CASE STUDY

Female Infertility and Chiropractic Wellness Care: A Case Study on the Autonomic Nervous System Response while Under Subluxation Based Chiropractic Care and Subsequent Fertility

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ABSTRACT

Objective: This case study describes a woman, previously diagnosed with a lazy (reproductive) system, who became pregnant after commencing subluxation-based chiropractic care.

Clinical Features: A 31 year old woman presented to have her nervous system evaluated after her husband's encouragement. They were under medical treatment for infertility as they had been attempting to become pregnant for over 12 months, and the woman had been taking Clomiphine Citrate (clomid) for 3 months. Her previous child, three years old, had been conceived naturally.

Chiropractic Care and Outcome: The initial chiropractic examination revealed increased aberrant autonomic and motor nervous system function detected on the thermography scans and sEMG scans, respectively. For the first three months (21 visits) of care the practice member received Diversified chiropractic adjustments followed by four months (12 visits) of Torque Release adjustments. At each visit prior to structural diversified adjustments, motion and static palpation, visual observation, Deerfield leg check and cervical syndrome test were performed to detected vertebral subluxations. The Torque Release Technique (TRT) utilizes the Intergrator™, a torque and recoil release adjusting instrument and three phases comprised the evaluation. After one month of care the practice member chose to stop taking the clomid. By the third month of care she reported having normal menses for two months and drug-free ovulation by month four. Nine months after chiropractic wellness care, the practice member conceived and proceeded to experience a successful full term pregnancy.

Conclusion: After receiving wellness chiropractic care for the detection and correction of vertebral subluxations, the practice member showed marked improvement in autonomic and motor system function as demonstrated on her sEMG and thermography scans. In additon, after having great difficulty conceiving, she became pregnant nine months after commencing chiropractic care. Further studies are needed to document the relationship between infertility, autonomic nervous system function, and the response to wellness chiropractic care, including subsequent fertility.

Key words: *infertility, chiropractic, wellness, subluxation, practice member, Torque Release Technique, Diversified Chiropractic Technique, EMG, thermography.*

INTRODUCTION

The purpose of this article is to describe chiropractic wellness care, the autonomic nervous system response, and subsequent fertility in a 31 year old female struggling with infertility.

Infertility is described as failure to achieve conception by those who have not used contraception for at least one year.[1] About 15% of couples in the United States experience infertility.[2,3] It is an emotional[4,5] and often times a very costly endeavor for those seeking answers and cures. Generally, a variety of tests and drug therapies with many side effects are involved. It is important for the public to know there are natural, more cost-efficient ways to identify interference to fertility.

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Infertility can be caused by many factors. Problems with ovulation and hormonal balance, fallopian tube damage often caused by pelvic inflammatory disease (PID), endometriosis and low sperm count are the most frequently diagnosed conditions in the medical field. In general, infertility caused by problems in the woman's reproduction system is more often treated than infertility caused by problems with the man's reproductive system[6].

Today extensive medical tests are available for couples seeking allopathic intervention for their infertility. Laparoscopy is one such procedure. It is a surgical procedure used to examine the abdominal organs and the female pelvic organs to diagnose problems such as cysts, adhesions, fibroids and infections.[7] Tissue samples can also be collected for biopsies.

Medication is commonly used as medical response to infertility. Clomiphine Citrate (clomid) to induce ovulation, Crinone Progesterone Vaginal gel, Lupron to prevent egg release from

the ovaries and Fertinex, a purified subcutaneous injected follicle stimulating hormone (FSH) are a few prescribed drugs.[8] The practice member is this case was prescribed Clomiphine Citrate (clomid), often referred to as the "fertility pill." [9] When the ovaries do not produce and release eggs due to hormonal imbalances, clomid works by helping the pituitary gland stimulate this function.

Surgery is often the medical mode of treatment for endometriosis and repairing damaged fallopian tubes. Assisted reproduction technology such as in vitro fertilization (IVF) and intrauterine insemination (IUI) are used for a variety of infertility problems. IVF is performed when fallopian tube blockage (often after unsuccessful surgery), cervical narrowing, and low sperm counts are the cause of the infertility. IUI is most commonly used for infertility associated with endometriosis, unexplained infertility, anovulatory infertility, very mild degrees of male factor infertility and for some couples with immunological abnormalities.[10] Additional infertility drugs are administrated with these procedures. IVF involves follicle suppression, follicle stimulation, maturing follicles, egg retrieval, fertilization of retrieved egg and sperm specimen. If the eggs are successfully fertilized an embryo transfer will take place. For the IUI procedure the egg is not retrieved but fertilized by placing highly motile sperm in the cervix or high in the uterine cavity (intrauterine).

Studies have shown the relationship of vertebral subluxations and autonomic nervous system dysfunction.[11,12,13,14] Improved gynecological function has been reported while receiving chiropractic care, including with these conditions: dysmenorrhea, amenorrhea, PMS and sexual dysfunction. Women under regular chiropractic care note a more balanced system during their life cycle change of menopause. Chiropractic does not treat symptoms or conditions but allows the nervous system to function more efficiently. This is accomplished through specific chiropractic adjustments that reduce and eliminate spinal cord tension and interference. The body and mind can function in harmony promoting health, wellness, and the ability to handle the physical, emotional, and chemical stresses that challenge a couple experiencing infertility.

Case Report

Personal History: A 31 year old female presented for care after her husband's encouragement; they were having difficulty conceiving and it was causing increased emotional stress. She stated her medical doctor had diagnosed her with a "lazy system" and irregular ovulation. The drug clomid was prescribed to increase ovulation. At the initial examination the practice member had been on clomid for three months. Her diet and exercise routines were subjectively rated as poor while sleep patterns and general health were rated as good (scale: poor, good, excellent). She experienced seasonal sinus headaches and allergies with increased symptoms to mold occasionally taking OTC sudafed for this condition. Other health concerns were irregular menstrual cycles and migraines. Three years prior, she had conceived naturally and has a daughter. As a child the practice member had received allergy shots and used an intermittent inhaler. She had usual childhood illnesses and was vaccinated.

Examination and Re-Examination Findings: The initial examination revealed a visually healthy female. All deep tendon reflexes were normal and ROMs were performed effortlessly within normal range. As she was trying to conceive no radiographs were taken. Thermographs and sEMG scans were performed on the initial visit and subsequent re-examinations.

