation is the breech position. The word breech is derived from the old English word *brec* meaning breeches or buttocks.¹⁰ The breech presentations are classified according to the positioning of the fetal hips and knees with respect to the sacrum.

Incidence

According to Hickock et al.,¹¹ approximately 3-4% of singleton pregnancies reach term with breech fetal presentation. According to Thorpe,¹² following 28 weeks of gestation, the incidence of breech decreases to 1.8%. Frank breech is the most common type of breech presentation and occurs in about 60% of breech births.¹³ Single or double footling accounts for 35% of breech births and is a common presentation for pre-term fetuses. The remaining breech presentations (about 5%) involve complete breech presentations. Common associations of breech presentations involve placenta previa, implantation of the placenta in either cornual area, hydramnios, multiple gestation, or fetal anomalies.¹³

Perinatal morbidity and mortality with breech presentation have been estimated to be three times that when compared to an infant with vertex presentation.¹⁴ Trauma and hypoxia are the two principal factors contributing to the increased natal morbidity and mortality. If the presenting part in a breech presentation does not completely fill the space of the lower

uterine segment; once membrane rupture occurs, cord prolapse is likely. In fact, cord prolapse occurs in 4% of breech presentations as compared to only 0.5% with cephalic presentations.¹⁴ Additionally, major congenital malformations have been reported in 17% of pre-term breech fetuses, in 9% of term breech fetuses and in 50% of breech babies who die just before birth, at birth or before 28 days after birth.^{12,13}

The purpose of any healthcare intervention is to alter the natural history of a disorder in a positive way. The medical management options for malposition and malpresented pregnancies include the external cephalic version (ECV), a planned caesarean section (CS) or aim for vaginal birth. With the publication of the Term Breech Trial by Hannah et al.,¹⁵ wherein a planned caesarean delivery results in significant reduction in adverse perinatal outcomes as well as a reduction in immediate maternal morbidity.¹⁶ The medical option of choice now seems to be a planned Caesarean.¹⁶ The rates of caesarean sections have increased in the past 25 years.¹⁷

After review of caesarean section rates and maternal and perinatal mortality rates in a number of countries, the World Health Organization concluded that there are no additional health benefits associated with a caesarean section rate above 10% to 15%.¹⁸ The above medical procedures (i.e., ECV, CS, etc.), as in all healthcare interventions, carry inherent risks with some procedures having more risk than others.

From a non-allopathic perspective and more specifically, from a chiropractic perspective, we believe the Webster In-Utero Constraint Technique is a welcome alternative, considering the inherent risks associated with the above mentioned medical procedures. This will be addressed in more detail below.

Epidemiology

At 37-38 weeks of gestation, ECV is attempted. If the ECV is unsuccessful, a planned CS or vaginal birth is considered. In a survey of 920 obstetrician/gynaecologists, 409 family physicians, and 62 midwives from the membership list of the Society of Obstetricians and Gynaecologists of Canada, Hutton et al.¹⁹ found that although the use of ECV is high in Canada, the success rate is low.

Hofmeyr and Hannah²⁰ searched the Cochrane Pregnancy and Childbirth trials register and the Cochrane Controlled Trials register to assess the effects of planned caesarean section for breech presentation on measures of pregnancy outcome. They found that planned caesarean section greatly reduces both perinatal/neonatal mortality and neonatal morbidity, at the expense of somewhat increased maternal morbidity.²⁰

In a randomly selected sample of 8,244 estimated eligible women stratified primarily by province and territory, Chalmers et al.²¹ explored the correlation of having a caesarean section on other experiences surrounding labor, birth, mother-infant contact, and breastfeeding. The investigators found that three-quarters of the women (73.7%) gave birth vaginally and 26.3 percent by caesarean section, including 13.5 percent with a planned caesarean and 12.8 percent with an unplanned caesarean. Furthermore, women who had a caesarean birth after attempting a vaginal birth had

less mother-infant contact after birth and less optimal breastfeeding practices.²¹

Non-Allopathic Approaches

Non-allopathic healthcare options exist for women with malposition and malpresentation. A Medline search on the use of CAM in breech pregnancies using the subject headings “breech presentation AND alternative medicine” revealed a number of alternative approaches. These involve the use of auricular plaster therapy,²² homeopathy,²³ hypnosis,²⁴ acupuncture,²⁵ and a traditional Chinese method of treatment called moxibustion.²⁶

The treatment with moxibustion involves burning the herbal preparation containing the plant *Artemisia vulgaris* to stimulate the acupuncture point 67B.²⁶ Except for hypnosis and homeopathy, the above alternative methods report a greater than 80% success rate in correcting the breech presentation. Tiran²⁷ performed a review of the alternative methods offered to women with breech pregnancies. We recommend to the reader this article to learn more about alternative methods for breeched pregnancies in addition to the above mentioned options. Tiran highlighted the Webster Technique as an alternative for breeched pregnancies.²⁷

Implications of the Webster Technique

Given the success of chiropractic care in patients with musculoskeletal conditions,²⁷⁻²⁸ pregnant women are also seeking relief from chiropractors. Musculoskeletal disorders are common in normal pregnancy, and high incidences have been described in several studies. Nine-month prevalence rates for low back pain ranging 48-90% have been reported.²⁹⁻³¹

As described, the theoretical and clinical framework of the Webster Technique is based on the reduction of lumbopelvic subluxation, resulting in improved biomechanics of the lumbopelvic region and therefore its function. In cases of breech pregnancies for example, this is believed to facilitate the fetus into the best possible position for birth and the observed clinical correction of the malpresentation. Indirect evidence in support of this theory is implicated from the findings that in pregnant women suffering from muscular dystrophy, there is a high rate of breech presentation.³² The assumption here is that dysfunctional muscle functioning in these patients result in aberrant biomechanical functioning of their lumbopelvis.

The use of the Webster Technique on pregnant women does not convey any known risks to the mother or fetus. This is based on the clinical experience of those who practice the technique and reported papers on the chiropractic care of pregnant women. Stuber³³ in a survey reported on the opinions of chiropractors on the perceived safety of chiropractic care for pregnant patients while determining the types of treatments employed when seeing pregnant patients, and the referral patterns of pregnant patients between chiropractors and other professionals. Twenty-six Canadian and Australian chiropractors with varying levels of experience were selected as part of a convenience sample. A response rate of 69% was obtained. All of the respondents indicated

seeing fewer than 11 pregnant patients per month. Spinal manipulative therapy was opined to be a safe therapy for use on pregnant patients, although certain co-morbidities reduced the number of respondents willing to use this particular treatment on such patients. Most of the respondents used spinal manipulative therapy, soft tissue therapy, exercise therapies, and patient education on pregnant patients with back and/or neck pain, headaches, or benign vertigo. Nearly all of the respondents indicated that spinal manipulative therapy was an appropriate treatment for those conditions during pregnancy. Almost all of the respondents indicated there was no evidence that pregnant patients are at increased or decreased risk for vertebrobasilar incident after cervical spinal manipulative therapy and pregnancy is not a contraindication for this therapy.

Referral of pregnant patients between chiropractors and massage therapists was the most common scenario followed by referrals between chiropractors and family medical doctors. Barring the known contraindications of the use of a high velocity low amplitude (HVLA) thrust to the sacrum) for any patient (i.e., presence of fracture, severe osteoporosis, neoplasm, etc.) the use of an HVLA thrust to the sacrum (in side posture patient position or facilitated by the use of a drop table) in pregnant women is safe. Again, the intent of performing such a procedure is to alleviate the discomforts of pregnancy (i.e., low back pain) by facilitating and reinstating proper lumbopelvic biomechanical functioning. As reported in this case series, another benefit in addition to alleviation of low back pain are the observation of fetal correction from breech.

The International Chiropractic Pediatric Association (ICPA) provides a post-graduate Certification Program in the technique. At present, over 3,400 practitioners worldwide have been certified and currently utilize the procedure in their private practices. No reported adverse reactions have ever been reported to the ICPA. Pistolesse⁵ surveyed members of the International Chiropractic Pediatric Association (ICPA) regarding the use of the Webster Technique in patients with pregnancies. The respondents reported a high rate of success (82%) in relieving the musculoskeletal causes of intrauterine constraint.

This case series reported the clinical findings of five females undergoing chiropractic care utilizing the Webster Technique to address lumbopelvic subluxations. Given the many functions of lower research design studies such as case reports and case series in the overall scheme of research endeavors, we stress that our purpose is to first and foremost report a clinical phenomenon that is, in our opinion, a common clinical observation among those who utilize this technique. To the best of our knowledge, this is the second reporting of its kind in the scientific literature.

A selective review of the literature using Pubmed and MANTIS was performed. With Pubmed [1966-2007]; we used the subject search terms “pregnancy AND chiropractic”, “breech AND chiropractic”, “Webster Technique AND chiropractic.” With MANTIS [1965-2007], the search terms were “pregnancy,” “breech” and “Webster Technique.” In addition to the study by Pistolesse⁵ and the review article by Tiran²⁷ as described above, Ohm³⁴ advocated for the use of the

Webster Technique in breeched pregnancies.

Kunau³⁵ provided a brief review of the medical versus chiropractic management of pregnancies with breech presentation along with a case series presentation of the Webster Technique in six pregnancies under her care. The patients were Amish women of varying ages and parity who had developed third trimester breech malpositions. Using the Leopold's maneuver by palpation and verified by medical doctors, all the cases described were successfully treated using the technique.³⁵ One woman had a failed external cephalic version attempt by a medical doctor. Five of the deliveries were uncomplicated with one birth pending.

Our case series reported similar findings based on the use of the Webster Technique by multiple practitioners. Chiropractors trained in the Webster Technique are quite homogenous in their examination and adjusting protocol. This allows for reproducibility in the application of the technique and would minimize confounder concerns in practice and in clinical research.

