

CASE STUDY

Resolution of Infertility Following Chiropractic Care for Vertebral Subluxation: A Case Study and Review of the Literature

Laura A Colman DC, CACCP¹ & Chelsea McClure Jaques DC²

Abstract

Objective: This case study reports on an infertile female patient who successfully conceived following the introduction of chiropractic care. The related literature is also reviewed and summarized.

Clinical Features: A 24-year-old patient presented for chiropractic care with a chief complaint of back pain and a 3.5-year history of infertility with infrequent progesterone induced menstrual cycles. Physical examination findings included postural abnormalities, paraspinal muscular tenderness, myospasm and vertebral subluxations.

Interventions and Outcomes: The patient was managed for vertebral subluxations through specific chiropractic care with the use of Diversified and Webster techniques. Electrical muscle stimulation (EMS) and therapeutic exercises were also applied during the course of care. The patient noted that on the ninth visit that she had her first normal menstrual cycle since the start of chiropractic care and that by the twelfth visit she was pregnant.

Conclusion: The patient in this case had a 3.5-year history of infertility. After twelve chiropractic adjustments the patient conceived. Chiropractic care may play a key role in women's reproductive health. More research on this topic is warranted.

Key Words: *Chiropractic, infertility, subluxation, adjustment, manipulation, Diversified Technique, Webster Technique*

Introduction

Infertility is a reproductive issue defined as the inability to accomplish a pregnancy within one year or more of regular sexual intercourse without the use of contraceptives.¹ The issue of infertility can be a devastating health concern for couples attempting to conceive a child. When it is presented as a whole, the literature demonstrates that infertility is a disturbing and distressing health concern, particularly for the woman within a couple that is attempting to conceive a child.² The psychological effects of infertility on a female patient can present in a myriad of different mental health concerns such as depression, low self-esteem, anxiety, guilt as well as self-loathing.³ These are co-morbidities that can have a grave

impact on the daily life, health and well being of an infertile female.

Infertility is a prevalent issue in Western society that is expected to continue to rise.⁴ It was estimated that in 2010, the number of infertile couples was 48.5 million.⁵ While that number included infertility caused by the male partner, the female partner and both partners combined; there are figures that deal specifically with female infertility. Within a couple unable to conceive a child, the issue lies with the female partner 40% of the time, 30-40% percent of the time with the male partner and 10-20% percent of the time the cause of

1. Private Practice of Chiropractic, Clarksville, TN
2. Chesterfield, MI

infertility cannot be explained.⁶ The 2006-2010 National Health Statistics Reports show data that 4.9% of females living with their partners and 6.0% of married females between the ages of fifteen and forty-four years old are infertile.⁷ Ten to fifteen percent of couples have had difficulty conceiving, or an issue conceiving the amount of children they desired and they have sought the services of reproductive specialists at least once during their fertile years.⁸

The purpose and goal of chiropractic care is to reduce subluxations, which will enhance the function of the nervous system. Chiropractic care does not treat symptoms nor is it a therapy that heals medical ailments⁹ therefore chiropractic care is not a remedy for infertile patients.¹⁰ When working with the nervous system through the reduction of subluxation, chiropractors understand that there can be a wide range of changes within the function of the body that includes enhanced biomechanical function and restoration of neurologic integrity that lead to optimized health.¹¹ The Association of Chiropractic Colleges (ACC) contends that subluxation can compromise neural integrity and may influence organ system function and general health. Vertebral subluxations are assessed, diagnosed, and reduced through chiropractic care.¹²

This article presents a case of conception in a previously infertile patient after the initiation of chiropractic care. In the presentation of this case, this article serves to be a part of the information available that expounds upon chiropractic care and its capability to enhance reproductive function in women who have issues with infertility. Chiropractic care has the capability of addressing the reproductive system through affecting the nervous system by the reduction of subluxation.

Review of the Literature

A review of the literature on chiropractic and infertility was conducted by searching the Index to Chiropractic Literature. Search results were obtained by searching for “chiropractic and infertility”. Studies were only included if they dealt specifically on the topics of infertility and chiropractic care and were published in a peer-reviewed journal. Articles that did not include a specific stand alone case or cases that only reviewed the topic of chiropractic and infertility or were reviews of the literature themselves were excluded. There were a total of seventeen Case Studies, two Case Series and no Randomized Controlled Studies. The research articles addressing chiropractic care and the results with infertile patients found in the Index to Chiropractic Literature are described in this Literature Review.

Case Studies

Adams described a case study of a 22-year-old female who was unable to have a menstrual cycle that was induced without the use of medication. The patient also had a history of Type 1 Diabetes Mellitus, bilateral hip and knee pain with a skin lesion on her lower leg. The patient was examined using motion palpation, leg length check and muscle testing in accordance with Applied Kinesiology (AK). The patient received specific chiropractic adjustments during treatment.