The Thermography scan is a paraspinal skin temperature study, with standardized protocols and established normative data utilized for computer analysis and comparision, which is used to assess sympathetic nerve function.The Static EMG scan is a paraspinal study, also with standardized protocols and established normative data (25-500Hz)utilized for computer analysis and comparison, which is used to assess location and extent of abnormal paraspinal muscle function (motor system).[15]

The following are the thermal results:

1) March 24, 2000 Initial Exam - Temperature differences one or two standard deviations greater than the mean (mild asymmetry) were observed at T1, T2, T6, T9, L2, L4. Temperature differences two or three standard deviations greater than the mean (moderate asymmetry) were observed at L3. Temperature differences three or four standard deviations greater than the mean (severe asymmetry) were observed at T3, T5, T11. Temperature differences four or more standard deviations greater than the mean (very severe asymmetry) were observed at T12, L1. (See Table 1a, page 3).
2) May 10, 2000 First Re-exam - Temperature differences one or two standard deviations greater than the mean (mild asymmetry) were observed at C5,T9. Temperature differences two or three standard deviations greater than the mean (moderate asymmetry) were observed at C6,T1. A temperature difference three or four standard deviations greater than the mean (severe asymmetry) was observed at C7. A temperature difference four or more standard deviations greater than the mean (very severe asymmetry) was observed at L5. (See Table 2a, page 4).
3) October13, 2000 Second Re-exam - Temperature differences one or two standard deviations greater than the mean (mild asymmetry) were observed at C1, C3, C5, T8, L1, L2, S1. Temperature differences two or three standard deviations greater than the mean (moderate asymmetry) were observed at C4, T11. (See Ttable 3a, page 5).
4) March 9, 2001 Third Re-exam - Temperature differences one or two standard deviations greater than the mean (mild asymmetry) were observed at C3,S1. Temperature difference two or three standard deviations greater than the mean (moderate asymmetry) was observed at T2. (See Table 4a, page6).

The following are the Static EMG results:

1) March 24, 2000 Initial Exam - Elevations one or two standard deviations above the mean were observed at C1(R), C5(L), C7(L&R), T4(L), S1(L&R). This is indicative of a mild elevation. An elevation two or three standard deviations above the mean was observed at C1(L). This is indicative of a moderate elevation. An area of significant asymmetry was noted at the following site: C5. (See table 1b, page 7).

(Continued on Page 7)

TABLE 1A

THERMAL: Fri Mar 24, 2000 at 12:29PM [Chart]

Asymmetry Table: degrees FAHRENHEIT

DIF	PSD	NSD	NORM	TEMP	SITE	TEMP	NORM	NSD	PSD	DIF
>>>				96.4	C1	96.9	0.41	0.29		0.50
>>>				96.8	C2	97.3	0.41	0.29		0.50
>>>				96.2	C3	96.9	0.41	0.29		0.69
>>>				96.9	C4	97.2	0.41	0.29		0.33
>>>				95.9	C5	96.2	0.41	0.29		0.31
>>>				94.1	C6	94.3	0.41	0.29		0.24
>>>				92.7	C7	93.0	0.41	0.29		0.26
>>>				91.6	T1	92.3	0.36	0.31	+	0.73
0.76	+	0.31	0.36	92.1	T2	91.3				<<<
>>>				90.4	T3	91.8	0.36	0.31	+++	1.41
>>>				91.5	T4	92.0	0.36	0.31		0.43
>>>				90.8	T5	92.1	0.36	0.31	+++	1.29
>>>				90.8	T6	91.6	0.36	0.31	+	0.79
>>>				91.2	T7	91.8	0.36	0.31		0.60
>>>				91.5	T8	92.1	0.36	0.31		0.61
0.96	+	0.31	0.36	91.1	T9	90.2				<<<
>>>				90.0	T10	90.6	0.36	0.31		0.63
>>>				89.8	T11	91.3	0.36	0.31	+++	1.51
>>>				90.3	T12	92.1	0.36	0.31	++++	1.76
>>>				89.4	L1	91.3	0.40	0.34	++++	1.92
>>>				89.0	L2	89.7	0.40	0.34	+	0.75
>>>				87.4	L3	88.6	0.40	0.34	++	1.19
>>>				86.9	L4	87.7	0.40	0.34	+	0.84
0.18		0.34	0.40	86.8	L5	86.7				<<<
>>>				86.5	S1	86.7	0.50	0.34		0.25

REF: Uematsu S, Edwin DH, Jankel WR, Kozikowski J, Trattner M: Quantification of thermal asymmetry. Part 1: Normal values and reproducibility. J Neurosurgery Oct. 1986, vol 69, pgs 552-555

THERMAL: Fri Mar 24, 2000 at 12:29PM [NCM]

