

Torticollis, Plagiocephaly/Facial Asymmetry and CranioSacral Therapy

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Personal Information: 6 Month Old Boy

CranioSacral Therapy Cost Comparison Analysis:

Baby Brandon was seen for evaluation and 10 CranioSacral therapy treatments including home exercise program once every 1-2 weeks, for an average of 1 hour, over a span of 4 months. Cost of treatment was about \$1,500. Comparable treatment for plagiocephaly entails the infant being fitted with a padded custom helmet which is then worn 23 hours a day, and is re-fitted every 2-3 weeks, for about 6 months, at an average price of about \$4,000. The helmet applies pressure in the broadened areas of the cranium, and leaves space in the contracted or flattened areas of the cranium, and gradually pushes and molds the head into a more symmetrical shape, without releasing any of the underlying restrictions. I have personally seen two cases where the patient was already using a Star Band or other custom helmet. In the first situation the toddler was 15 months old, and the helmet had a significant impact on increased shyness, and self-consciousness, and a decreased desire to explore and interact with the environment and others. Much of our therapy entailed sensory desensitization to the head and neck, and increasing comfort in interactions and physical/social exploration of the environment. In the other situation, the 11 month old baby had significant hypertonicity/spasticity, and was constantly patterning and rubbing in the helmet creating open sores which would not heal, and were very uncomfortable. This was very frustrating for the family, and child. My other concern is that plagiocephaly is almost always accompanied by an asymmetrical tightness in the neck which causes the child to pattern to one side, and keep pressure on the head. This would not change with the helmet. Regarding stretching the tight neck muscles, in 23 years of pediatric physical therapy experience, I have not seen a case of torticollis that did not also involve asymmetry in the pelvis and spine. Like a spring, when the entire trunk of the body is not attended to, the neck stretching etc. is only minimally effective, and the restrictions through the spinal soft tissue and the pelvis continually pull the neck back out of neutral alignment.

HISTORY & BACKGROUND:

Brandon had been in a breech position, and after a 26-hour labor, the problem was discovered, and Brandon was delivered by Caesarian-section. Brandon's mother had concerns about Brandon very early on, but was placated by medical staff and family. She was finally able to bring him in for initial evaluation when he was 6 months old. Her greatest concerns were both the asymmetry in his head shape and face, which continued to grow progressively worse, and that he had poor head control did not tolerate prone, and was showing no signs of rolling or sitting independently. Upon evaluation, he was tested using the Alberta Infant Motor Scale (AIMS) and was shown to be functioning at the low 5th percentile for his chronological age of 6 months. His resting and movement patterns were very asymmetrical, and he was unable to move out of these restrictions, thus not progressing in gross motor skills.

Mother noted that he had the following neurological markers:

1. he was constipated, and had bowel movements only every two days
2. he had difficulty with latch and suck, and breastfeeding was very difficult early on, favoring one position
3. he experienced some reflux after eating and had a highly sensitive gag reflex
4. he did sleep well, from 8-9 hours at night, and 1-2 hour naps.

OBJECTIVE FINDINGS:

Gross Motor Skills, Postural Patterns, and Range of Motion: As noted above, Brandon was functioning with a significant 2 month delay (33 percent) based on the AIMS and the average skill level of a 6 month old baby. He was functioning at the 5th% for his age. Resting position in Case Study of 6 Month Old Boy with Torticollis and Plagiocephaly/Facial Asymmetry Pg. 2 supine demonstrated left side-bent neck an average of 12 degrees, with minimal right rotation, with pelvic obliquity (the right anterior superior iliac spine 1.0 cm superior to the left) scapulae retracted with poor upper extremity reaching, kicking only on the right lower extremity as facilitated by pelvic obliquity. In prone position he kept weight shifted greater onto the left body and arm, and head again side-bent an average of 12 degrees left, and slightly rotated to the right. He showed no volitional active cervical side bending, and kept head in left side-bent position, but could actively rotate his head 60 degrees right and 55 degrees left. Passive range of motion for cervical side-bending measured 30 degrees right and 58 degrees left +/- 5 degrees.