Through the course of care the patient also began taking

nutritional support for her pituitary gland and performing cross pattern exercises for neurological reorganization. Within four months of treatment the patient experienced her first menstrual cycle without the use of medication. Within the next fifteen months the patient was treated eight times and conceived eventually delivering a healthy infant.¹³

In a case study written by Bedell, a 27-year-old patient and her struggle with infertility and the effects chiropractic care had on her condition are discussed. The patient presented with a history of two miscarriages and ulcerative colitis. Medical doctors had diagnosed the patient as anovulatory for nine months, giving her medication prior to her two miscarriages. The patient was evaluated for subluxations via Activator Methods and Torque Release Technique (TRT). The patient was observed to have leg length discrepancies, postural distortions, taught and tender muscular fibers, left foot inversion, as well as pelvic torsion. The patient was adjusted via the Integrator instrument to reduce the indicators of subluxations throughout her care. The patient also was evaluated for nutritional, emotional and physical stresses. After 45 days of chiropractic care the patient reported an ovulation cycle. Ninety days after care began the patient had conceived.¹⁴

In his report, Blum overviewed a case of a 32-year-old female that presented for chiropractic care with a chief complaint of chronic colitis. The patient neglected to mention that she had also been infertile for seven-years. The patient was treated via Sacro-Occipital Technique (SOT). The patient's SOT chiropractic treatment involved the use of orthopedic blocking, cervical stair-step procedures, occipital fiber evaluation and treatment, Chiropractic Manipulative Reflex Technique (CMRT) procedures for the colon, and category one protocol. The patient's treatment began at a frequency of two visits per week for the first two weeks, then decreased to one time a week for the next six weeks, and eventually one to three times each month for four months until her stools normalized and the condition of chronic colitis was under control. One month following the resolution of the patient's chronic colitis, with the stabilization of her category one indicators, R + C (resistance and contraction) factors, and occipital fiber reflexes the patient noted to the chiropractor that she was pregnant.¹⁵

Cohn and Minnich discussed a case of a successful conception in a 31-year-old female after nine months of failed attempts to conceive. Along with the inability to conceive for nine months, the patient presented to a chiropractic office with a history of sacroiliac joint pain, digestive issues and migraine headaches. Upon examination, abnormal thermography and surface electromyography (sEMG) readings were noted with use of the Tytron C300 and Millennium Subluxation Station. Vertebral subluxations were also revealed through spinal palpation. The patient began care at a consistency of three visits per week. After twelve visits the care plan was taken to two visits per week. On the fifth week of care the patient became pregnant, but miscarried two weeks later. The patient continued care and became pregnant again after two more months. This pregnancy was carried the full term and resulted in a normal birth without complication.¹⁰

A case report written by Kaminski describes a 31-year-old

patient who presented to a chiropractic office to have her nervous system evaluated. The couple was under treatment for infertility as they had been unsuccessful in their attempts at conception over the past twelve months despite conceiving their three-year-old child naturally. The patient had been diagnosed with a “lazy reproductive system” and was prescribed Clomid. The patient had other concerns of migraine headaches and irregular menstrual cycles. Examination revealed objective findings for subluxation including aberrant sEMG and thermography readings. To reduce vertebral subluxation, the patient was treated with a combination of Diversified technique for the first three months and TRT for the duration of care. One month into care, the patient stopped the use of Clomid, with a desire for her body to ovulate naturally. After nine months of chiropractic care the patient was able to conceive naturally, resulting in a full term pregnancy and birth free of complications.⁹

Lyons reported a case study in which a 27-year-old athletic female presented to a chiropractic office due to an unresolved post-marathon injury. The patient's chief complaint was sore ankles though she had additional complaints that included back pain, constipation, diarrhea, neck pain, headaches, numbness in fingers, nervousness, tension, irritability, chest pains, dizziness, buzzing in ears, flushed face, fatigue, light sensitivity, tints, cold feet, stomach upset, cold sweats and loss of balance. During the report of findings the patient also revealed that she had been unable to conceive for the past five years despite attempting to become pregnant with her husband. The initial examination findings included abnormal thermography and sEMG readings and subluxations in the pelvis, lumbar, thoracic and cervical spine. Radiographic examination indicated a slight right lumbar list, increased atlanto-axial space, and a slight loss of normal lateral curvatures. The intervention used was Gonstead based chiropractic care for the reduction of subluxations. Within the first month care consisted of fourteen visits. The patient was estimated to conceive the day after her fourteenth visit.¹⁶