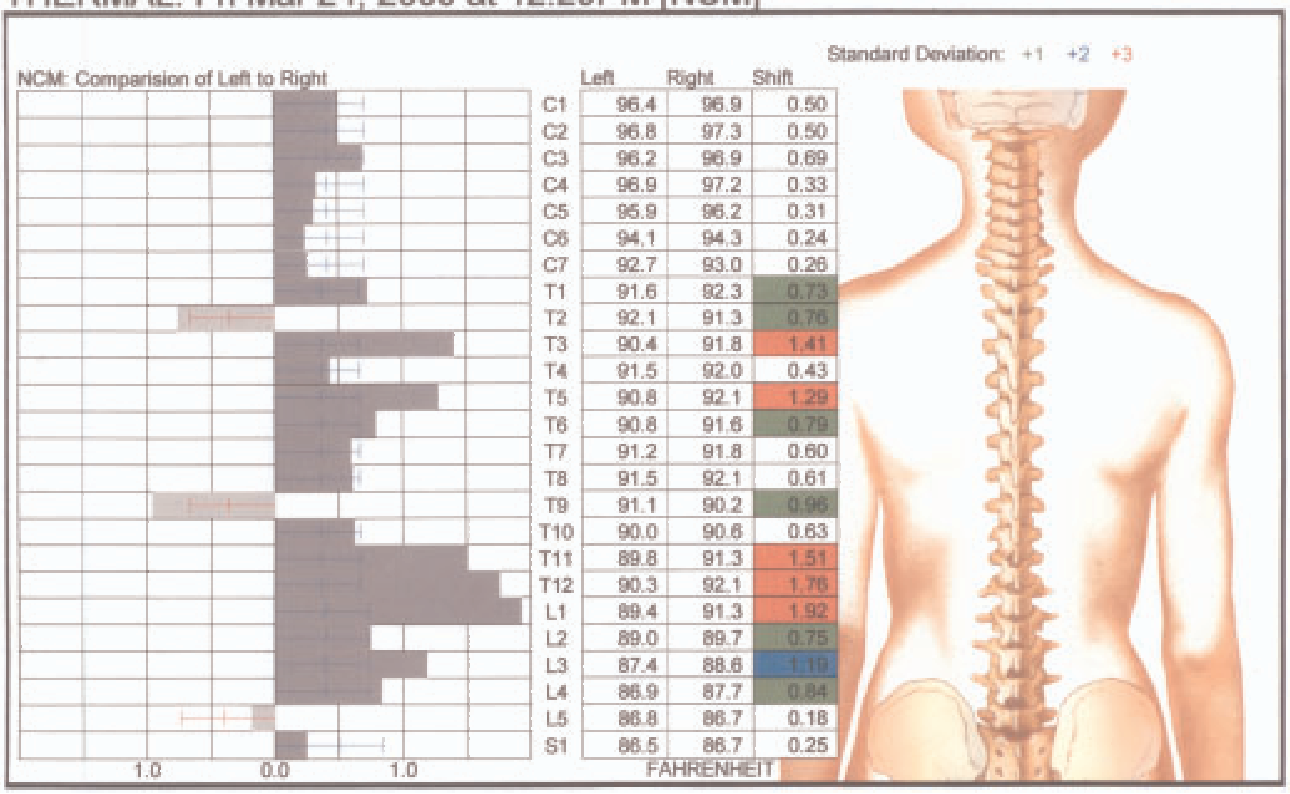


TABLE 2A

THERMAL: Wed May 10, 2000 at 12:25PM [Chart]

Asymmetry Table: degrees FAHRENHEIT

DIF	PSD	NSD	NORM	TEMP	SITE	TEMP	NORM	NSD	PSD	DIF
0.22		0.29	0.41	93.5	C1	93.3				<<<
>>>				94.7	C2	94.9	0.41	0.29		0.18
0.22		0.29	0.41	94.5	C3	94.3				<<<
>>>				94.3	C4	94.5	0.41	0.29		0.21
0.72	+	0.29	0.41	93.6	C5	92.9				<<<
1.13	++	0.29	0.41	93.0	C6	91.9				<<<
1.47	+++	0.29	0.41	92.4	C7	91.0				<<<
1.17	++	0.31	0.36	90.8	T1	89.7				<<<
>>>				89.6	T2	89.7	0.36	0.31		0.08
0.62		0.31	0.36	91.1	T3	90.5				<<<
>>>				90.1	T4	90.5	0.36	0.31		0.39
>>>				89.9	T5	90.1	0.36	0.31		0.16
>>>				89.5	T6	89.7	0.36	0.31		0.19
0.16		0.31	0.36	90.5	T7	90.3				<<<
0.26		0.31	0.36	90.0	T8	89.7				<<<
0.96	+	0.31	0.36	89.1	T9	88.1				<<<
0.24		0.31	0.36	88.9	T10	88.7				<<<
0.47		0.31	0.36	90.3	T11	89.9				<<<
0.61		0.31	0.36	91.0	T12	90.4				<<<
0.34		0.34	0.40	89.9	L1	89.5				<<<
0.70		0.34	0.40	89.1	L2	88.4				<<<
0.67		0.34	0.40	87.9	L3	87.2				<<<
0.35		0.34	0.40	86.8	L4	86.4				<<<
2.73	++++++	0.34	0.40	87.3	L5	84.6				<<<
0.58		0.34	0.50	85.6	S1	85.1				<<<

REF: Uematsu S, Edwin DH, Jankel WR, Kozikowski J, Trattner M. Quantification of thermal asymmetry. Part 1: Normal values and reproducibility. J Neurosurgery Oct. 1988, vol 69, pgs 552-555

THERMAL: Wed May 10, 2000 at 12:25PM [NCM]

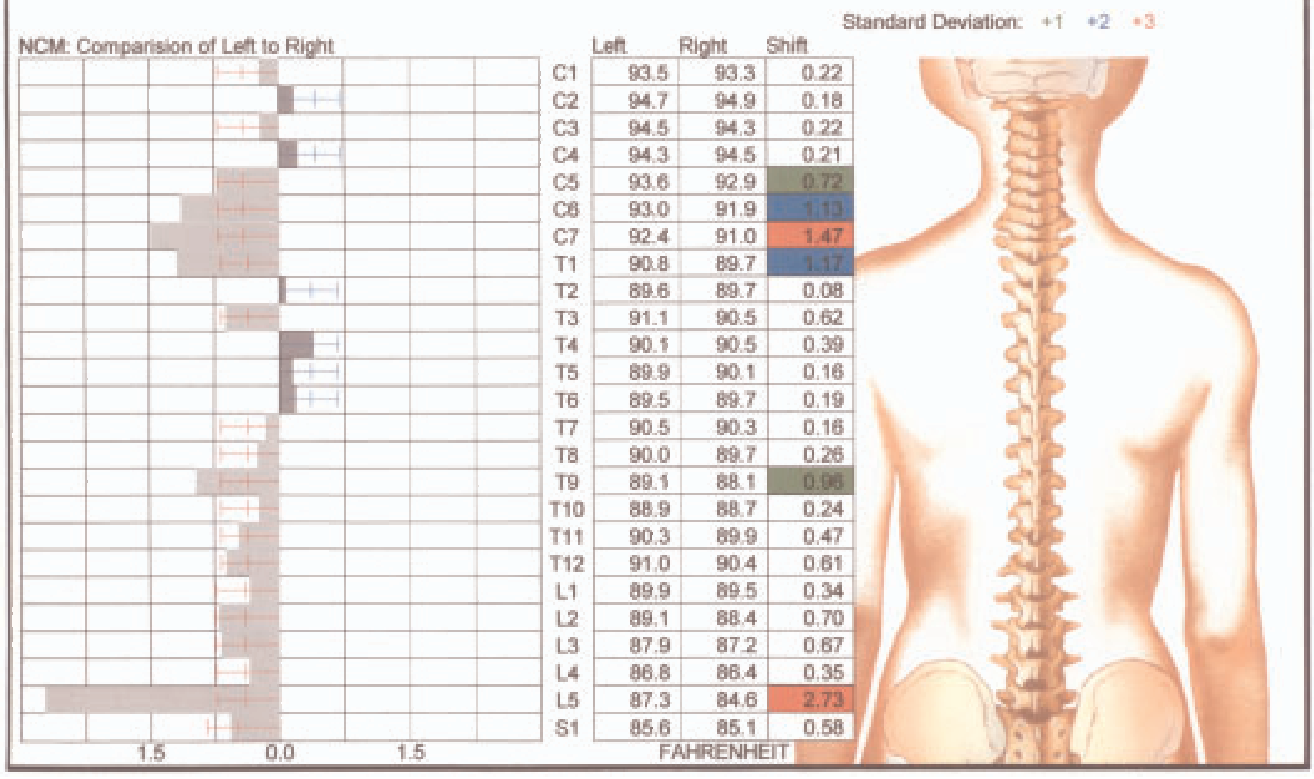


TABLE 3A

THERMAL: Fri Oct 13, 2000 at 11:56AM [Chart]