As with all case reports/case series reporting, we caution the reader on the generalizability of our findings. In making cause and effect inferences, higher level design studies (incorporating a control group, randomization and manipulation of the independent variable) are needed to fully assess the true nature of the Webster Technique in pregnancies with breeched presentation. As with all case reports, the reported improvements in the patients described may be attributed to (a) the natural history of the disorder, (b) regression to the mean and (c) the result of placebo. Furthermore, both the chiropractor and his or her patient may make incorrect inferences from treatment due to (d) the demand characteristics of the therapeutic encounter and (e) subjective validation.

Conclusion

We described through a case series presentation the successful chiropractic care of patients with lumbosacral subluxation concomitant with breech pregnancies. The technique utilized was the Webster Technique. This presentation contributes to the knowledge base that pregnant patients may derive benefits from chiropractic care beyond low back pain and advocate further research in this area.

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THE WEBSTER TECHNIQUE: A CHIROPRACTIC TECHNIQUE WITH OBSTETRIC IMPLICATIONS

Richard A. Pistolese, DC^a

ABSTRACT

Objective: To survey members of the International Chiropractic Pediatric Association (ICPA); regarding the use of the Webster Technique for managing the musculoskeletal causes of intrauterine constraint, which may necessitate cesarean section.

Methods: Surveys were mailed to 1047 US and Canadian members of the ICPA.

Results: One hundred eighty-seven surveys were returned from 1047 ICPA members, constituting a return rate of 17.86%. Seventy-five responses did not meet the study inclusion criteria and were excluded; 112 surveys (11%) provided the data. Of these 112 surveys, 102 (92%) resulted in resolution of the breech presentation, while 10 (9%) remained unresolved.

Conclusion: The surveyed doctors reported a high rate of success (82%) in relieving the musculoskeletal causes of intrauterine constraint using the Webster Technique. Although the sample size was small, the results suggest that it may be beneficial to perform the Webster Technique in month 8 of pregnancy, when breech presentation is unlikely to spontaneously convert to cephalic presentation and when external cephalic version is not an effective technique. When successful, the Webster Technique avoids the costs and/or risks of external cephalic version, cesarean section, or vaginal trial of breech. In view of these findings, the Webster Technique deserves serious consideration in the health care management of expectant mothers exhibiting adverse fetal presentation. (*J Manipulative Physiol Ther* 2002;25:000)

Key Indexing Terms: *Breech; Chiropractic; Intrauterine Constraint; Labor; Pregnancy*

INTRODUCTION

Intrauterine constraint is defined as any force external to the developing fetus that obstructs the normal movement of the fetus. Intrauterine constraint has been casually related to a number of structural defects of the peripheral and craniofacial skeleton of the fetus.¹⁻¹⁰ Taylor¹¹ and others^{12,13} have described how the forces of intrauterine constraint adversely affect the spine during the prenatal and perinatal periods. Moreover, intrauterine constraint can prevent the developing fetus from attaining a head-down vertex position and achieving a vaginal birth, thereby necessitating a cesarean section delivery.

Nearly 13% of all cesarean deliveries are performed as a result of breech presentation.¹⁴ In the United States, 86% of infants with breech presentation are delivered by cesarean section.¹⁵

Approximately 3% to 4.6% of all singleton pregnancies result in a breech presentation.^{16,17} The incidence of perinatal mortality with breech presentation is approximately 4 times that of a vertex presentation.¹⁸

The importance of preventing intrauterine constraint and subsequent cesarean section delivery is apparent, considering current statistics. The United States and Canada have some of the highest rates of obstetric interventions in the world, which boosts the already high cost of obstetric intensive care.¹⁹⁻²¹ In Canada, the incidence of cesarean section ranges from 15% to 22%, depending on the province.¹⁹ In the United States, approximately 22% of all births in 1999 were cesarean section deliveries.^{20,22} Cesarean rates varied from 14.8% in Alaska to 27.3% in Mississippi. This marks the third consecutive increase in cesarean rates in as many years.^{22,23} The US rate for primary cesarean delivery increased for the second consecutive year to 15.5%. Even

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though the percentage of women beginning prenatal care in the first trimester of pregnancy has increased to 83.2%, the low-birth-weight rate has remained unchanged at 7.6%.²² In addition, the national rate of vaginal birth after cesarean delivery has fallen 17% since 1996.^{22,24}

In 1985 the World Health Organization (WHO) proposed 15% as the highest acceptable limit for cesarean section rates.²⁵ This figure was based on the cesarean section rates of countries with the lowest perinatal mortality rates.²⁶ In 1991, this figure was adopted as a goal for the year 2000 by the United States Department of Health and Human Services.²⁷ Several reports have cited reducing the number of cesareans for breech presentation as a strategy for reaching the Healthy People 2000 goal of a 15% cesarean section rate,^{26,28,29} a goal the United States failed to reach and a goal which was again adopted as a Healthy People 2010 goal by the Centers for Disease Control and Prevention (CDC) and the United States Department of Health Resources and Services Administration.³⁰

While many fetuses in breech presentation before 34 weeks' gestation will convert spontaneously to a cephalic presentation, few will do so after 34 weeks.³¹ Reports of the rates of spontaneous version have varied from 0% to 33%, with an average of approximately 9%.³²⁻⁴⁴ The number of cesarean sections performed due to breech presentation and dystocia has increased, whereas those attributable to fetal distress have not changed significantly, and elective repeat cesarean delivery rates have declined.¹⁴

Anecdotal reports⁴⁵⁻⁴⁹ indicate that the Webster Technique, a chiropractic technique designed to relieve the musculoskeletal causes of intrauterine constraint, has been successful in converting breech presentations to cephalic presentation.

The purpose of this study was to gather information on how widely this technique is used by chiropractors who routinely care for pregnant women, and their reported success rates.

METHODS

Study Population

Surveys were sent to 1047 members of the International Chiropractic Pediatric Association, Inc (ICPA), throughout the United States and Canada. Members of the ICPA were chosen based on their interest in the care of pregnant women and children.

Intervention

The Webster Technique⁴⁵ is a chiropractic technique designed to relieve the musculoskeletal causes of intrauterine constraint. Formerly known as Webster's In-Utero Constraint Technique or Webster's Breech Turning Technique, the Webster Technique was developed by Dr Larry Webster in 1978 and has been described in several texts and professional publications.^{46,49-54} In addition, the technique is

taught in several chiropractic colleges and postgraduate chiropractic education programs.

Performance of the Webster Technique involves analysis of the functional and spatial relationship of the bones of the pelvis, and manual correction of aberrant biomechanics through the employment of a light-force chiropractic adjustment of the sacrum (Step 1). The Webster Technique further involves analysis and relief of abdominal muscle tension or spasm (Step 2). Both steps are intended to relieve the potential musculoskeletal causes of intrauterine constraint that may lead to cesarean section or breech delivery.

It is important to stress at this time that the Webster Technique is not to be misconstrued as the practice of obstetrics. The Webster Technique is a specific chiropractic technique intended to relieve a specific musculoskeletal condition, and is well within the chiropractor's scope of practice.⁵⁵⁻⁶⁰ At no time does the chiropractor attempt to change the position of the fetus, as is done with external cephalic version (ECV), by applying pressure to the mother's abdomen in an attempt to turn the fetus in either a forward or a backward somersault to achieve a more vertex presentation. The chiropractor only attempts to correct a potential cause of intrauterine constraint. Untrained individuals should not attempt the Webster Technique.

Survey Instrument

The survey involved 16 questions (Appendix), which provided responses concerning the respondent's practice characteristics (Questions 1 to 4) and knowledge and use of the Webster Technique in the previous 6 months (Questions 5 and 6). Questions 7 to 9 ascertained information regarding the diagnosis of the breech presentation. Questions 10 to 16 required respondents to provide information regarding their use of the technique and the outcome. Breech presentation was considered resolved when the fetus turned to a head-down vertex presentation. Respondents were asked to submit the results of all documented cases, regardless of outcome.

Content validity was initially established by having practitioners certified in the use of the Webster Technique validate the content of the survey relative to its intended purpose. The content was approved unanimously by these practitioners as reflecting the type of issues pertinent to the application of the Webster Technique. Following the study, practitioners reported that they found the questionnaire to be clear and complete, both of which are primary attributes of content validity.⁶¹

Data Analysis

Returned surveys were numerically coded and entered into a spreadsheet program (Microsoft Excel 2000, Version 9.0.2720; 1985 to 1999). Responses were analyzed for percentages of outcomes.

Table 1. Summary of excluded responses

Reason responses were excluded	#
Answered No to question #3—Did not provide care for pregnant women.	25
Answered No to question #5—Did not know the Webster Technique.	8
Answered No to question #6—Did not use the Webster Technique.	18
Answered Yes to question #12—Required further intervention (ECV) to resolve the breech presentation.	5
Answered Yes to question #14—Oligohydramnios	4
Answered Yes to question #14—Placenta previa	1
Answered Yes to question #14—Short umbilical cord	5
Answered Yes to question #14—Twins	7
Answered Yes to question #14—Uterine anomalies	2
Total Excluded	75

RESULTS

One hundred eighty-seven surveys were returned from 1047 US and Canadian members of ICPA, constituting a return rate of 17.86%. The sample size was sufficient to allow estimation of the probability that practitioners would respond in the affirmative or negative with an error of less than 5% ($P < .05$).⁶²

Of the 187 responses, 25 were excluded because the practitioners did not provide care for pregnant women with a breech presentation (Questions 3 and 4). Eight respondents were excluded because they did not know the Webster Technique (Questions 5), and 18 were excluded because they did not use the Webster Technique in their practices in the prior 6 months (Question 6). Five subjects were excluded because they underwent ECV after having the Webster Technique performed (Question 12). In addition, 19 were excluded because they had a condition that physically prevented the fetus from turning, such as oligohydramnios, placenta previa, short umbilical cord, twins, uterine anomalies, etc (Questions 14 and 15) (Table 1). This left a pool of 112 respondents from which to derive data (11%).