In a case report by Nadler, the issue of infertility of a 42-year-old woman and successful conception after the introduction of chiropractic care are discussed. The patient in this case had in the years after her fourth decade, began to have a diminished cycle twenty-four to twenty-six days instead of the normal twenty-eight to twenty-nine days followed by a lengthened amount of menstrual flow, up to ten days instead of the normal five to six days. Due to religious convictions the patient was unable to engage in sexual intercourse for a period of seven days after her menstrual flow had ceased. This in combination with her diminished cycle and lengthened flow time made conception difficult. The patient chose to undergo chiropractic care in an effort to reduce vertebral subluxation with the objective to address her concerns naturally and increase her physiologic tone with the possibility of regulating her cycle. Care was recommended to start one week prior to the client's next menstruation cycle at a frequency of five visits the first week and three visits each week thereafter. Care was rendered using TRT. Improvements were made in the patient's cycle and several months later the patient conceived.¹⁷

In his case report, Philips detailed the account of a 37-year-old woman who was diagnosed as infertile after suffering from endometriosis with ovarian and fallopian tube scarring. The

patient presented for chiropractic care with a chief complaint of low back pain for a time period of eighteen months. History revealed that the patient spent most of her day seated and also the issues with infertility as described above. Further discussion revealed that the patient had been attempting to conceive for over a three-year period and that she had been through four unsuccessful in-vitro fertilization (IVF) procedures in efforts to have a child. Examination revealed motion restrictions, hypertonic musculature as well as hypotonic musculature. The patient began chiropractic care through the use of Gonstead Technique and SOT. The frequency of care consisted of visits once a week for the first two weeks, twice a week for the next eight weeks, once every week for eight more weeks. The patient had improvements in her low back pain through the course of care. After four months of care the patient received her fifth IVF treatment, which resulted in a successful pregnancy and birth by c-section due to placenta previa.¹⁸

In a case study written by Rosen, the infertility of a 34-year-old woman and her results with chiropractic care are discussed. The patient presented for chiropractic care with several health concerns including infertility. The patient attempted to conceive her first child naturally and was unable, so she sought medical intervention. After medication did not work the patient had success with IVF two years prior to presenting to the chiropractor. She began to try to conceive a second child naturally and was unsuccessful. The patient's history involved gymnastic injuries and motor vehicle accidents. Upon examination, reduced cervical and lumbar ranges of motion were noted along with bilateral weakness of the gluteus maximus and hamstrings as well as the left psoas muscle. The patient had postural abnormalities and positive Nachlas and Ely test on the left as well as Yeoman's test bilaterally. SOT exam procedures revealed that the patient needed to be treated for Category II subluxation complex. The patient was treated to reduce vertebral subluxation with SOT orthopedic blocking as well as high velocity low force adjustments. Within four weeks of the patient's introduction to chiropractic care the patient conceived naturally.¹⁹

Schwanz and Schwanz presented a case study involving the infertility of a 29-year-old female, her struggle with infertility and the results she obtained with chiropractic care. The patient presented for chiropractic care with chief complaints of lower back pain and left leg pain radiating to her foot. It was found that the patient had an eight-year history of trying to conceive a child with her husband without success. The patient had an athletic history with menstrual cycles typically lasting between forty and sixty days. Upon physical exam pattern breaks were found on instrumentation, motion palpation revealed fixations, and positive orthopedic tests included; left Lasegue, left Braggard, left Bechterew, left Well-Leg, and Soto-Hall, finally range of motion was limited in extension. Radiographic findings revealed a diminished L5/S1 disc space and subluxation findings. The care plan began at a schedule of two visits each week, decreasing to one visit per week and eventually one visit per month. Nineteen days after the patient's first adjustment the patient reported a positive early pregnancy test, which was later confirmed by her obstetrician.²⁰

Senzon reported a case study on the results of successful IVF

treatment while a previously infertile patient was undergoing chiropractic care. A 34-year-old patient presented for chiropractic care with chief complaints of a stiff neck, a sore throat and to be receptive, balanced and prepared for IVF treatment. Examination revealed postural abnormalities, bilateral heel tension, bilateral inversion stress, bilateral leg adduction resistance, as well as bilateral leg abduction resistance, muscle tension and tension on bony palpation. Readings from sEMG also indicated asymmetry and subluxations were noted. The patient was treated using Network Spinal Analysis (NSA) to reduce vertebral subluxations at a frequency of three visits per week for twelve weeks, followed by two visits per week for another four weeks. The patient underwent IVF therapy, which resulted in a pregnancy.²¹