Asymmetry Table: degrees FAHRENHEIT

DIF	PSD	NSD	NORM	TEMP	SITE	TEMP	NORM	NSD	PSD	DIF
>>>				94.9	C1	95.7	0.41	0.29	+	0.81
0.32		0.29	0.41	95.3	C2	95.0				<<<
0.77	+	0.29	0.41	95.3	C3	94.5				<<<
>>>				94.3	C4	95.5	0.41	0.29	++	1.24
>>>				92.9	C5	93.9	0.41	0.29	+	0.96
0.63		0.29	0.41	93.3	C6	92.6				<<<
0.34		0.29	0.41	91.6	C7	91.3				<<<
0.43		0.31	0.36	90.9	T1	90.5				<<<
>>>				90.9	T2	91.4	0.36	0.31		0.48
>>>				92.0	T3	92.2	0.36	0.31		0.17
0.42		0.31	0.36	91.9	T4	91.5				<<<
>>>				91.7	T5	92.3	0.36	0.31		0.55
>>>				91.4	T6	91.8	0.36	0.31		0.41
>>>				91.2	T7	91.8	0.36	0.31		0.64
>>>				91.3	T8	92.1	0.36	0.31	+	0.78
>>>				91.3	T9	91.8	0.36	0.31		0.48
0.18		0.31	0.36	90.5	T10	90.3				<<<
>>>				89.4	T11	90.5	0.36	0.31	++	1.17
>>>				90.1	T12	90.6	0.36	0.31		0.46
>>>				90.3	L1	91.1	0.40	0.34	+	0.79
>>>				89.3	L2	90.1	0.40	0.34	+	0.79
0.23		0.34	0.40	88.8	L3	88.6				<<<
0.08		0.34	0.40	88.1	L4	88.0				<<<
0.72		0.34	0.40	88.4	L5	87.7				<<<
1.08	+	0.34	0.50	88.1	S1	87.0				<<<

REF: Uematsu S, Edwin DH, Jankel WR, Kozikowski J, Trabner M: Quantification of thermal asymmetry. Part 1: Normal values and reproducibility. J Neurosurgery Oct. 1988, vol 69, pgs 552-555

THERMAL: Fri Oct 13, 2000 at 11:56AM [NCM]

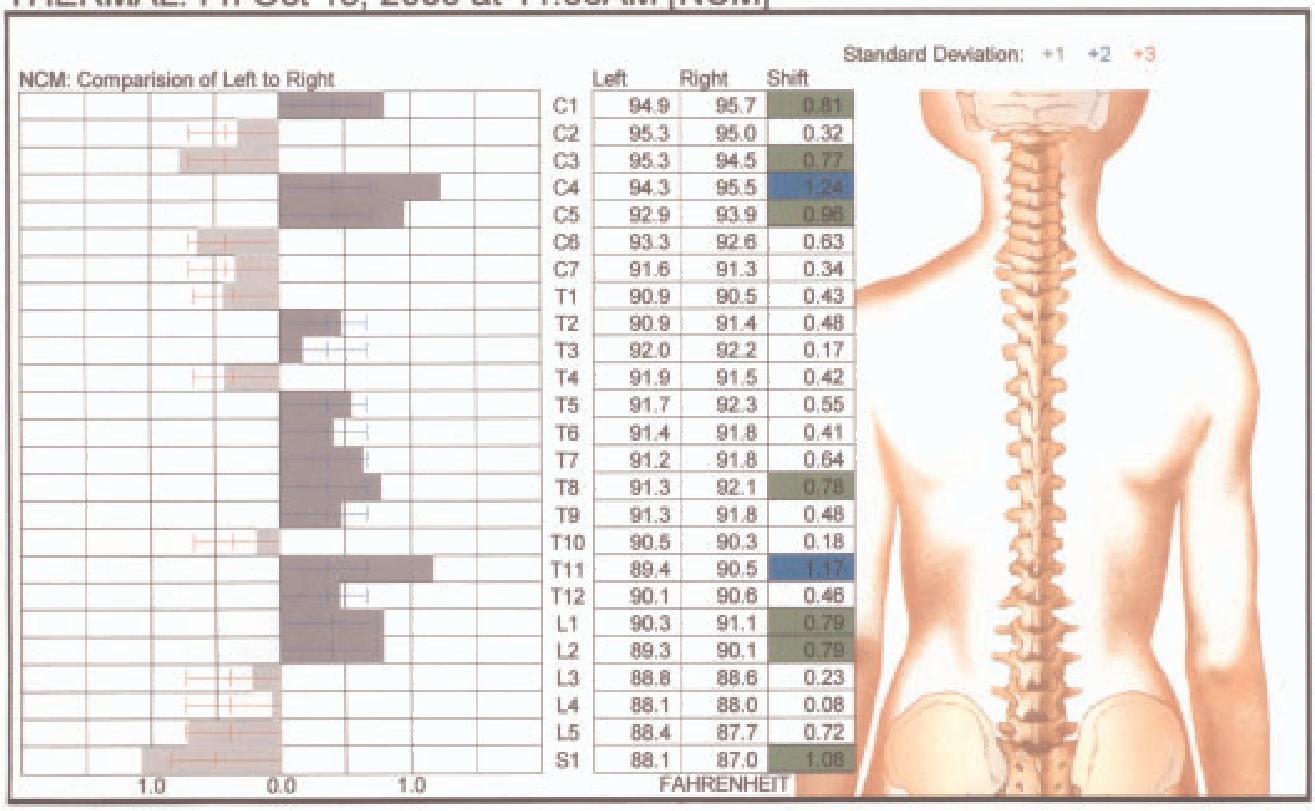


TABLE 4A

THERMAL: Fri Mar 09, 2001 at 09:59AM [Chart]