Of these 112 responses, all indicated that they were licensed chiropractors, graduates of accredited chiropractic colleges, and provided care for pregnant women with a breech presentation (Questions 1-4). All 112 respondents reported they were knowledgeable in the use of the Webster Technique and had performed the technique in the previous 6 months (Questions 5 and 6). Of the 112 cases of breech presentation, 92 were medically diagnosed, 12 were not medically diagnosed, and in 8 cases it was unknown if the diagnosis was made medically (Question 7). Furthermore, 104 respondents indicated that diagnosis of breech presentation was made by a certified nurse/midwife or other health care provider, while 3 were not diagnosed by such a professional, and in 5 cases it was unknown who made the diagnosis (Question 9). In 53 reported cases, fetal ultra-

Table 2. Analysis of responses of resolution status

Month performed	Number of responses	Percent of responses	Number resolved	Number unresolved
7	16	14.3	14	2
8	51	45.5	50	1
9	45	40.2	38	7
Total	112	100	102	10

sound confirmed the diagnosis of breech presentation, while 31 did not use ultrasound, and in 28 cases it was unknown if ultrasound was used in the diagnosis (Question 8). The discrepancy between the number of diagnoses made by a nurse/midwife and those diagnosed medically (Questions 7 and 9) led us to believe that in some cases lay midwives were consulted in lieu of certified nurse midwives or other health care professionals.

All 112 respondents indicated that they employed the Webster Technique (Question 10), of which 102 (92%) resulted in resolution of the breech presentation, while 10 (9%) remained unresolved (Question 12). The Webster Technique was performed on 16 patients in month 7 of pregnancy, on 51 patients during month 8, and on 45 patients during month 9. The Webster Technique resulted in resolution of the breech presentation in 14 of 16 responses when performed in month 7 of pregnancy, in 50 of 51 when performed in month 8, and in 38 of 45 when performed in month 9 of pregnancy (Table 2).

The surveyed doctors reported 98 cases of a subsequent vaginal unassisted birth, 12 reported cases of cesarean section delivery, 1 reported that birth was achieved with the additional use of forceps, and 1 reported that birth was achieved with the additional use of vacuum extraction (Question 13). Lastly, 34 reported that the fetus had achieved a head-down vertex position within 24 hours of performance of the Webster Technique, while 24 converted within 2 to 6 days, and 41 converted within 1 to 2 weeks. In 3 cases, the interval between use of the technique and conversion was unknown, and in 10 cases there was no conversion (Question 16).

DISCUSSION

The pelvic bowl consists of the two innominate bones, the sacrum and the coccyx, and connective tissues.^{66,67} The sacroiliac joint is described as both diarthrotic and amphiarthrotic⁶⁶⁻⁶⁸ and moves with rotation around a Y-axis.⁶⁹⁻⁷¹ During pregnancy and parturition, the ligaments of the pelvis relax in order to permit a spreading of the bones.⁷² Throughout this period the movement of the sacrum is multidirectional for 1 to 3 mm.⁷⁰

When the sacrum is in a neutral position relative to the right and left innominates, the pelvic bowl has a uniform, symmetrical opening (Fig 1). However, when the sacrum is rotated, its position in relationship to the innominates is

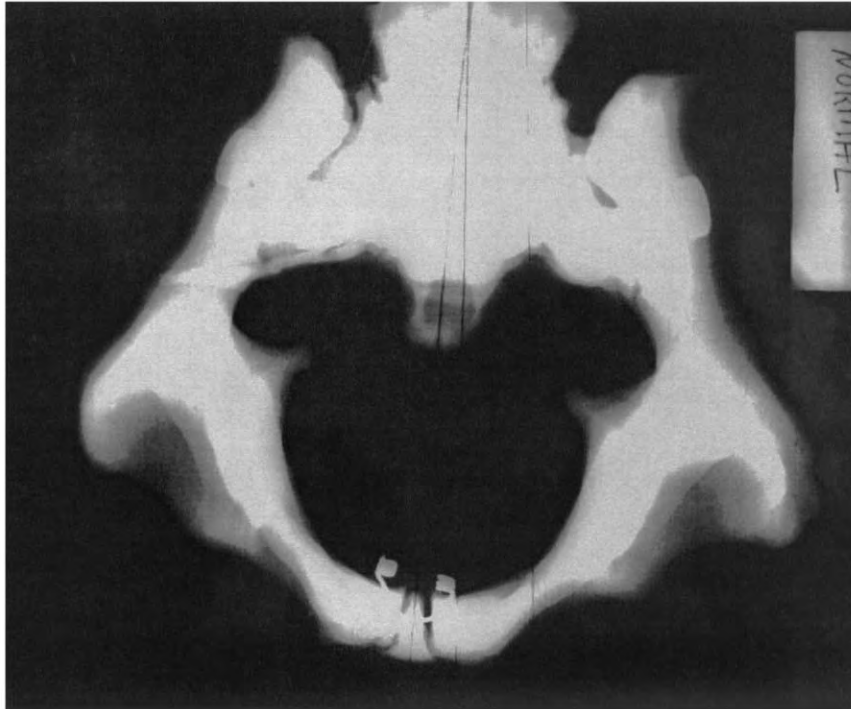


Fig 1. Normal unsubluxated female pelvic bowl. (Model) S to I view. Note symmetry and relative roundness of opening. (Radiograph provided courtesy of Cherie Goble, DC.)

altered and the normal perimetry of the pelvic bowl is distorted. Due to the unique diarthrotic and amphiarthrotic nature of the sacroiliac joint, as the sacrum rotates the adjacent ilium moves along one axis of motion either posteroinferiorly or anterosuperiorly.⁷³⁻⁷⁵ This movement is denoted by the change in the position of the posterosuperior iliac spine (PSIS).

In addition, the innominates can rotate around a second axis either externally or internally.⁷⁴⁻⁷⁶ Internal and external rotation of the ilia with respect to the sacrum is characterized by the changed position of the posterosuperior iliac spine either toward or away from the midline.

Figure 1 is a superior to inferior (S to I) radiographic view of a model demonstrating normal pelvic perimetry. Notice the symmetry and relative roundness of the pelvic bowl with respect to the midline. A model was used for the radiography because of the inherent risk associated with the use of radiography during pregnancy. Moreover, radiographs of nonpregnant patients were not used because it is believed that they would not exhibit the 1- to 3-mm multidirectional movement in the sacroiliac joints that occurs in pregnancy and parturition as described by Schafer.⁷⁰

Figure 2 is an S to I radiographic view of a model demonstrating pelvic perimetry when the ilia have rotated posteroinferiorly and anterosuperiorly, as described above. Note the lack of symmetry and distortion of the roundness of the pelvic bowl. Observe also the differences in space from the centerline through the pubic symphysis to each lateral aspect of the pelvic bowl. Figure 3 is an S to I

radiographic view of a model demonstrating pelvic perimetry when the ilia have rotated externally and internally, as previously described. Again, notice the lack of symmetry and distortion of the roundness of the opening. Contrast the difference in space from the centerline through the pubic symphysis to the right ilium as opposed to the left ilium.

There are 3 major ligaments suspending the uterus: the uterosacral, ovarian, and round ligaments. The location of the uterus is dynamically positioned by the stretch of these ligaments.

The uterosacral ligament arises from the posterior wall of the uterus and it inserts on the anterior face of the sacrum at the S2-S3 level. It exerts tension on the cervix in dorsal direction, preventing the body of the uterus from displacing anterior and inferiorly.⁶³ Uterosacral ligament laxity is almost always associated with uterine prolapse. When the sacrum rotates as described above, it may torque the uterus out of its proper juxtaposition via the change in tension of the uterosacral ligament, resulting in intrauterine constraint.

The low force sacral chiropractic adjustment performed in Step 1 of the Webster Technique is intended to relieve the tension exerted on the uterus due to sacral rotation. Moreover, it is intended to restore the proper perimetry and biomechanics of the pelvic bowl.

The round ligament arises from the fundus of the uterus and proceeds inferolaterally to the labia major, joining up with the inguinal ligament about halfway through its course.⁶³ The round ligament plays a major role in uterine support as it limits posterior movement of the uterus, thus, maintaining the normal anterior uterine position.

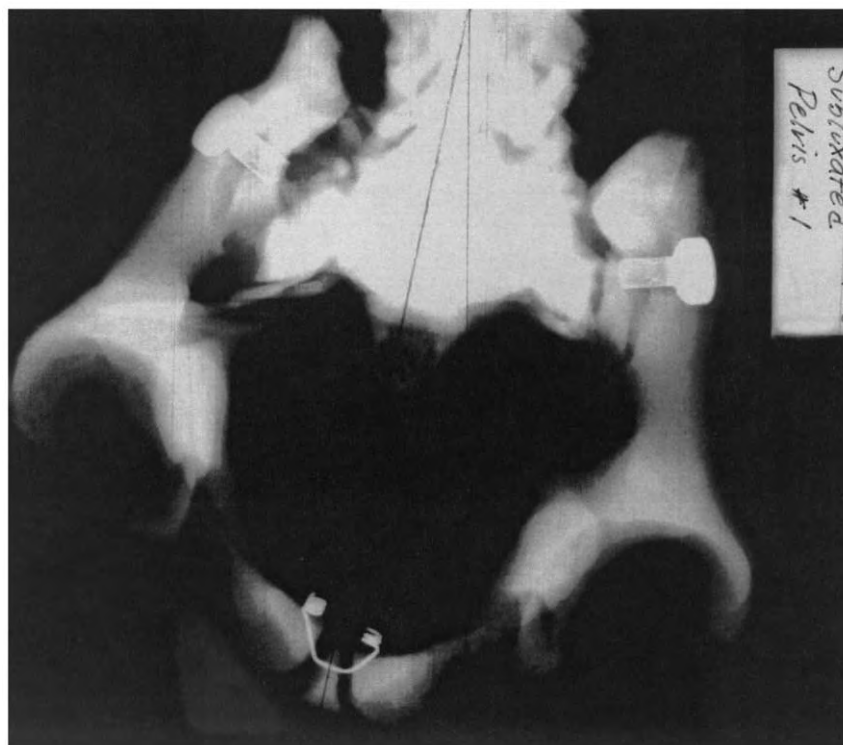


Fig 2. PI/anterosuperiorly subluxated female pelvic bowl. (Model) S to I view. Note lack of symmetry and distortion of roundness of opening. Also note difference in space from centerline through pubic symphysis. (Radiograph provided courtesy of Cherie Goble, DC.)