In a case study reported by Shelley, the results of a 32-year-old patient with a history of infertility and the results achieved with the introduction of chiropractic are discussed. The patient presented for chiropractic care after trying to conceive with her husband for two years without success, she had additional history of endometriosis, low back pain and frequent headaches. The patient sought medical testing for her infertility that noted her cervical mucosa was sparse and thin. Her husband's reproductive system was not contributing to the couple's infertility. The couple tried conventional therapies including artificial insemination three times, medication and IVF all of which did not result in pregnancy. Upon chiropractic examination, sEMG showed significant muscle asymmetry and palpatory evaluation noted muscular spasm and tenderness at several levels. Directional Non-Force Technique (DNFT) chiropractic analysis and care was utilized to reduce vertebral subluxations with this patient for nine visits over six weeks. The patient was reassessed and seen three more times over the next two months during which time she also was treated by an acupuncturist. The patient then underwent a second IVF attempt, which resulted in an uncomplicated pregnancy.²²

A case study, written by Sims and Lee, overviewed the resolution of infertility of a 23-year-old female after the initiation of chiropractic care. The patient presented for chiropractic care with chief complaints of infertility, low back pain and transient foot numbness. The patient did not reach menarche by the age of seventeen and was placed on birth control by her medical doctor. At the age of twenty she stopped using birth control for nine months but did not menstruate so she began to take the medication again. The patient saw a gynecologist six months and again one month prior to the initiation of chiropractic care. The gynecologist advised the patient that her pelvic ultrasound and all blood work were normal and that she should stay off birth control for one year before seeking the help of a fertility specialist. Examination of the patient revealed postural findings, muscular hypertonicity and vertebral subluxations. The patient was adjusted via Diversified technique to reduce vertebral subluxations. After three and a half months of chiropractic care the patient began menstruating for the first time without the use of medication. After four months of care the patient noted that she had a positive over-the-counter pregnancy test that was confirmed and resulted in a full term pregnancy.²³

Stone-McCoy and Abbott presented a case of resolved

infertility in a 29-year-old patient undergoing chiropractic care to address vertebral subluxation. The patient presented for chiropractic care with a previous diagnosis of polycystic ovarian syndrome (PCOS) and infertility after she was unable to conceive for a six-month period. The patient had no other complaints. Upon examination sEMG, thermography and heart rate variability showed the patient to be functioning at a high level prior to the initiation of chiropractic care. Physical examination revealed that the patient had subluxations in the pelvis, lumbar, thoracic and cervical spine. The patient was seen a total of twenty-six times during four months of care using Diversified technique. Two months into care the patient had conceived. The patient delivered her baby naturally.²⁴

Vilan reported on a case of a 28-year-old female that presented for chiropractic care with a chief complaint of migraine headaches. Upon history, the patient revealed that she had irregular menstrual cycles and would usually only menstruate twice each year. The patient and her husband sought help from a reproductive endocrinologist after years of infertility. The patient was prescribed Prevera and Clomid and became pregnant, but miscarried nine weeks later. After that artificial insemination was attempted but unsuccessful. After which time the patient reported conceiving resulting in a full-term pregnancy. At the time the patient began care she had not menstruated for three months. Examination revealed slight loss of cervical range of motion, hypertonic musculature and tenderness from fixations at several joints. Radiographs revealed a congenital blocked vertebra at C2-3 and a C4-5 narrowed disc space. The patient was treated twice a week for the first four weeks and then once a week there after utilizing Diversified technique to reduce subluxations. After three months the patient was also treated using Cox flexion-distraction. A regular menstrual cycle was reported seven weeks into care after six months the patient conceived.²⁵

In a case study presented by Wolcott and Hughes, a healthy pregnancy following chiropractic care in an infertile cancer survivor is discussed. A 28-year-old female presented for chiropractic care to improve her overall health with the goal of increasing her odds of fertility. The patient's chief complaints were low back pain and a two-year history of infertility. Nine year previous to her presentation, the patient had a history of ovarian cancer with surgical removal. The patient was left with no right ovary and a three-fourths functioning left ovary. The patient had previously tried to conceive with Clomid and Pergonal but the medication use did not result in success. Upon examination the patient was unable to resist perturbation on Shunt Stabilization test, left pupillary fatigue was observed, as was decreased sensitivity to the tuning fork in the left ear. Vertebral dysfunction and muscle imbalances were also noted. Radiography noted a right lumbar lean and anterior head carriage. The patient was treated using Diversified technique after fourteen visits the patient conceived naturally and carried the pregnancy to a full term.²⁶