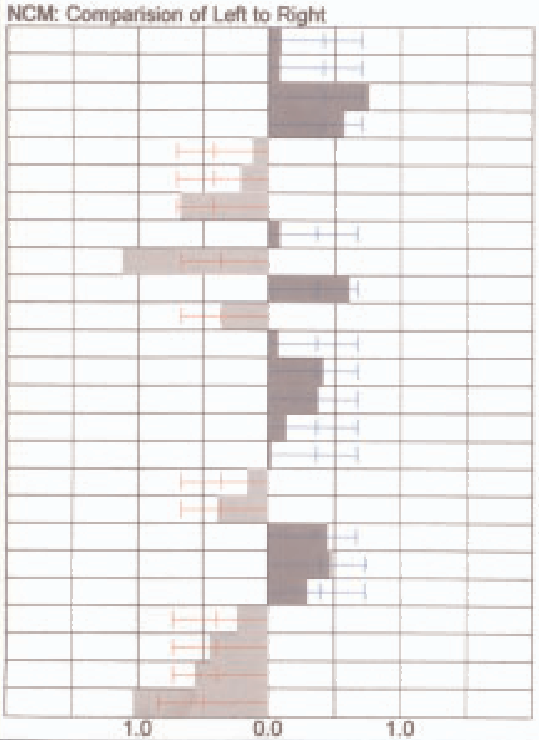
Asymmetry Table: degrees FAHRENHEIT

DIF	PSD	NSD	NORM	TEMP	SITE	TEMP	NORM	NSD	PSD	DIF
>>>				95.8	C1	95.8	0.41	0.29		0.09
>>>				95.9	C2	96.0	0.41	0.29		0.09
>>>				95.5	C3	96.3	0.41	0.29	+	0.76
>>>				95.0	C4	95.6	0.41	0.29		0.57
0.12		0.29	0.41	93.8	C5	93.7				<<<
0.21		0.29	0.41	93.0	C6	92.8				<<<
0.68		0.29	0.41	92.4	C7	91.7				<<<
>>>				90.7	T1	90.8	0.36	0.31		0.09
1.13	++	0.31	0.36	91.2	T2	90.1				<<<
>>>				90.7	T3	91.3	0.36	0.31		0.61
0.36		0.31	0.36	92.2	T4	91.8				<<<
>>>				91.1	T5	91.2	0.36	0.31		0.08
>>>				91.1	T6	91.5	0.36	0.31		0.41
>>>				90.3	T7	90.7	0.36	0.31		0.38
>>>				90.7	T8	90.8	0.36	0.31		0.14
>>>				90.8	T9	90.9	0.36	0.31		0.03
0.16		0.31	0.36	90.2	T10	90.0				<<<
0.39		0.31	0.36	89.3	T11	88.9				<<<
>>>				88.9	T12	89.3	0.36	0.31		0.45
>>>				89.5	L1	90.0	0.40	0.34		0.47
>>>				88.8	L2	89.1	0.40	0.34		0.30
0.24		0.34	0.40	88.1	L3	87.9				<<<
0.45		0.34	0.40	87.0	L4	86.6				<<<
0.56		0.34	0.40	86.6	L5	86.0				<<<
1.03	+	0.34	0.50	85.2	S1	84.2				<<<

REF: Uematsu S, Edwin DH, Jankel WR, Kozikowski J, Trattner M: Quantification of thermal asymmetry. Part 1: Normal values and reproducibility. J Neurosurgery Oct. 1988, vol 69, pgs 552-555

THERMAL: Fri Mar 09, 2001 at 09:59AM [NCM]

NCM: Comparision of Left to Right



Standard Deviation: +1 +2 +3

	Left	Right	Shift
C1	95.8	95.8	0.09
C2	95.9	96.0	0.09
C3	95.5	96.3	0.76
C4	95.0	95.6	0.57
C5	93.8	93.7	0.12
C6	93.0	92.8	0.21
C7	92.4	91.7	0.68
T1	90.7	90.8	0.09
T2	91.2	90.1	1.13
T3	90.7	91.3	0.61
T4	92.2	91.8	0.36
T5	91.1	91.2	0.08
T6	91.1	91.5	0.41
T7	90.3	90.7	0.38
T8	90.7	90.8	0.14
T9	90.8	90.9	0.03
T10	90.2	90.0	0.16
T11	89.3	88.9	0.39
T12	88.9	89.3	0.45
L1	89.5	90.0	0.47
L2	88.8	89.1	0.30
L3	88.1	87.9	0.24
L4	87.0	86.6	0.45
L5	86.6	86.0	0.56
S1	85.2	84.2	1.03

FAHRENHEIT

(Continued From Page 7)

2) May 10, 2000 First Re-exam - An elevation one or two standard deviations above the mean was observed at C1 (L&R). This is indicative of a mild elevation. Areas of significant asymmetry were noted at the following sites: L1, L5. (See Table 2b, page 8).
3) October 13, 2000 Second Re-exam - Elevations one or two standard deviations above the mean were observed at C1(L), C5(L), T2(L). This is indicative of a mild elevation. Areas of significant asymmetry were noted at the following sites: C1, C7, T2, S1. (See Table 3b, page 8).
4) March 9, 2001 Third Re-exam - Elevations one or two standard deviations above the mean were observed at C1(R), C3(L), C5(L). This is indicative of a mild elevation. An elevation two or three standard deviations above the mean was observed at C1(L). This is indicative of a moderate elevation. Areas of significant asymmetry were noted at the following sites: C3, T4, S1. (See Table 4b, page 9).

Chiropractic Care Rendered: For the first three months (21 visits) of care the practice member received Diversified chiropractic adjustments. Diversified technique is a segmental model; subluxations are described as alterations in specific intervertebral motion segments.[16] The practice member was assessed at each visit to detect the area(s) of subluxation. Motion and static palpation, visual observation, Deerfield leg check and cervical syndrome test were performed. Upon detection of the vertebral subluxation(s) location, a specific manual chiropractic thrust was given with the appropriate angle, drive and force. The practice member received care 12 times in my office between March 24–May 8, 2000. On May 10, 2000 she had a re-evaluation (see above results). May 10-June 23, 2000 the practice member had nine office visits and continued to receive diversified adjustments.

During the year 2000 and at the time the practice member was receiving care, I was in the process of changing my adjusting technique to a tonal model (Network Spinal Analysis-NSA[17]). Tonal models are generally based on meningeal and dural tension. As I had a segmental model practice for 14 years, I converted my practice members over during the summer and fall months. I initially incorporated the Torque Release Technique (TRT) which utilizes the Intergrator™, a torque and recoil release adjusting instrument. TRT is a tonal model approach, which is non-mechanistic and non-linear. The practice member received Torque Release adjustments for 12 office visits from July 5-October 23, 2000. The practice member was assessed at each visit using the TRT phasing systems and observations. On October 13, 2000 a re-evaluation was performed (table 3a and 3b)and a pattern of recurrent coccyx subluxations was noted at that time.