Myofascial trigger points are hyperirritable areas in a muscle or its fascia. The presence of trigger points (myofasciitis) indicates possible nutritional deficiencies to the area resulting from such things as postural and skeletal abnormalities, overloading, fatigue, and/or psychological stress.⁷⁷ Myofascial trigger points prevent the full lengthening of a muscle or other fascia and may be latent, eliciting pain only upon palpation.⁷⁸ The presence of a myofascial trigger point, as evidenced by a palpable nodule in the area of the round ligament is thought to further torque the uterus out of its proper juxtaposition. This also contributes to the forces of intrauterine constraint.

In the second step of the Webster Technique, the woman's lower abdomen is palpated for nodules, taut bands, edema, adhesions, or tenderness in the area of the round ligament as it passes inferomedially of the anterosuperior iliac spine. Upon location, light effleurage trigger point therapy is performed to release latent or acutely painful muscle nodules. The efficacy of trigger point therapy is well supported by the medical literature and appears in many physical medicine and rehabilitation texts.^{77,79-81} It should be noted that the Webster Technique does not employ the use of cryogenics, electrotherapy, ultrasound, or pharmaceuticals as the effect of these modalities on the developing fetus remains largely undetermined.

Conversely, ECV involves applying pressure to the mother's abdomen in order to turn the fetus in either a forward or a backward somersault to achieve a more vertex presenta-

tion. The goal of ECV is to increase the proportion of vertex presentation in fetuses that were formerly in breech position near term. With selective screening, ECV has been reported to be 38.4% to 65% effective.^{28,82-84} External cephalic version before term, at less than 37 weeks, has not been shown to be effective.^{83,85}

The additional use of tocolytic agents during ECV improves the success rate only slightly.⁸⁶⁻⁸⁸ However, most studies involving tocolysis are not randomized trials,⁴⁰ and the benefits of tocolysis remain unproven.^{89,90} Moreover, the safety of tocolytic agents remains controversial at best.⁹¹

Even with the use of tocolysis, ECV has been associated with abruptio placentae,^{84,92} fetal bradycardia,⁸⁸⁻⁹³ prenatal cranial hemorrhage,⁹⁴ umbilical cord prolapse,^{33,95} vaginal bleeding,⁸⁴ and even death.^{96,97} While the incidence of serious complication associated with ECV may be low, the potential is present. Currently, the American College of Obstetricians and Gynecologists recommends that ECV only be attempted in settings in which cesarean delivery services are readily available.⁹⁰

CONCLUSION

The doctors surveyed in this study reported a high rate of success with the Webster Technique (82%). Although the sample size was small, the results suggest that it may be beneficial to perform the Webster Technique in month 8 of pregnancy, when breech presentation is unlikely to spontaneously convert to cephalic presentation³¹ and when ECV is not effective.^{83,85}

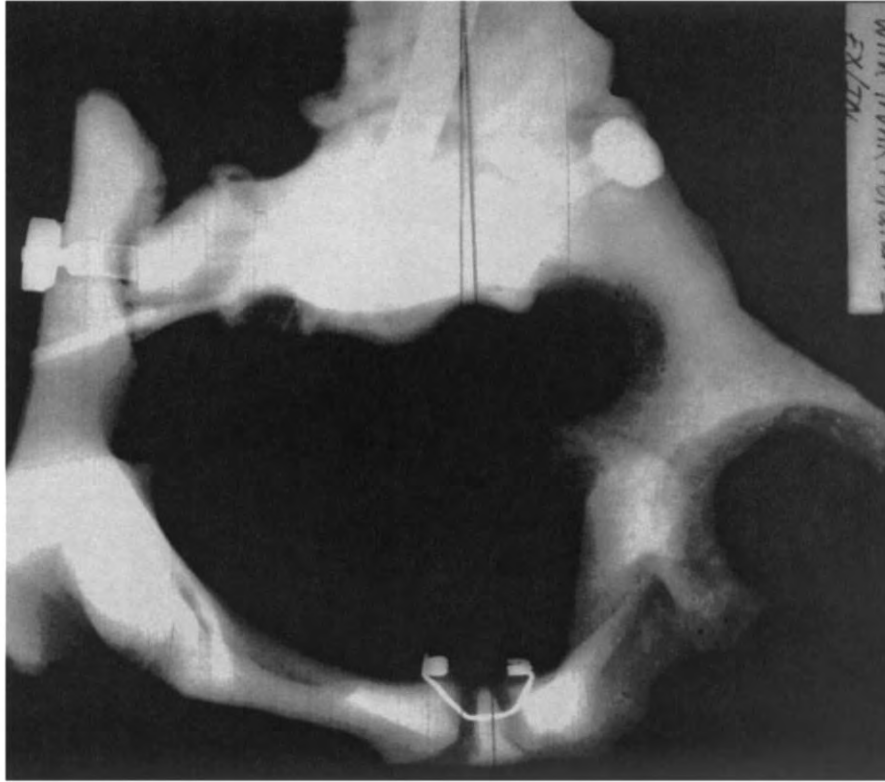


Fig 3. Ex/In sublaxated female pelvic bowl. (Model) S to I view. Note lack of symmetry, and distortion of roundness of the opening. Also note difference in space from centerline through pubic symphysis to right ilium. (Radiograph provided courtesy of Cherie Goble, DC.)

This study has some limitations. The response rate of 17.86% is low, and the 11% response rate is inherently subject to bias. In 59 reported cases, the breech presentation was not confirmed with ultrasound, which introduced the potential for medical misdiagnosis. Furthermore, there was no way to objectively confirm how long after employment of the Webster Technique that the resolution of breech presentation occurred (Question 16). Because this was a retrospective trial, the results are subject to recall bias and, consequently, respondents may have reported more socially desirable results, particularly with respect to selection of cases reported. I attempted to limit self-report bias and recall bias by asking respondents to report the results of all documented cases in which the Webster Technique was used in the previous 6 months, regardless of outcome. However, because I relied on retrospective self-report data, the sample size was small, and there were potential design weaknesses, these results should be tempered with caution. Nonetheless, when successful, the Webster Technique avoids the costs and/or risks of ECV, cesarean section, or vaginal trial of breech. In view of these findings, the Webster Technique deserves serious consideration in the management of expectant mothers exhibiting adverse fetal presentation.

I am not suggesting that chiropractic care is a substitute for prudent, proper obstetric care for the expectant mother. Moreover, not all chiropractors are trained in the perfor-

mance of the Webster Technique. Currently, the ICPA maintains a database of chiropractors certified in the proper performance of the technique.

The results of this study warrant a larger, more extensive observational study on this promising noninvasive technique. Furthermore, it is suggested that the Webster Technique be further investigated regarding its role in the overall health care of pregnant patients.

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Appendix

1. Are you a licensed chiropractor?
 No Yes
 2. If so, from what chiropractic college did you graduate? _____
 3. Do you provide chiropractic care for pregnant women?
 No Yes
 4. Do you provide chiropractic care for pregnant women who are of breech presentation?
 No Yes
 5. Have you learned the Webster Technique, formerly called the Webster In-Utero Constraint technique?
 No Yes
 6. Do you use, or have you used the Webster Technique to care for women of Breech presentation in the last six months?
 No Yes
 7. Was the patient medically diagnosed as having a breech presentation?
 No Yes Unknown
 8. Was fetal ultrasound (ultrasonography) used in the diagnosis
 No Yes Unknown
 9. Did a nurse/midwife or other health care professional diagnose the breech presentation?
 No Yes Unknown
 10. Did you employ the Webster Technique in this case?
 No Yes
 11. If so, at what month of gestation was the Webster Technique employed?
 6th month 7th month 8th month 9th month
 12. Did the breech presentation resolve without further intervention?
 No Yes
 13. What was the birth method employed?
 Vaginal- unassisted C-Section Forceps Vacuum extractor
 14. Were there any additional conditions, which prevented resolution of the breech presentation?
 No Yes
 15. If you answered Yes to question # 14, please explain:

 16. If you answered yes to question #12, how long after the Webster Technique was initially employed did resolution occur?
 1 Day (0 to 24 hrs) 2 to 6 days 1 to 2 Weeks Unknown
-

CASE SERIES

Female Infertility, Subluxation & Chiropractic Care: A Case Series and Selective Review of the Literature

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Abstract

Objective: To report on three infertile females with vertebral subluxation that responded to the introduction of chiropractic care and review the literature on the topic.

Clinical Features: Three females presenting with a chief complaint of infertility and vertebral subluxation.

Interventions and Outcomes: Chiropractic care included diversified spinal adjusting, dietary modification and nutritional supplements. All three women conceived following the introduction of chiropractic management.

Conclusion: We described three patients with infertility who were able to conceive following chiropractic care. Continued research in this area is strongly encouraged.

Key Words: *Infertility, vertebral subluxation, chiropractic, diversified technique*

Introduction

Observational studies continue to demonstrate that patients with morbidities mainly of musculoskeletal origin (i.e., neck pain and low back pain) present themselves commonly to the chiropractor.¹⁻³ However, since its inception, chiropractic was founded on a vitalistic and holistic philosophy to patient care.⁴ As such, the care of the chiropractic patient was not dependent on the patient's presenting symptoms or medical diagnosis but rather the detection and elimination of spinal (and extraspinal) subluxation.⁵ In chiropractic's early years, patients with an array of disorders including both

musculoskeletal and non-musculoskeletal origins were cared for.⁶ In modern times, studies by Hawk et.al.⁷ and LeBouef-Yde et.al.⁸⁻⁹ document that chiropractic care of adult patients present with both types of disorders but primarily of the musculoskeletal type.