CranioSacral Assessment:

Brandon demonstrated significant facial asymmetry, with the left eye slit superior by 4-5 mm, and open wider than the left. The mandible was perched in a 15 degree counterclockwise rotation (viewed facing him) and the forehead was very prominent with comers at the superior lateral frontal ridges, more prominent anteriorly on the right. The right ear was about 1.0 cm superior, 2.0 cm anterior to the left ear. He had a significant flattening on the left occipito-parietal area of the skull, measuring at an angle of 45 degrees from the mid-line base transverse plane of 0 degrees. He also had an indentation on the right parietal bone, just superior to the right lateral section of the lambdoidal suture, and superior to the temporal bone, of about 3.5 cm diameter. The measurement from the lateral brow ridge to the same side anterior auricular attachment was 5.2 cm right and 4.8 cm left. Brandon had lumbo-sacral compression with right sacro-iliac joint tightness. He had palpable dural tube restrictions at the levels of T4/5 and T7/8, and significant compression of the occipito-atlantal joint. The sphenobasilar joint was in a superior vertical shear, left sheared, left side-bent and right rotated position, with much greater flexion excursion, and barely any extension. The dural membranes in the cranium were restricted and tight throughout the falx cerebri and cerebelli, and the tentorium cerebelli.

CranioSacral Treatment and Home Exercise Program:

It is critical that with the "back to sleep" campaign to avoid increased incidence of SIDS, positioning be monitored throughout the day and night. Repeated pressure to the same flattened place on the cranium from sleeping on the back with the head sidebent and rotated away continues to contour the cranium asymmetrically. The family was taught how to align the pelvis in neutral in the car-seat carrier, blocking it gently with towel rolls bilaterally, and then placing a soft roll by the left ear to prevent resting in left side-bent cervical position. Lots of active playtime in prone with supervision was encouraged to get Brandon off the left parieto-occipital flattened area. Right side-lying play position was also encouraged. When the child could be monitored full-time, swaddling and right side-lying nap position was also encouraged. (There are also some other devices available for sleep positioning which are available including the Ambey Baby - a hammock type arrangement that attaches to the side of the adult bed, or a memory foam wedge cushion which elevates the head slightly to decrease the pressure to the head in supine. Neither of these items were available to the family in the case.) Brandon's parents were also shown a variety of exercises to facilitate equal movement of the body on both sides and to facilitate gross motor skill development. Facilitating active use of the new range of motion provided by the CranioSacral therapy is of utmost importance for speedier progress and more complete symmetry of movement.

The modified "ten-step protocol" was employed initially, to help get Brandon's pelvis in neutral, and decrease dural tube tension throughout. Occipito-atlantal decompression required repeated releases for it to hold consistently, including releases to all the cranial sutures, and cranial dural membranes. Progressive releases of the spheno-basilar joint lesion patterns with passive releases into the direction of ease first were tolerated well. As releases progressed and held better from session to session Brandon's forehead lost its look of "hardness and pressure" as the lateral frontal ridges lost their superior corners and became more rounded. Temporo-mandibular joint decompressions progressively were effective, as well as releases to hyoid muscles both externally and intra-orally. Decompression to the maxilla, vomer, and palatines through modified techniques were also included in his treatment. Direction of energy techniques and antero-posterior gentle vertebral mobilizations helped to release facilitated segments as noted above in T4/5 and T7/8. Doral tube elongation and unwinding from handholds of the sacrum and occiput were very beneficial in reducing rotation in the system, and helped pelvic obliquity remain neutral. Brandon tolerated treatment well with toys, songs, and entertainment during treatment sessions, but became increasingly mobile and active, and didn't want to lie still as he grew and developed. This highlights the importance of treating this diagnosis as soon as possible. An infant is happy to remain still for periods of time. After 8-10 months of age, it takes a gifted and very flexible therapist to keep the child busy working in unorthodox positions to get the releases that are needed!