(Continued On Page 9)

TABLE 1B

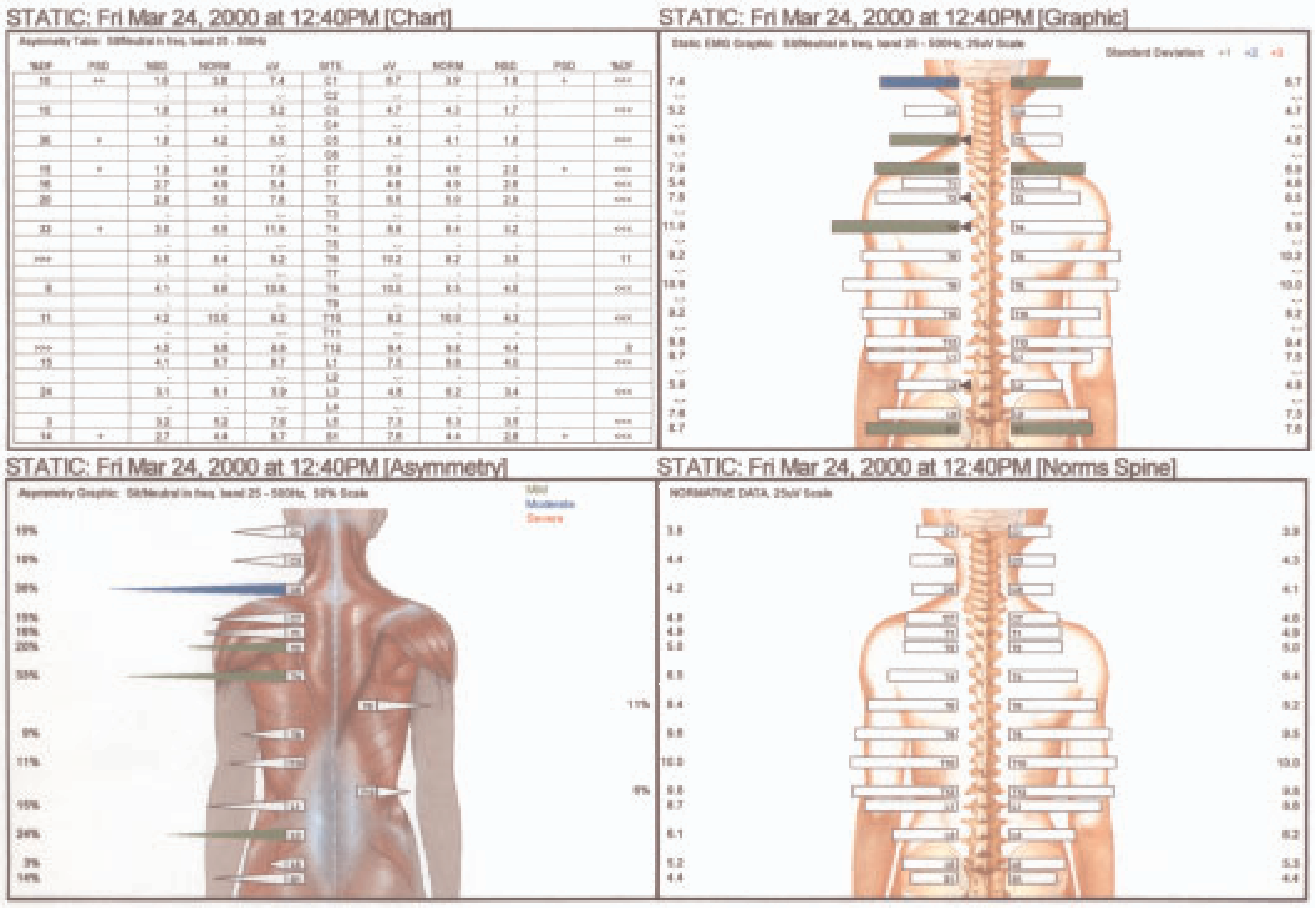
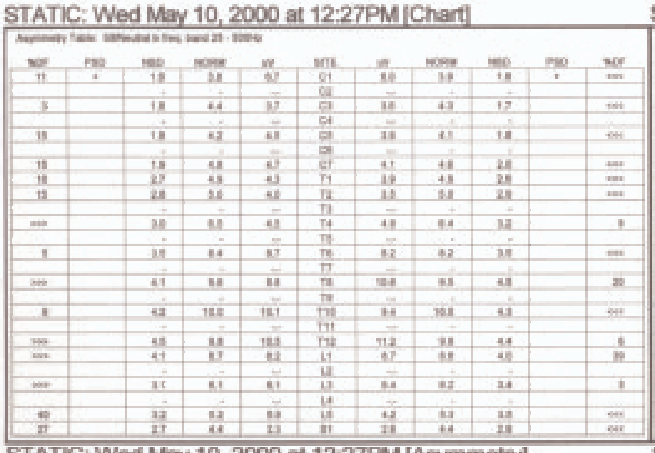


TABLE 2B

STATIC: Wed May 10, 2000 at 12:27PM [Chart]



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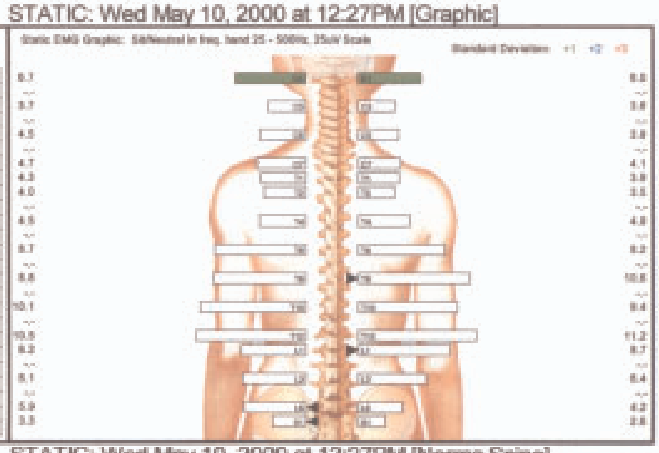