Of various non-musculoskeletal conditions amenable to chiropractic, anecdotes and testimonials abound on the positive effects of chiropractic care in patients with infertility. Infertility is simply defined as the inability to conceive after at least 1 year of unprotected intercourse.¹⁰ Data from the Centers for Disease Control and Prevention indicate that there were 7.3 million infertile women in the U.S. in 2002¹¹ with 1.2

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million women having had an infertility-related medical appointment.¹² These data also indicate that from 30 years of age and on, rates of infertility increases with age. There are many reasons for both male and female infertility, which we will discuss more fully in this manuscript, but some of these factors include ovulatory, anatomic, immunologic and hormonal factors for the female and sperm count for the male.

The ability to conceive is an important aspect of the relationship between couples. There are societal and cultural/religious expectations for men and women to have a child, which places great psychological/emotional, physical and financial burdens on them in this pursuit. In keeping with evidence-based practice, we present in a case series presentation, the care of women with a history of unsuccessful attempts to conceive despite, in two of the cases, medical assistance.

Case Series

Case 1

A 33-yr-old female presented for chiropractic consultation and possible care following a referral from her acupuncturist to specifically address a complaint of infertility with one of the co-authors, Gregg Stern (GS). The patient and her husband attempted to conceive for the last 4 years without success despite assisted reproductive technology. According to the patient, she was prescribed infertility drugs that eventually resulted in 2 ectopic pregnancies. Each ectopic pregnancy was followed by laproscopic surgery. Furthermore, the patient indicated undergoing 2 failed in-vitro fertilization (IVF) procedures and at the time of chiropractic consultation, the patient was receiving acupuncture care to enhance the likelihood of conception.

At the initial consultation, the patient had complaints of restricted cervical spine range of motion, temporomandibular joint (TMJ) pain with abnormal jaw motion and clicking sounds, low back pain generalized to the right side at the L3-L5 paraspinal muscles and at the buttocks at both piriformis muscles with the right side worse than the left. Additionally, the patient described pain at the right inguinal region, which caused the patient to feel “off balance.” Her low back and inguinal pain complaints may be described as “periodic” occurring 3-4 times per week with an onset after her medical infertility care began. The patient described her pain as “a shooting pain” from the inguinal region into the thigh and “throbbing pain” in the low back. She stated that the pain started-out as periodic, occurring 3-4 times per week, but, by the time of the initial consultation, it had become more constant and was worsened by menstruation and stress. The patient also indicated that this pain started after her medical infertility care began. The patient rated her pain complaints as a 2-2 ½ on the verbal pain scale of 1-10 (i.e., 0 = minimal pain while 10 = maximum pain). Notable past medical history included the 2 ectopic pregnancies, painful ovulation, digestive problems including “gassiness” and diarrhea, a cholecystectomy and high levels of emotional stress. The patient admitted to having a stressful career with poor stress management habits. The patient was experiencing menstrual cycle related problems of frequent urination which has affected her sleep by causing her to awaken “often” in the

middle of the night. This further exacerbated her high stress levels.

Lower extremity orthopedic testing with Hibb’s Test was positive (bilaterally with the right side worse than the left). Neurological examination for the lower extremities was unremarkable. Thoracolumbar active range of motion (ROM) was full and pain-free based on patient feedback and direct observation. Digital palpation of the lower back demonstrated bilateral piriformis muscle hypertonicity and tenderness to palpation with greater symptomatology on the right. Full spine static and motion palpation findings indicated vertebral subluxations at C₀₋₁ left (+θY), C_{3,4} left (+θY), C_{6,7} left (+θY), T₂ left (+θY), L_{3,5} right (-θY) and left sacroiliac joint subluxation as posterior inferior (-θX). Furthermore, the use of the Subluxation Station Millenium (Mahwah, New Jersey; 1988) demonstrated positive findings on the right side with respect to thermographic analysis: C_{2,3} vertebral level as severe, C6-T3 vertebral level as mild-moderate, T9-L1 vertebral level as moderate-severe and L2-3 vertebral level as mild. The sEMG instrumentation further demonstrated a reduced tone at the L1 vertebral level, bilaterally and notable left sided asymmetry at the C7-T1 vertebral level.¹³

Based on the history and examination findings, a radiological examination of the cervical and lumbosacral spine (anteroposterior (AP) and lateral (Lat) views) was performed. The radiologist’s interpretation of the two view lumbar study revealed “pelvic unleveling low on the right by several millimeters with the lumbar spine well aligned above the L4 disc space. The sacroiliac joints appear normal. Noted in the right upper quadrant are several metallic densities most likely from the previous cholecystectomy. The visualized osseous components are well maintained and the soft tissue shadows all appear correct. The lateral projection reveals a mild invagination along the inferior L5 end plate with the remainder of the disc space heights and osseous vertebrae appearing normal. Radiological interpretation of the two view cervical study revealed a slightly reduced cervical lordosis with the disc spaces appearing well maintained.

There is perhaps minimal disc space narrowing at the C5/C6 level. The AP projection reveals the spine to be well aligned although there is rotation noted (LP) in the mid cervical region. The remainder of the osseous and soft tissue structures appeared otherwise unremarkable.” The radiological impressions were: 1) Pelvic unleveling with low on the right including L5; 2) Previous cholecystectomy; 3) Mild endplate invagination along the inferior endplate; 4) Mild reduction in the usual cervical lordosis and very early narrowing of the C5 –C6 disc space; and 5) No other evidence of recent fracture, dislocation or neoplastic changes.

Diversified full spine adjustments that are commonly described as high velocity low amplitude (HVLA) type thrusts to sites of vertebral subluxation were applied.¹⁴ The patient was also counseled to reduce or eliminate from her diet refined carbohydrates and sugars, reduce/eliminate intake of “fast foods”, increase intake of fresh vegetables and fruits with water hydration at a minimum of half her body weight in ounces of water per day. She was also provided a multivitamin (Bio Multi-Plus by Biotics) and omega-3 fatty acids (OrthoOmega by Ortho Molecular) to be taken daily.

Lifestyle modification counseling was provided to the patient on the use of stress management techniques, goal setting, affirmations, meditation, massage, and exercise. Additionally, it was recommended that the patient consider altering her work schedule and making overall paradigm shifts in her cognitive perspective in order to decrease her level of stress. The patient was resistant to incorporating these and was non-compliant. Therefore, the patient's care was limited to chiropractic adjustments, nutritional supplementation and dietary changes.

Subjective reports following chiropractic care include increased cervical spine ROM as measured by her ability to turn her head when driving, which she was unable to perform before initiating care, improvement in her TMJ pain with the patient indicating that her jaw felt "more balanced" since she started care. By the 9th visit, after 4 weeks of chiropractic care, the patient reported that she felt that her pelvis was more level and noticed that she walked straighter no longer veering off to the side. Six and one-half weeks after the start of care, the patient started a pre-planned course of IVF with fertilization medications. The harvesting of the patient's eggs for IVF took place after her 16th chiropractic treatment. The outcome of her IVF was a full term pregnancy and the delivery of a happy healthy baby. The patient attributed the success of the IVF as partly due to the chiropractic care stating in a letter: *"We got really good news that our tests were positive... I honestly believe that my appointments with you have had a significant positive impact on this round of IVF. Everything at the transfer went so smoothly this time and it never has before. I think the fact that most of the tension in that area has been treated was a large contributing factor."* The patient continued under chiropractic care throughout the pregnancy and post-partum.

Case 2

A 33-yr-old female presented to the clinic of one of the co-authors (GS) for chiropractic consultation and possible care with a chief complaint of infertility. The patient was referred to the clinic by a friend who had a history of infertility and was able to conceive while under the care of one of the attending clinician (GS).

At the initial consultation, the patient stated that she had been attempting to conceive for 2 years without success. In the past, she attended the services/care of a fertility center, received 2 rounds of the fertility drug Clomid but without success. She was at the time of chiropractic consultation considering artificial insemination. The fertility center found no medical problems with the patient or her husband to attribute the couple's inability to conceive. The patient stated at the time of chiropractic consultation that she was motivated "to try" chiropractic in part by desperation and, "Now I want to work on my mind-body connection." Additional medical history included a history of heavy menstrual flow and issues with excessive hair growth (i.e., hirsutism).

Upon physical examination, the patient was noticeably overweight. A chiropractic examination incorporating inspection, static and dynamic spinal palpation incorporating global and intersegmental ROM examination revealed the following subluxations: C₁ body right (-θY), C₇ body right

(-θY), T₁₋₄ body right (-θY), T₇ body left (+θY), T₉ body left (+θY), and L₁₋₃ body left (+θY).

Spinal thermography scanning using the Millenium Subluxation Station (Mahwah, New Jersey; 1988) demonstrated the following: C₃₋₅ right-sided mild-moderate thermal response and T_{11-L₁} left-sided mild-moderate thermal response, L₃ left-sided mild thermal response and L₄ right-sided mild thermal response. Paraspinal sEMG analysis demonstrated the following: T_{12-L₁} reduced tone with mild asymmetries.

Based on the history and physical examination findings, a radiographic examination consisting of cervical and lumbar spine anteroposterior and lateral views revealed the following:

"Flat cervical contour below C2 with anterior carriage of the head and neck is seen. Right convexity apex at C2/C3 is seen. Mild left lower thoracic convexity apex at T10/T11 is present. Spina Bifida Occulta is noted at C1. Remaining osseous integrity appears intact. Subchondral sclerotic degenerative change is seen involving the lower cervical, C7 through T2 and lower lumbar facet joints. Slight lipping is seen involving the anterosuperior L4 and L5 segments. Remaining osseous and articular relationships appear maintained. Nuchal bones are incidentally noted in the lower cervical posterior soft tissues." The radiological impression as per the radiology report was: 1. Mild Spondylosis deformans: L₃₋₅; 2) Facet arthrosis: lower cervical spine, from C₇-T₂ and lower lumbar spine; 3) Spina bifida occulta is noted at C₁ as normal variation; 4) Postural comments and biomechanical alterations as noted and described above; and 5) No other gross evidence of bone or joint pathology.