In the case presented by Yost, a 28-year-old female presented for chiropractic care with a failure to achieve menses without medication, anovulatory cycles, diagnosed infertility and chronic low back and hip pain. The patient was treated with Diversified and Thompson techniques as well as acupuncture, Russian Stimulation and dietary changes. The patient was also using medications Provera and Femara; improvements were

seen in the patient's menses, cycle length and response to these medications. The patient also had improvements in sEMG and thermography readings. Pregnancy was achieved, but the patient miscarried after seven weeks. Chiropractic care continued and after four and a half months the patient conceived for the second time, which also resulted in a miscarriage. While two pregnancies were recorded, neither were carried to term.²⁷

Case Series

Alcantara, Stern and Oman report on three infertile patients and the results they achieved after the induction of chiropractic care in this case series.²⁸

The first case involved a 33-year-old patient specifically seeking to address her complaint of infertility. The patient was unable to conceive after four years of attempts, the patient had two ectopic pregnancies after the introduction of fertility drugs. Upon examination the patient was found to have decreased cervical range of motion, hypertonic musculature, abnormal jaw motion and clicking, low back pain, a positive Hibb's Test, abnormal thermographic findings and vertebral subluxation. Radiographic images revealed; pelvic unleveling, previous cholecystectomy, mild invagination of the inferior end plate, mild reduction in cervical lordosis, and early narrowing of the C5-C6 disc space. The patient was treated using high velocity low impact (HVLA) Diversified full spine adjustments to address subluxation. The patient was also advised on stress management, goal setting, affirmations, meditation, massage, exercise, dietary changes and nutritional supplementation during the course of her care. The patient was only compliant with dietary changes, nutritional supplementation and chiropractic adjustments to reduce subluxations. Six and a half weeks after chiropractic care began the patient started a course of IVF with fertilization medications, resulting in a full term pregnancy.

The second case involved a 33-year-old female that presented to a chiropractic clinic with a chief complaint of infertility. The patient had been attempting to conceive for two years without success. The patient used fertility medication during that time without success. The patient had additional history of excessive menstrual flow and hirsutism. The patient was also overweight. Exam findings included subluxations at the levels of C1, C7, T7, T9 and L1-3 as well as abnormal thermographic readings. Cervical and lumbar radiographs revealed loss of cervical lordosis, anterior head carriage, Spina-Bifida Oculata of C1, Mild spondylosis deformans L3-5, as well as Facet arthrosis of the lower cervical and lumbar spine. Chiropractic recommendations consisted of adjustments for the reduction of subluxation, as well as nutritional support and exercise. The chiropractor employed HVLA adjustments to reduce subluxations. Two months after initiating care, on the eleventh visit the patient reported she had conceived.

The third case reported on a 35-year-old female with complaints of menstrual cycle irregularity with the inability to conceive for seven months, neck stiffness and right wrist pain. Examination findings included; decreased cervical range of motion, subluxation and thermographic abnormalities. Radiographic findings revealed; mild spondylosis at C4/5 and from L3-5, facet arthrosis at C7/T1 and L5/S1, Schmorl's

nodes at L1 and L4 and a decreased cervical curve. The course of care for the patient consisted of HVLA Diversified full-spine adjusting, nutritional counseling, nutritional supplementation and stress management. On the fifth visit, twelve days after initiating chiropractic care the patient reported that she was pregnant. Two months later the patient suffered an idiopathic miscarriage. Approximately twelve weeks after her miscarriage with continued chiropractic care the patient reported she had once again conceived. This conception resulted in a full term pregnancy and the birth of a health child.

After the introduction of chiropractic care and the reduction of vertebral subluxation in these cases presented by Alcantara, Stern and Oman all patients eventually conceived and had normal pregnancies with successful deliveries.²⁸

Anderson Peacock presents a series of cases of two female patients that presented to a family-based chiropractic office with complaints including infertility. This case series goes through the history, examination, interventions and results of chiropractic care on infertility in each of the cases.¹¹

The first case involved a 35-year-old female with a chief complaint of low back pain. The patient also noted that she had a two-year history of infertility, neck pain, left hand paresthesia, insomnia, irritability, reduction in concentration and constipation. Upon physical examination the patient was found to have subluxation, decreased cervical and thoracolumbar ranges of motion, loss of normal joint play at C2-3, C5, T3-4, T8-9, L3-4 and L5-S1 as well as abnormal thermographic findings. The patient was advised on a care plan of three visits per week for four weeks to reduce subluxations via TRT. The patient was inconsistent with her care. Her care plan was eventually reduced to one visit each week. During the course of her care four weeks after her second re-assessment the patient noted that she was six weeks pregnant.