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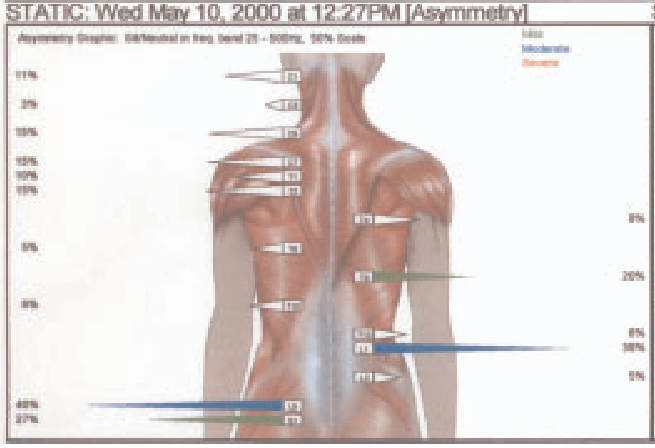


STATIC: Wed May 10, 2000 at 12:27PM [Norms Spine]

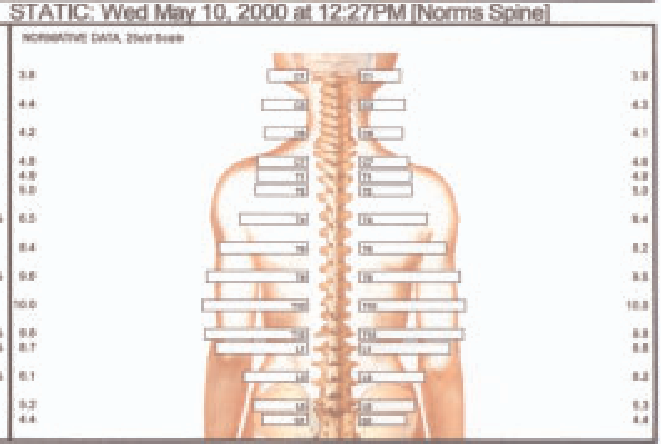
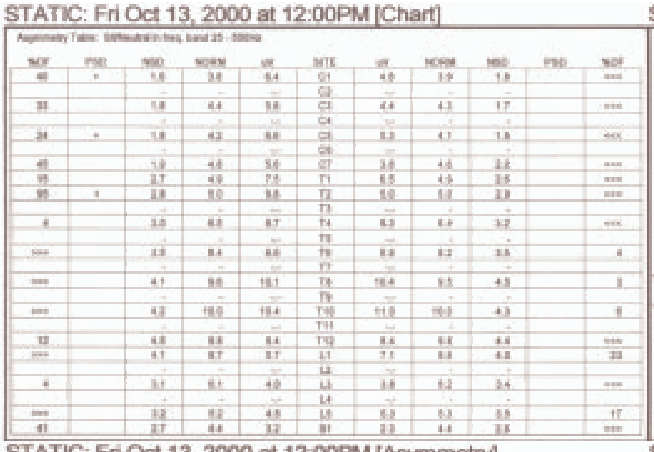
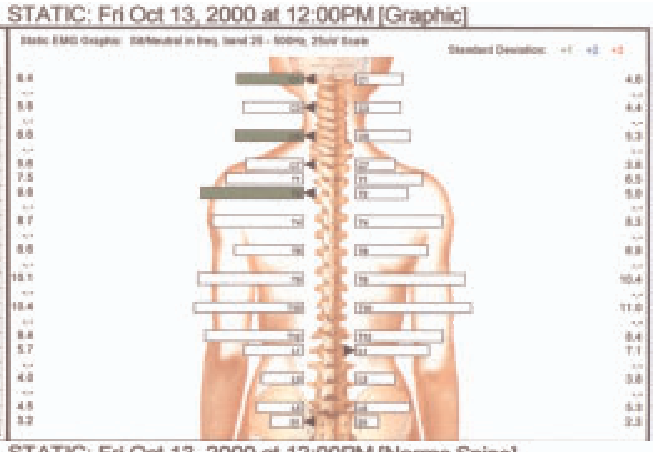


TABLE 3B

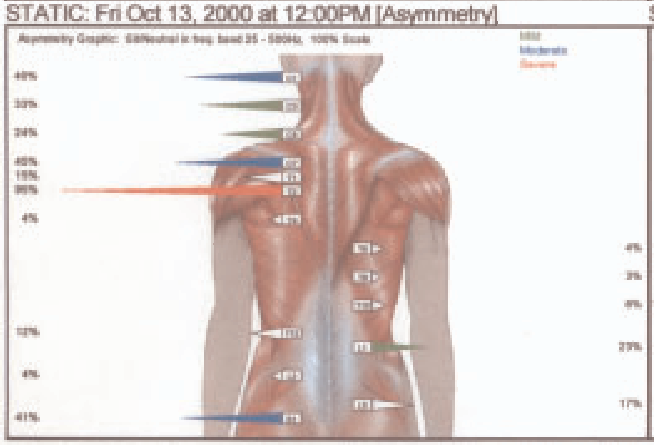
STATIC: Fri Oct 13, 2000 at 12:00PM [Chart]



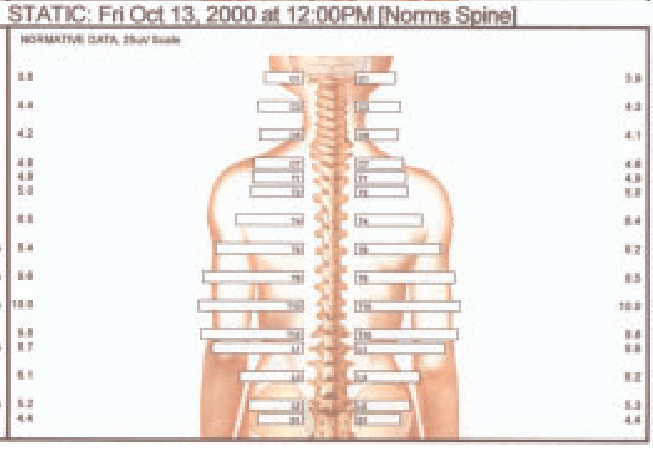
STATIC: Fri Oct 13, 2000 at 12:00PM [Graphic]



STATIC: Fri Oct 13, 2000 at 12:00PM [Asymmetry]



STATIC: Fri Oct 13, 2000 at 12:00PM [Norms Spine]



(Continued From Page 7)

Results of Care: The practice member chose to stop taking the ovulation stimulating drug, clomid, one month into care. She was not happy taking the medication due to the side effects[18] and wanted to allow her body to function naturally. By the third month of care she reported her menstrual cycle had been normal for two months. On July 17, 2000, she felt she had (drug-free) ovulated on her own. Although pregnancy did not occur by September, the practice member continued to have normal cycles. Her medical doctor recommended she have a Laparoscopy due to continued infertility. Her initial reaction was not to have the procedure. Although she experienced high stress over the procedure she conceded and had it done at the end of October 2000. The results were negative. At the beginning of November the practice member had some personal commitments and was unable to continue regular care for a couple of months. At her March 9, 2001 office visit, she reported she was nine weeks pregnant. Nine months after receiving initial chiropractic care the practice member conceived naturally and then carried the baby to term without complications.