The initial clinical impression with this patient by the attending clinician was, in addition to the presence of spinal subluxation, the significant role of stress in her health and possibly in her infertility. Chiropractic care recommendations consisted of chiropractic adjustments, exercise, nutritional supplementation (i.e., multi-vitamin and omega 3 fish oils 2160 mg EPA/DHA per day), increase water intake and initiation of stress management techniques. Chiropractic HVLA adjustments addressed sites of vertebral subluxations. The patient's response to care was measured using thermography, sEMG and the presence of subluxation as well as her subjective reports. The patient did not implement the stress management techniques taught to her but did comply with the dietary recommendations.

This patient required 5 weeks after the initial report of findings and initial treatment to decide to commit to chiropractic care. On her 11th visit, exactly 2 months after her 1st adjustment and following 4 weeks of continuous chiropractic care, the patient reported she had conceived. Upon re-examination on the 12th visit, the following were notable. The thermography scans demonstrated the following: T₉ right side and T_{11-L₂} left side mild-severe thermal response. Paraspinal sEMG demonstrated reduced tone at the T_{10-L₃} vertebral levels with moderate increase in tonicity on the left at C₃. The patient was capable of carrying her pregnancy to full term with the delivery of a healthy baby. The patient attributed much of the success of "getting pregnant" with the chiropractic care she received. The patient therefore

continued under chiropractic care throughout her pregnancy.

Case 3

A 35-yr-old white female presented to one of us (GS) based on a referral from a friend for the chief complaint of irregular menstrual cycles, the inability to conceive, neck stiffness and right wrist pain. At the initial consultation, the patient reported an inability to conceive over the last 7 months and had concerns about her fertility based on a history of irregular menstrual cycles.

Upon physical examination, this patient was an otherwise healthy female. Cervical spine active ROM demonstrated global restriction with flexion limited to 15° due to stiffness and “tightness” in the cervical spine. Orthopedic examination for the cervical spine was unremarkable.

Cervical spine static and dynamic digital palpation revealed subluxations at: C₂₋₇ body left (+θY), T₃₋₄ body right (-θY), T₉ body right (-θY), and subluxated left lower sacroiliac joint. Spinal thermography scanning using the Millenium Subluxation Station (Mahwah, New Jersey; 1988) demonstrated mild thermal response on the left side of C₁, on the right side of T₅ and T₇. Paraspinal sEMG demonstrated all measurements within normal limits except for increased tonal response at C₁, T₁₂ and L₃ on the right side.

Based on the history and physical examination procedures, cervical and lumbosacral anteroposterior and lateral radiological views were obtained for spinographic examination. The radiology report provided the following interpretations: “Flat contour from C2 through C4 with an overall flattening of the lordosis below this level with anterior shift in cervical weight bearing is seen. There is a left thoracolumbar convexity apex at T12/L1 with +1 rotational component. Overall flattening of the lumbar lordosis with a mild posterior shift in Ferguson's L3 gravitational line is seen. Left lateral list of the upper thoracic and cervical spine is seen. Small limbus bone is seen involving the anterosuperior L5 segment. Small Schmorl's nodes are seen involving the superior L1 and L4 and inferior L4 segment. Remaining osseous integrity appears intact. There is minuscule spur formation involving the anteroinferior C4 and superior C5 vertebral body and the anteroinferior L3 and superior L5 segment at its discovertebral junction. Subchondral sclerotic change is seen involving the cervicothoracic and lumbosacral facet joints. Remaining osseous and articular relationships appear maintained. Cervical prevertebral soft tissue spaces are within normal limits.” The radiological impressions were: 1) Mild spondylosis: C4/5 and from L3 through L5; 2) Mild spondylosis: c4/c5 and from L3 through L5; 3) Facet arthrosis: C7/T1 and L5/S1; 4) Old Schmorl's nodes: L1 and L4; 5) Limbus bone: anterosuperior L5 segment; 6) Postural comments and biomechanical alterations noted and described above. clinical correlation is recommended; and 7) No other gross evidence of bone or joint pathology.

The patient consented to Diversified full spine adjusting (HVLA-type), nutritional counseling and supplementation (multi-vitamin and omega 3 fish oils 2160 mg EPA/DHA per day) and counseling on stress management. The patient's progress and response to chiropractic care was monitored

using thermography, SEMG, chiropractic examination and subjective reports. Similarly to patient #2, the stress management techniques were presented to the patient throughout her care but she never implemented them in her daily life.

At the 5th visit, 12 days following the initiation of care, the patient reported that she was pregnant. On the following visit (6th visit), the patient reported a confirmed pregnancy based on a home pregnancy test kit. Two months later, the patient suffered an idiopathic miscarriage. One and ½ weeks after her miscarriage, the patient was re-examined. A thermography scan with the Millenium Subluxation Station (Mahwah, New Jersey; 1988) demonstrated a C1 right moderate & L3 right mild thermal response. Paraspinal sEMG demonstrated all measurements within normal limits with only mild asymmetry at C1 and T6. The patient elected to continue chiropractic care with the intention of conceiving again.

Approximately 12 weeks after her miscarriage and with continued chiropractic care, the patient reported conceiving. The outcome was a full term pregnancy and delivery of a healthy baby. The patient received chiropractic care throughout her pregnancy.

Discussion

It was Sir James Young Simpson in the 19th century who first addressed the issue of impaired fertility when he commented upon 495 British peers, with marriages “which had lasted five years or more, and in which the husbands were under 75 years of age, [. . .] one marriage in 6.5 was unproductive.”¹⁵⁻¹⁶

Infertility Defined

Although described in the case report that the patients presented to the treating clinician with complaints of “infertility”, the true definition of the complaints described may be more correctly termed sub-fertility. Sub-fertility refers to those situations in which there is reduced fertility despite wanting to conceive for a prolonged period of time. Infertility on the other hand refers to sterility with the possibility of attaining sporadically spontaneous pregnancies. Despite the implications of the chiropractic cases presented with respect to possibly affecting the natural history of subfertility or true infertility, the definitions as defined above remain for our discussion.

Epidemiology of Infertility

Hull and colleagues, in an assessment of 708 couples in a health district on England, determined that approximately 1 in 6 couples require the assistance of a fertility specialist to conceive their first child (primary subfertility) or conceive the number of children they wanted (secondary subfertility). These findings were independently confirmed by two studies in the Netherlands. Beurskens et. al.¹⁷ found an incidence of 10.4% while Snick and colleagues¹⁸ determined that for women between the ages of 15-45 years, approximately 9.9% require a specialist for their fertility needs sometime in their life.

Diagnosis of Infertility

Inherent in all diagnostic criteria, the diagnosis of unexplained infertility requires a thorough physical examination of both partners. Based on the European Society for Human Reproduction and Human Embryology (ESHRE), the criteria are complex and many and beyond the scope of this manuscript. These include the laboratory examination of the normal ovulation and the luteal phase, evaluation of tubal patency and semen (see Table 1).¹⁹ The diagnosis of infertility is one of exclusion and since the basic recommended evaluation protocols are dependent on the individual practitioner and no consensus exists on the most appropriate tests, the criteria should also include findings from examination procedures such as endometrial biopsy, a post-coital test and serum prolactin estimations.²⁰⁻²² The possible pathophysiology of unexplained infertility are many and complex. In addition to hormonal factors from altered pituitary or follicular dysfunction, unexplained infertility may be attributed to gamete dysfunction, altered endometrial function, altered uterine or spiral artery blood flow, and immunological factors (see Table 2).²³

Review of Medical Approaches to Infertility

Although outside the scope of this writing, it would seem prudent to comment superficially on the medical approach to the patient with unexplained infertility. The treatment options include expectant management; clomiphene citrate (CC), or gonadotropins used for ovulation induction; intrauterine insemination (IUI) alone or combined with ovulation induction; and in-vitro fertilization and its modifications.²³ The success rates vary dependent on the type of treatment used, the age of the woman and the duration of the infertility.

Implications of Chiropractic Care

As a basis of commentary on the implications of this case series in patients with infertility/subfertility, we performed a selective review of the literature using Pubmed (1966-2007) and MANTIS (1965-2007). Pubmed was searched with the subject headings “chiropractic AND infertility” and found no articles cited. MANTIS (1965-2007) was searched with the subject heading “infertility”, specific to the English language and the chiropractic discipline. The results of our review are provided in Table 3.²⁴⁻³⁴ This builds upon the review/commentary performed by Behrendt.³⁵

In the case series presented, the approach to patient care was the detection and removal of spinal subluxation.⁵ Additionally, nutritional intervention and counseling on stress management was provided to the patients involving goal setting, affirmations, meditation, massage, exercise, alteration of work schedule and overall paradigm shifts in lifestyle modification. The contention of this case series is that, through this approach to patient care, the patients benefited with improvements of their presenting symptoms as well as possibly improving upon the patients’ condition of infertility/subfertility. The same contention may also be said for the case reports/case series previously reported.

On first impression, due to the close temporal association with the care provided and the patients’ ability to conceive, one

may infer a cause and effect situation. However, to fully address this issue of cause and effect, we turn to Hill’s criteria of causation³⁶ wherein temporal association is only one of many variables that need to be address. Not all of Hill’s criteria will be addressed in the context of this case series due to the need for higher-level research designs with the appropriate statistical tests. However, for our discussion, we will address the issue of temporal association, consistency, biological plausibility, specificity, coherence and the consideration of alternative explanations/confounders.