The second case involved a 36-year-old with a chief complaint of infertility and a secondary issue of low back pain. The patient has a history of a fully blocked left fallopian tube, a damaged right fallopian tube and a nine-year history of high prolactin levels. The patient noted that she had dysmenorrhea with menstrual cycle irregularities. On physical examination unleveling of the right shoulder girdle was noted with a flared scapula, an increase in thoracic kyphosis and an occiput laterally translated to the left. A hypotonic psoas, hypertonic right hamstring, gluteal muscles and trapezius bilaterally as well as reduced motion during knee to chest and Patrick FABRE tests were also noted. Thermography and sEMG noted multiple levels of abnormal tone. Subluxations were also noted with aberrant joint play at multiple levels. The patient was treated using TRT to reduce subluxations at a frequency of 3 visits for 4 weeks. The patient was then given exercises and seen at a frequency of two visits each week for a period of two weeks. The patient then was reduced to weekly visits and she reported that she was pregnant two weeks later. After five additional weeks the patient left care. Upon follow-up the patient reported a normal pregnancy resulting in a successful delivery.

The patients in these cases presented by Anderson-Peacock

had success in their attempt to conceive and deliver a child after the introduction of chiropractic care to reduce vertebral subluxations.¹¹

Case Report

This case report focuses on a 24-year-old patient that presented for chiropractic care with a chief complaint of back pain and a three and a half year history of infertility. The patient's past medical history revealed that the patient had had a dilation and curettage procedure four years prior to her presentation. The procedure was performed to remove tissue as a result of a miscarriage. In the history it was also noted that all of the patient's menstrual cycles were progesterone induced and would occur infrequently every 3-5 months on average.

Upon physical examination it was noted that the patient had a flat affect. The patient was also found to have postural abnormalities including; a decreased cervical curve, a high left shoulder and a high right ilium. The patient also had palpatory findings including tenderness of the paraspinal muscles in the thoracic and lumbar areas bilaterally, bilateral sacroiliac joint tenderness, as well as bilateral tenderness of the iliotibial band, tensor fascia latae and quadratus lumborum. Bilateral myospasm of the lumbar paraspinal muscles was noted. The patient also had bilateral trigger points in her tensor fascia latae. The patient's general appearance, inspection, stability, range of motion muscle tests, reflexes and sensation were all within normal limits. The patient had a positive Patrick test on the right; all other orthopedic tests were negative with the exception of bilateral positive straight leg raiser due to tight hamstrings. Radiographs were also taken which revealed a cervical kyphosis. Subluxations were also observed on the radiographs at C2, C6, C7 as well as L2-L5.

After an explanation of chiropractic and an informed consent, the patient began care the same day as her exam. The care was given at a frequency of two visits the first week, after which the patient was put under a one visit per week care plan. After four weeks of being treated at a once a week frequency, the patient had a month with no visits. The patient came back under care following the absent month, and remained under her one visit per week care plan. The patient was managed using a combination of Diversified Technique and Webster Technique.

Diversified Technique can be described as a technique using high-velocity low-amplitude (HVLA) thrusts to correct subluxation.²⁹ Diversified Technique describes a subluxation as a condition in which aberrant changes in specific intervertebral motion segments occur. It is a segmental approach, in which the involved motion segments may be identified by radiographic procedures or by clinical examination procedures to measure intersegmental dysfunction.³⁰

Webster Technique involves analysis of the functional and spatial relationship of the bones of the pelvis.³¹ In terms of performing the adjustment, Webster recommended a manual low force, posterior-anterior drop technique as the preferred mode of adjustment.³² This would correct the aberrant biomechanics. In the female patient, to support the efficiency

of the sacral adjustment as well as to relieve abdominal muscle tension or spasm, an anterior abdominal soft tissue contact of the opposite round ligament is also used.³¹

The patient had subluxations that were found and corrected in her cervical, thoracic, lumbar and sacral areas through the twelve visits in her course of care. Electrical muscle stimulation was also used on the patient's quadratus lumborum throughout the course of care. The doctor also incorporated therapeutic exercises to stretch the patient's hypertonic musculature in efforts to relieve the low back pain the patient experienced.

During the course of treatment the patient noted that she had her first normal menstrual cycle and eventually conceived. The patient noted on her third visit that she started menstruating, however the cycle was not of normal duration or flow. On the ninth treatment the patient noted that since being under chiropractic care she had finished her first normal menstrual cycle. On the tenth chiropractic visit the patient had noted that she had begun ovulating. By the twelfth visit the patient noted that she had conceived. The patient went on to have a successful vaginal birth and is currently pregnant with her second child. She continues with her chiropractic care.