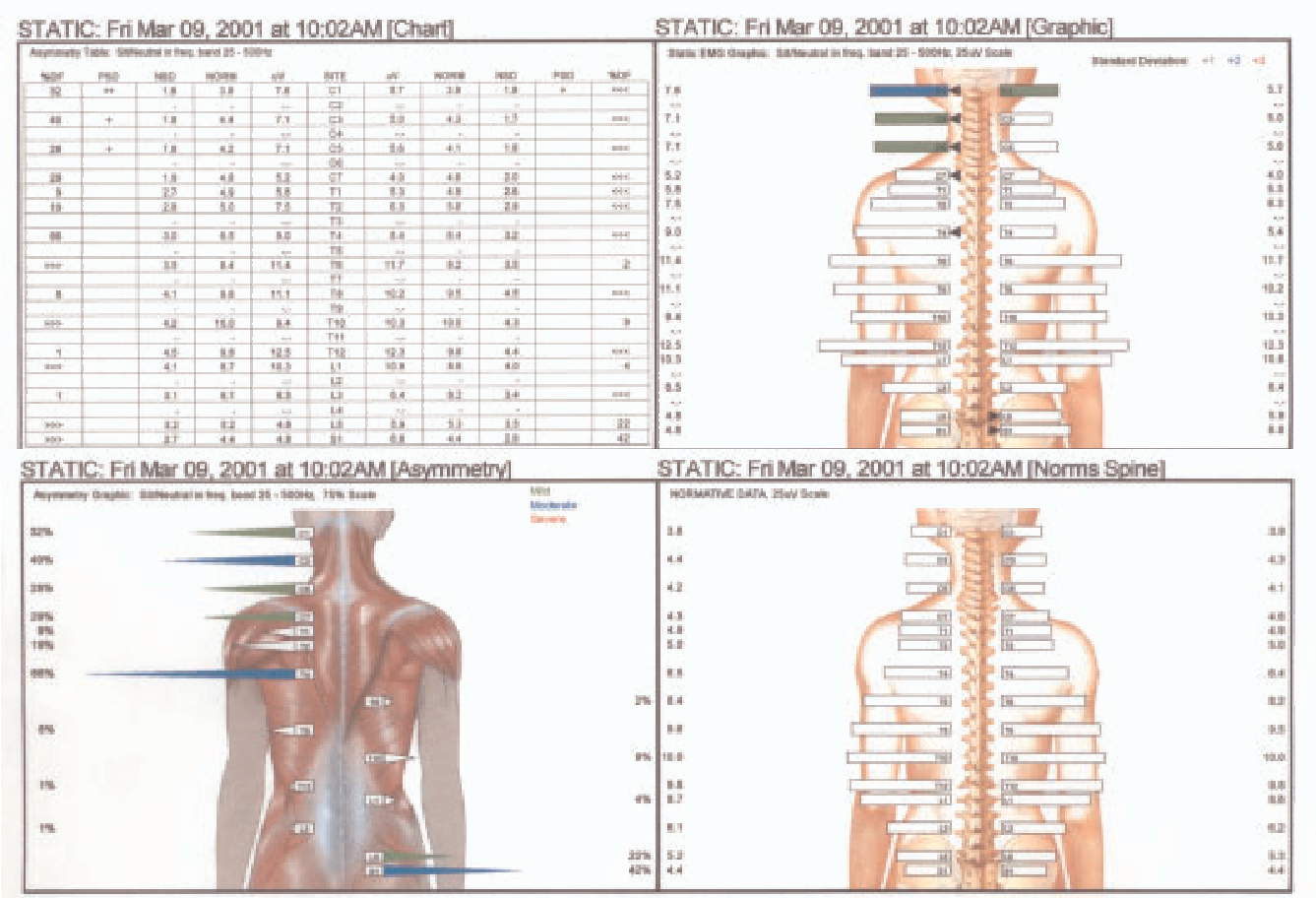
Thermography[19] and sEMG[20] scans are important objective tests in observing the change and improvement of the autonomic and motor systems while under subluxation based chiropractic care.

Upon evaluating the thermal and sEMG scans of this practice member we can see a definite overall improvement and continued change. Considering the presenting concern was infertility the thermal scans demonstrate interesting results, the areas of significant change have sympathetic nerve connections to the reproductive organs and adrenal glands. The readings on Figure #4a show a more balanced autonomic system. The practice member was able to conceive naturally and was nine weeks pregnant at the time of the March 9, 2001 scan.

Discussion

Chiropractic does not treat symptoms nor claim to cure medical conditions; however, this study demonstrates the impact of improved autonomic nervous system function while under care. Prior to subluxated based chiropractic care the practice member's menstrual and ovulation cycles were irregular. She was trying to conceive for over one year, was experiencing infertility, and medical treatment had been unsuccessful. After the application of chiropractic care, she experienced normal menses and was able to ovulate without the use of drugs within three months of regular care. The practice member received segmental diversified chiropractic adjustment for the first three months followed by four months of tonal adjusting utilizing the Torque Release Technique. Thermal and sEMG scans were performed at the initial examination and three reevaluations. As the thermal scans showed decreased overall asymmetry, indicating improved sympathetic nerve function, the practice member's previously diagnosed "lazy (reproductive) system" returned to normal func-

TABLE 4A



tion. Natural conception occurred nine months after onset of wellness chiropractic care.

In addition, reports and case studies regarding gynecological conditions and chiropractic were found. Dr. J.E. Browning[12,13] wrote about the positive effects of chiropractic on pelvic disorders, including gynecologic and sexual dysfunction. A case study by McNabb[21], documents the restoration of female fertility after receiving chiropractic care.

The practice member continued chiropractic care throughout her pregnancy. Her labor (six hours) and delivery were uncomplicated.

Conclusion

Increased function of the autonomic nervous system as a result of chiropractic care appears to benefit normalization of the menstrual cycle, in this case regular ovualtion occurred and subsequent pregnancy. Infertility effects 15% of the United States population, and current medical care involves significant expense and potentially severe side effects. As a matter of Public Health, natural approaches which promote health and wellness, and their subsequent results, warrant study on their benefits, safety, and cost-effectiveness. This article serves as a foundation in consideration of chiropractic as an integral part of further formal research.

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