Barring the lack of higher level designed studies (i.e., studies performed with controls and randomization to make inferences on strength of association), the case reports/series thus far published would seem to be consistent with temporal association that women with fertility problems may benefit from chiropractic care. However, this is made with the full understanding that the type of care described is under the auspices of “chiropractic care.” Although this case series presented data from the clinical experience of one of the co-authors (GS), previous studies provide for a heterogeneity of care approaches. One need only examine the brand-named techniques utilized in previous cases to comprehend the complexity that must be considered. This heterogeneity in clinical approach provides, on the one hand, support for the notion that the detection and removal of vertebral subluxation (regardless of the type of technique employed) may be an alternative approach to usual medical care.

However, many confounders exist in such situations and challenge the chiropractic profession to search for the “active ingredient” that is the causative variable for a salutary effect. Herein lies the challenge in reporting cases of this nature. The third patient in our case series became pregnant after 12 days of chiropractic care despite 7 months of unsuccessful attempts to conceive. The second patient became pregnant approximately 3 months after initiating chiropractic care despite 2 years of unsuccessful medical reproductive assistance. The first patient was able to conceive after 4 months of initiating chiropractic care and had a 4-year history of unsuccessful medical approaches (i.e., reproductive assistance and IVF). The timelines are consistent with the findings of previous reports with even longer periods of infertility (i.e., 9 years of unsuccessful pregnancy prior to initiating chiropractic care) having been reported prior to chiropractic care. This temporal association should also be compared with what we know of the natural history of infertility/sub-fertility.

According to the medical literature, spontaneous pregnancy rates in couples with unexplained infertility have been reported as high³⁷ and life tables indicate that women with unexplained infertility will eventually conceive without medical treatment³⁸. About 14% of all couples with unexplained infertility will conceive without treatment within 1 year and 35% within 2 years³⁹. The cumulative 3-year pregnancy rate without treatment is 30–80% and the 5-year cumulative pregnancy rate without treatment is 80%.⁴⁰⁻⁴¹ When the female is >35 years old, the pregnancy rates are much lower.⁴² The range of spontaneous pregnancy rate have been reported as low as 1–2% per cycle among couples with unexplained infertility⁴³ but may be as high as 4.1%.⁴⁴ Higher-level research designs are required to address the confounder

of natural history.

What of biological plausibility? Various explanatory mechanisms have been proposed regarding the effects of the chiropractic intervention in patients with infertility. To this end, we comment upon the paper by Anderson-Peacock.²⁵ Similar to Anderson-Peacock and others, we espouse to the pathophysiology that infertility and sub-fertility are the consequences of traumas, thoughts and toxins – the three Ts of chiropractic. Trauma resulting in vertebral subluxations and its role in the pathophysiology of infertility/sub-fertility may seem plausible but “thoughts” (i.e., stress) and “toxins” (i.e. poor diet) may be considered too implausible. However, consider the studies examining the long-term impact of war and post-war exposure. In a case control study, Kobeissi et.al.⁴⁵ demonstrated an association between the Lebanese civil war and male infertility. According to these authors, reproductive risk factors - including toxins, injuries, and stress - was believed to be the main factors leading to their findings.

What of the specific effects of the chiropractic adjustment? Only two patients (see case 1) had presenting complaints associated with the low back - low back and inguinal pain and a patient with irregular menstrual flow (see case 3). However, based on the radiographic findings, all patients had positive spinographic findings in the lumbosacral spine as well as in the cervical spine. These findings were concomitant with objective (i.e., thermographic and sEMG) and subjective (i.e., presenting complaints) findings leading to a diagnosis of spinal subluxations. There are reports in the scientific literature demonstrating an association between chronic pelvic pain and infertility⁴⁶⁻⁴⁷. Furthermore, there provides for the possibility that pelvic adhesions (with or without the presence of pelvic pain) may be associated with infertility.⁴⁸⁻⁴⁹

Given the above findings, we would like to expound and postulate that the presence of lumbopelvic subluxation (i.e., lumbopelvic dysfunction) may lead to intra-abdominal adhesions as well as adhesion formation between intra-abdominal structures and the surrounding osseous structures and between the articulations of the pelvic bowl itself. Support of this theory comes from the work of Burns who found an association between infertility and vertebral lesion.⁵⁰ What of specificity? Based on the case series provided and the type of care employed, it is difficult to establish a one-to-one cause and effect phenomenon. The care of the patients presented involved a multiple treatment approach combining chiropractic adjustments augmented with nutritional/dietary intervention and stress counseling. This approach would seem prudent given the multiple causality of infertility or subfertility within the framework of a holistic/vitalistic approach to patient care.

With respect to coherence; as set forth above, the detection and elimination of vertebral subluxation seems compatible with existing theory and knowledge within chiropractic and in the scientific field. What of alternative explanations to the results described in this case series? Herein lies the limitation of the case series. We addressed the issue of natural history indicating a favorable pregnancy. Due to their research design (i.e., lack of controls), case series lack generalizability. Thus the findings of the case series presented and the case reports/series reviewed must be viewed with caution,

particularly in terms of the cause and effect discussion above. Inherent in their research designs, the benefits of care attributed in the case series presented may be attributed in addition to a favorable natural history to the following: (a) regression to the mean and (b) the result of placebo. Furthermore, both the healthcare provider and the patient may make incorrect inferences from the chiropractic treatment due to (c) the demand characteristics of the therapeutic encounter and (d) subjective validation. The use of appropriate controls, randomization and manipulation of the independent variable (i.e., the care employed) must be applied in higher-level designed studies to fully determine the role and salutatory effects of chiropractic care in similar patients. Despite their lack of generalizability and bias, case reports/case series do provide an important aspect of evidence-based practice.⁵¹

Conclusion

We described in a case series presentation patients with “fertility problems” who, following chiropractic care, were able to conceive. We support and encourage continued research incorporating higher level designs in this field for the benefit of patients.

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Table 1. Diagnostic Criteria for Unexplained Infertility

Testing	Description
Ovulation and the Luteal Phase,	Ovulation is usually indicated by: <ul style="list-style-type: none">• existence of a regular menstrual cycle (26–32 days, with the cycle length varying no more than 4 days from cycle to cycle),• an ovulatory progesterone rise at midcycle and a luteal phase of 5–12 days¹².• Different cut-off values indicative of ovulation are progesterone levels of 416 nmol/l¹⁸, 418 nmol/l at two assays or 425 nmol/l in the midluteal phase¹³.
Tubal Patency	Tubal patency can be determined by ultrasound-assisted hysterosalpingosonography (HSSG), hysterosalpingography (HSG) or, if necessary, laparoscopy and chromopertubation
Semen	Semen analysis is evaluated according to the criteria of the World Health Organization ¹⁵ . Based on the criteria for normality of the semen analysis, a sperm concentration of 520 million/ml, motility of 55% and normal morphology of 51% are required.

Table 2. Theories on the possible causes of unexplained infertility

Possible Cause of Unexplained Infertility	Description and/or Examples
altered pituitary or follicular dysfunction,	<ul style="list-style-type: none"> • elevated levels of follicle stimulating hormone (FSH) in the early follicular phase and luteinizing hormone (LH) abnormalities • elevated estradiol levels in the follicular phase and elevated estradiol/progesterone ratio suggesting altered folliculogenesis • absent midcycle elevation of the hormone prolactin
Luteal Phase,	<ul style="list-style-type: none"> • Impaired (shorter) luteal phase and decreased peak serum progesterone level • An abnormal follicular LH pulse frequency or decreased midfollicular FSH level have been postulated to induce an impaired luteal phase functional imbalance in the hypothalamus • decreased inhibin-B concentrations are associated with increased FSH concentrations, and both may reflect a diminished ovarian reserve
gamete dysfunction,	<ul style="list-style-type: none"> • Altered folliculogenesis, impaired oocyte maturation, reduced oocyte quality and defects in gamete interaction • sperm dysfunction would impair the ability of spermatozoa to penetrate the cervical mucus, the zona pellucida and the ooplasmic membrane • insufficient acrosome reaction • failure in the natural ovum pick-up mechanism by the Fallopian tube
altered endometrial function,	<ul style="list-style-type: none"> • Low endometrial progesterone receptor concentrations, inadequate estrogenic induction of progesterone receptors, decreased inhibin levels²² and suboptimal expression of integrins or pinopode formation in the endometrium • Aberrant patterns of integrin expression, e.g. absence of the $\beta 3$ subunit in the window of implantation despite normal histological maturation of the endometrium
altered uterine or spiral artery blood flow, and	<ul style="list-style-type: none"> • Increased uterine artery impedance, absent end-diastolic flow or an abnormal flow in spiral arteries in the midluteal phase have been suggested to impair the implantation process • Poor endometrial blood flow has in some studies predicted poor implantation rate
immunological factors	<ul style="list-style-type: none"> • Antiovarian antibodies are frequent among women with unexplained infertility as are elevated anti-spermatozoal^{18,38} and anti-cardiolipin antibodies • inadequate maternal immunosuppression, which might cause embryo rejection in women • endometriosis • occupational exposure to noise, chemicals, radiation, mercury and cadmium may be linked to unexplained infertility • Women's anxiety and stress levels may also lower the chances of conception

Table 3. Review of the literature on chiropractic care in patients with infertility.