Discussion

There are several different causes of infertility in the female patient. In 40% of cases of female infertility the reason is mechanical. Mechanical causes of infertility include pelvic adhesions, infections or endometriosis. These issues have the potential to affect the patency and function of the fallopian tubes as well as the overall health of the ovaries. With female infertility, 40% is due to ovarian failure in these cases the menstrual cycle either absent or not predictable, it does not occur at regular intervals with consistent volume and duration. Another 10% of the cases of female infertility are considered to be unexplainable with the remaining 10% considered as due to other health problems of the female patient.³³

Chiropractors theorize that the stimulation provided by the adjustment at the proper segmental levels alters the current flow of energy in the corresponding nerves to influence changes in these systems.³⁴ Anatomists have a comprehensive understanding of the innervations of the female reproductive systems.²⁰ Both sympathetic and parasympathetic nerves innervate the female reproductive organs.¹⁸ Visceral afferent pain fibers ascend from the ovaries and uterine tubes to the spinal sensory ganglia at T11-L1. While from the ovaries and uterine tubules the visceral afferent reflex fibers flow to the S2-S4 spinal sensory ganglia. Parasympathetic motor fibers of the uterus and vagina are supplied by the pelvic splanchnic nerves, which arise from S2-S4. Visceral afferent fibers travel from the uterine body to the T12-L2 spinal ganglia. The S2-S4 spinal ganglia receive afferent fibers from the cervix and vagina. The somatic sensation of the vagina also reaches the S2-S4 spinal ganglia via the pudendal nerve.^{20,35}

Chiropractic adjustments have the potential to affect organ systems through the restoration of function by the removal of a subluxation that interferes with the nervous system. Correction of vertebral subluxations is a vital aspect in the return of normal afferent input to the central nervous system,

which allows the body to have a correct awareness of itself including its systems, organs, tissues and their current state.³⁰ By permitting the nervous system to successfully assimilate the chemical, physical, and emotional information between the brain and reproductive system it is hypothesized that this will increase the ability to conceive.³⁶

Conclusion

Chiropractic care has the ability to restore biomechanical function and neurological integrity by working with the nervous system through the reduction of subluxations. This restoration of the nervous system can improve the function of the body in many aspects, including whole organ systems. The altered function of a female reproductive system has the potential to be improved through the enhancement of neurological function due to the effects of reducing subluxations.

This case report followed the care of a patient that presented with low back pain and a 3.5-year history of infertility. Within twelve chiropractic treatments the patient was found to have conceived. There is little literature to support chiropractic care in women's reproductive health. However, most of the literature is based on case studies and some case series. It is recommended that further study on infertility and how it is affected by chiropractic care be completed on a larger scale.

References

1. Zegers-Hochschild F et al. The international committee for monitoring assisted reproductive technology (ICMART) and the world health organization (WHO) revised glossary on art terminology, 2009. *Hum Reprod.* 2009;24(11):2683–7.
2. Griel AL. Infertility and psychological distress: a critical review of the literature. *Soc Sci Med.* 1997;45(11):1679-1704.
3. World Health Organization. Mental health aspects of women's reproductive health: a global review of the literature. WHO Press, World Health Organization. 2009.
4. Chachamovich JR, Chachamovich E, Ezer H, Fleck MP, D Knauth, Passos EP. Investigating quality of life and health-related quality of life in infertility: a systematic review. *J Psychosom Obstet Gynaecol.* 2010 Jun; 31(2):101–10.
5. Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel S, Stevens GA (2012) National, Regional, and Global Trends in Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys. *PLoS Med* 9(12): e1001356. doi:10.1371/journal.pmed.1001356
6. Norris S. Reproductive infertility: prevalence causes trends and treatments. *Lib of Parliament* 2001. PRB-32:1-3.
7. Chandra A, Copen CE, Stephen EH. Infertility and impaired fecundity in the United States, 1982–2010: Data from the National Survey of Family Growth. *National health statistics reports; no 67.* Hyattsville, MD: National Center for Health Statistics. 2013
8. Evers JLH. Female subfertility. *Lancet.* 2002 Jul 13;360:151-9.