Author/Ref	Age	How Long Infertile	Technique	Prev. Care	Time between start of chiropractic and Pregnancy
Adams ²⁴	22	Primary Amenorrhea	AK/Full Spine	None	w/in 4 months start unassisted cycles, 20 months pregnant
Anderson-Peacock ²⁵	36	9 yrs	TRT (torque Release)	Inserol	within 3 months
Anderson-Peacock ²⁵	35	2 yrs	TRT	None	within 2 months
Bedell ²⁶	27	2 miscarriages in 6 mo.	TRT	Clomid & Synth Progesterone	App. 3 months (and carried to term)
Blum ²⁷	32	7 yrs	SOT & CMRT	None	After body recover from 12 yrs of unresolved colitis (take 1yr., pregnant 1 month after)
Kaminski ²⁸	31	>1yr	Diversified (3 mos) & TRT (6 mos)	Clomid	diagnosed with “lazy” reproductive system. 3 months start regular cycles, app. 6 mo. pregnant
Lyons ²⁹	27	5 yrs.	Gonstead	Fertility meds	App. 1 month
Nadler ³⁰	42	perimenopause	TRT	None	In 5 weeks, cycle shift from 24-26 days with 8-10 Days flow to 29-30 days, w/in months - pregnant
Ressel ³¹	65	Amenorrhea since 18	Thompson	None	cycles restart in app. 4 weeks
Rosen ³²	34	always	SOT	Meds & IVF	approximately 4-5 weeks
Senzon ³³	34	IVF	NSA (Network)	IVF, FSH & Gonadotropin Releasing Hormone	3 months with IVF
Shelley ³⁴	32	2 yrs - IVF	DNFT	AI (art insemin), clomid & IVF	3 ½ months with IVF

PROCEEDINGS

The efficacy of the Webster technique with twin breech pregnancies: Two case reports

Katherine A. Kadin, DC, DACCP

Introduction:

The objective of this case series is to investigate the efficacy of chiropractic care, more specifically, the Webster Technique, for late-term twin breech pregnancies. A breech pregnancy or breeched position is “defined as a fetus in a longitudinal lie with the buttocks or feet closest to the cervix. This occurs in 3-4% of all deliveries. The percentage of breech deliveries decreases with advancing gestational age from 22% of births prior to 28 weeks' gestation to 7% of births at 32 weeks' gestation to 1-3% of births at term.”¹ There are a variety of predisposing factors that are present in women whose fetuses are in a breeched presentation. They include: prematurity, uterine malformations or fibroids, polyhydramnios, placenta previa, fetal abnormalities (e.g., CNS malformations, neck masses, aneuploidy), and multiple gestations. Fetal abnormalities are observed in 17% of pre-term breech deliveries and in 9% of term breech deliveries.¹ Regardless of how the fetus is ultimately delivered (i.e. vaginally or via cesarean) there exists a two- to fourfold increase in perinatal mortality. Death is associated with “malformations, prematurity, and intrauterine fetal demise.”¹

Prior to 1959, vaginal breech deliveries were the norm, after which it was determined that it would be safer to deliver the fetus abdominally to reduce perinatal morbidity and mortality.¹ Hence, women who wanted a natural delivery, but who had breeched fetuses did not have very many options available to them. One obstetrical technique available to these women is “External Cephalic Version (ECV);” which has an approximately success rate of 65%, is performed by one or more obstetricians who forcefully move the breeched baby out of breech into vertex presentation. Richard Fischer, MD describes ECV as “transabdominal manual rotation of the fetus into a cephalic presentation.” It is reported to be very uncomfortable and is often performed in hospitals with all related physicians present, such as the anesthesiologist, so that if the version is successful, the mother will be induced so as to prevent the fetus from reverting to breech. Should the ECV not be successful, then commonly the woman at that time will

have a cesarean.¹ Other non-allopathic approaches to turn a breech include the use of a slant board, the pelvic tilt, prenatal massage therapy, as well as acupuncture, which of this group is the one that has some compelling research to support its inclusion.²

These two case reports are meant to explore how the Webster Technique,³ which has evidence supporting its effectiveness with singleton mal-presentations or mal-positioned fetuses, may also be an effective treatment in twin pregnancies, whether the fetuses are both breech, or if one fetus is breech and the other transverse or vertex.

Clinical Features:

The two female patients in this case report were of different ages, had different methods of conception, and were cared for in different years; one in 2009, the other in 2010. The first patient was a 49-year-old multi-gravid and multiparous woman pregnant with breech twins, presented to the office seeking a way to help the fetuses to turn to permit her to have the vaginal birth she desired, hence avoiding a cesarean section. The second patient was a 28-year-old nulliparous female, gravid with twins in the breech presentation and accompanying pain, seeking relief as well as a vertex position for both twins, especially Baby A, so she too could be considered for a vaginal birth. The first child to be born is commonly called “Baby A” whereas the second is called “Baby B.” Both women had stated that their respective OBs would consider a vaginal birth, provided Baby A was vertex.

Methods and Interventions:

The use of the Webster Technique and analysis, as well as the Diversified and Thompson chiropractic techniques, were administered. Both patients were encouraged to continue their

self-care at home, exercise and to add round ligament massage.

The round ligament self-massage involves having the pregnant patient sit on an appropriate-sized and well-inflated exercise ball in a modified wide legged squat at the front edge of the ball. Using both hands, primarily their index and middle fingers to contact the round ligaments bilaterally, they were instructed to massage gently in a circular motion as well as make notes to report on whether one side was perceived to be tighter or perhaps more tender than the other.

When each woman presented to this office for care for their initial visit, they filled out new patient paperwork, which included a full history and requested details regarding their chief complaint. Following the completion of the paperwork, a consultation was then performed to attain more thorough information regarding their chief complaint. At the conclusion of the consultation, each woman was escorted to the exam room, where Surface Electromyography (sEMG), using the Insight Millennium, was performed, followed by chiropractic, orthopedic, neurological and physical examination. Additionally, static and motion palpation of her spine was conducted to confirm areas of suspected subluxation. Finally, the Webster Technique analysis was used to determine the future sacral and round ligament contact for the adjustment.

At subsequent visits, when each woman presented for care, the Webster technique analysis was performed. The patient would lie prone on the adjustment table, which had the pelvic piece elevated and the thoracic piece lowered to the approximate depth of their pregnant abdomen's protrusion. The doctor would then flex both legs bilaterally and feel for resistance on one side versus the other. The side of the restricted leg, in the Webster Technique, is the side of suspected sacral posteriority. First, 2-3 posterior to anterior drops on the posterior sacrum were made using the cock-and-drop mechanism of the table. The leg indicators were then rechecked. If they were not clear, then a sacral side-posture adjustment would be performed. After the leg check indicators were cleared, the table was repositioned to allow the patient to turn over and lie supine to accommodate the round ligament check.

This portion of the Webster Technique analysis was done by initially palpating the round ligament on the contra-lateral side of the posterior sacrum finding. It was found at the intersection of the following two vectors: 45° inferior and medial to the ASIS and 45° inferior and medial to the umbilicus. Once palpated and confirmed, a slight inferior to superior pressure and gentle massage angled at the opposite shoulder was made. The time of therapeutic application depended upon how long it took for the perceived release of the ligament by both doctor and patient. Often, other segmental subluxations were addressed on the same visit, including cervical adjustments, pubic bone adjustments or psoas muscle releases. In review, the Webster Technique,³ with its corresponding analyses and advanced protocols, such as the psoas release, was used to correct for intra-uterine constraint in two separate twin pregnancies.

Results:

In both cases, the Webster Technique's application relieved the intra-uterine constraint, thereby permitting both sets of twins to achieve the vertex position, which was preferred by their respective birth providers prior to consenting to a vaginal birth. Patient 1: both baby A and baby B went vertex, as confirmed by ultrasound after 14 adjustments in 7 weeks. Patient 2: both babies were vertex after the 10th adjustment, also in 7 weeks and confirmed by ultrasound. Both pregnancies remained vertex throughout their respective terms. Both women also stated improved function and decreased pain throughout the remainder of their pregnancies.³

Discussion:

Both biological plausibility and clinical research support the need for a vertex presentation of twins, especially baby A (the first to exit), to be considered for a vaginal birth. The most important factor may be the possibility of twin A's inability to successfully navigate the birth canal, thereby precluding twin B from being able to enter the canal. Additionally, if twin A is smaller, or growth restricted, it could also pose problems with the delivery of the second, yet larger, twin. Clinically it has been found that more adjustments with Webster Technique are required to resolve breech twin pregnancies as compared to a typical singleton. The theory behind Webster Technique involves the concept that balanced pelvic floor, muscles and related ligaments support a vertex position, and when the patient is balanced with these specific techniques a positive outcome will ensue. With these two cases, it is of interest that some obstetricians commonly perform a cesarean section before 37 weeks, with breech twin births. In these two cases it took until approximately 37 weeks gestation before baby A and B could reach a vertex position.

There is evidence to support the importance of achieving a vertex birth position. One study (n= 7,045) found that a "nonvertex fetus at 35 weeks had a 45% chance of spontaneous version by delivery. Multivariable logistic regression analysis found that multiparous women had half of the risk of nonvertex presentation as nulliparous women."⁴ In addition, a study of 1019 pregnant women found a "spontaneous change from vertex- into breech presentation from the 32nd to 40th week of gestation was evident in 4 cases = 0.41% ."⁵ Generally, apart from rare exceptions, this study found that the definite birth-presentation of the fetus usually has taken place about the 35th/36th week of gestation. Late changes of position of the fetus are not likely with primi- and multiparae presentations between the 32nd and 40th week of gestation.⁵

By contrast, in one study, the Webster Technique was shown to have an efficacy rate of 82%.³ Both women in this current study experienced the turning of their respective fetuses to the vertex position only by approximately 37 weeks, suggesting that a spontaneous turn to vertex presentation was unlikely. Thus, it is reasonable to consider that the desired vertex position these two women sought for their pregnancies would not, in all likelihood, have taken place had they not both respectively received chiropractic care, and more specifically, the Webster Technique.

Conclusions:

Chiropractic care, particularly the Webster Technique and associated advanced protocols, was rendered with apparent success by approximately 37 weeks fetal gestation in both instances. While the two patients' desired outcomes were achieved, these cases illustrated the purported efficacy of the Webster Technique, regardless of the gravidity of the woman. Additional multi-gestation pregnancies should be evaluated with the Webster Technique and greater studies should be performed to determine whether this care can develop a greater evidence base and be utilized broadly in the pregnancy and maternal healthcare field. The low-risk nature of this procedure makes it a viable option for women pregnant with twins who seek to have a vaginal birth and possibly reduce the high-risk alternative of a cesarean surgery. Further research is needed to develop a specific clinical prediction rule to assess which pregnant patients with breech presentations might be best helped by this novel chiropractic technique.

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