9. Kaminski TM. Female infertility and chiropractic wellness care: a case study on the autonomic nervous system response while under subluxation based chiropractic care and subsequent fertility. *J Vert Sublux Res.* 2003 Nov 2;2003(1):1-10.
10. Cohn A, Minnich J. Successful conception following following reduction of vertebral subluxation in a 31-year-old woman: a case report and selective review of the literature. *J Pediatr Matern & Fam Health.* 2011 Jun 27;2011(2):66-72.
11. Anderson-Peacock E. Reduction of vertebral subluxation using torque release technique with changes in fertility: two case reports. *J. Vertebral Subluxation Res.,* 2003 Jul 19;2003(1):1-6.
12. Keating JC, Charlton KH, Grod JP, Perle SM, Sikorski D, Winterstein JF. Subluxation: dogma or science? *Chiropr & Osteopat.* 2005 Aug 10;13(7):1-10.
13. Adams JP. Chiropractic and nutritional management and its effect on the fertility of a diabetic amenorrheal patient: a case report. *J Vert Sublux Res.* 2003 Oct 12;2003(1):1-2.
14. Bedell L. Successful pregnancy following diagnosis of infertility and miscarriage: a chiropractic case report. *J Vert Sublux Res.* 2003 Dec 2;2003(1):1-7.
15. Blum CL. The resolution of chronic colitis with chiropractic care leading to increased fertility. *J Vert Sublux Res.* 2003 Aug 31;2003(1):1-5.
16. Lyons DD. Response to Gonstead chiropractic care in a 27-year-old athletic female with a 5 year history of infertility. *J Vert Sublux Res.* 2003 Nov 9;2003(1):1-3.
17. Nadler A. Torque Release Technique™ in the clinical management of infertility related to cultural or religious-based lifestyle. *J Vert Sublux Res.* 2003 Nov 16;2003(1):1-3.
18. Phillips G. Changes in ovarian function after chiropractic adjustments in woman diagnosed with infertility. *J Chiropr Clin Pediatr.* 2006;7(1):458-60.
19. Rosen MG. Sacro Occipital Technique management of a thirty four year-old woman with infertility. *J Vert Sublux Res.* 2003 Dec 17;2003(1):1-4.
20. Schwanz JW, Schwanz JT. Female infertility and subluxation-based gonstead chiropractic care: a case study and selective review of the literature. *J Pediatr Matern & Fam Health.* 2012 Oct 22;2012(4):85-94.
21. Senzon SA. Successful in vitro fertilization in a poor responder while under Network Spinal Analysis care: a case report. *J Vert Sublux Res.* 2003 Sept 14;2003(1):1-6.
22. Shelley J. Healthy pregnancy in a previously infertile patient following D.N.F.T. chiropractic care: a case report. *J Vert Sublux Res.* 2003 Dec 8;2003(1):1-7.
23. Sims LE, Lee J. Resolution of infertility in a female undergoing subluxation based chiropractic care: a case report & review of the literature. *J Vert Sublux Res.* 2008 Aug 6;2008(1):1-6.
24. Stone-McCoy P, Abbott G. Resolution of infertility, healthy pregnancy and delivery in a patient previously diagnosed with polycystic ovarian syndrome: a case history and selective review of the literature. *J Pediatr Fam & Matern Health.* 2012 Mar 5;2012(1):26-30.
25. Vilan R. The role of chiropractic care in the resolution of migraine headaches and infertility. *J Clin Chiropr Pediatr.* 2004;6(1):338-41.

26. Wolcott E, Hughes M. Healthy pregnancy following chiropractic care in ovarian cancer patient after 2 years of infertility: a case report. *J Pediatr Matern & Fam Health*. 2012, Jan 23;2012(1):12-15.
27. Yost H. Infertility and alternative care: a case report. *J Pediatr Matern & Fam Health*. 2010 Dec 29;2010(4):281-2.
28. Alcantara J, Stren G, Oman RE. Female infertility, subluxation & chiropractic care: a case series and selective review of the literature. *J Pediatr Matern & Fam Health*. 2009 June 8;2009(2):1-10.
29. Hawk C, Khorsan JR, Lisi AJ, Ferrance RJ, Evans MW. Chiropractic care for nonmusculoskeletal conditions: a systematic review with implications for whole systems research. *J Altern Complement Med*. 2007;13(5):491–512.
30. Kent C. Models of vertebral subluxation: a review. *J Vert Sublux Res*. 1996 Aug;1(1):1-7.
31. Pitolese RA. The webster technique: a chiropractic technique with obstetric implications. *J Manip Physiol Ther*. 2002;25(6):1-9.
32. Ohm J, Alcantara J. The Webster technique: definition, application and implications. *J Pediatr Fam & Matern Health*. 2012 May 10;2012(2):49-53.
33. Denson V. Diagnosis and management of infertility. *J Nurse Pract*. 2006;2(6):380-386.
34. Murphy JT. A review of complementary and alternative care for infertility issues. *J Chiropr Clin Pediatr*. 2010 Dec;11(2):804-10.
35. Moore KL, Dalley AF. *Clinically oriented anatomy*. 5th ed. Baltimore Lippincott Williams and Wilkins. 2006.
36. Bula SM. Infertility and chiropractic: a review of the literature. *J Chiropr Clin Pediatr*. 2008 Mar;9(1):567-71.