PROGRESS:

Brandon made rapid progress and within 6 visits (40 days) he had progressed to the 50th percentile for his gross motor skills and was moving more symmetrically. His passive range of motion for cervical side bending improved to 70 degrees bilaterally (from 30 right and 58 degrees left,) without direct stretching. He could rotate his head within normal limits bilaterally (85-90 degrees,) up from 60 degrees right and 55 degrees left. After the next 5 visits his facial symmetry improved significantly with no measurable rotation of the mandible, eyes level and eye slits equal, ears level and equal antero-posteriorly within measurable error. He measured lateral brow to anterior auricular attachment at 5.1 cm right and 5.3 cm left (changed from 5.2 cm right and 4.8 cm left.) Frontal ridge superior corners diminished, and left occipito-parietal flattening improved from 45 degrees flattening from the mid-line, to rounding in the midline (10-15 degrees,) and more laterally at 65 degrees mirroring the right side more closely in a gradual rounding antero-laterally. Spheno-basilar joint was aligned in neutral, with equal flexion and extension excursion, and he continued to gain improved mobility and robust quality of movement. He no longer rested in left cervical side-bending and kept head in neutral mid-line. Brandon demonstrated active balance reactions and righting reactions with active right cervical side-bending when he was tilted to the left (moving out of his stuck pattern.) This was impossible before treatment. He was able to move upper and lower extremities equally and roll supine to prone and back both ways, creep in four-point position independently, sit in neutral tailor position with weight bearing in midline instead of to the left while using upper extremities for reaching in all directions. He began to have bowel movements after eating or at least daily, with no reflux, decreased gag hypersensitivity, easier time eating and tolerating new textures, and he continued to sleep well. There was a phase of about 4-5 weeks when mother noted that he became very hypersensitive to any loud noises and she remembered that they were unable to get a normal bearing test on one side as an infant. As time progressed, he was no longer sensitive to sounds of any type or decibel level, and he responded well to spoken language at even very quiet levels (whisper) on both sides. Mother was very pleased both with his appearance as family and friends who hadn't seen him much were very surprised at how different he looked, and his gross motor progression was now developing easily on its own, and on target for his age.

Abstract:

In this case study, a six month old boy with plagiocephaly and left torticollis was treated with 11 sessions of CranioSacral therapy, for an average length of 1 hour, over a span of 4 months, including home exercise and positioning programs, and physical therapy facilitation of gross motor skills. Brandon had multiple asymmetries in the face and cranium, with significant 45 degree flattening of the occipito-parietal region on the left from midline transverse plane of 0 degrees. There were several restrictions noted in the spine, with pelvic obliquity as well. The lumbo-sacral, occipito-atlantal and spheno-basilar joints were all very compressed, with asymmetry in the spheno-basilar joint. He had several other symptoms including difficulty with latch and suck strength and control, hypersensitive gag reflex, mild reflux initially, and constipation. All of these resolved. These might be attributed to restrictions in the cranium impinging on cranial nerves IX, X, and XI. Brandon progressed rapidly improving his gross motor skills from the 5th% on the AIMS, to the 50th percentile in 40 days. He could turn head actively in all directions, creep in four-point, and roll supine to prone and back in both directions, as well as sit independently with protective extension in all directions. He resolved facial symmetry with neutral eyes, and eye slit size, and neutral mandible, and ears level and closer antero-posteriorly. He measured lateral brow ridge to anterior auricular attachment at 5.1 cm right and 5.3 cm left (changed from 5.2 cm right and 4.8 cm left.) Frontal ridge comers diminished, and left occipito-parietal flattening improved from 45 degrees flattening from the mid-line, to rounding in the mid-line, and more lateral at 65 degrees mirroring the right side more closely in a gradual rounding antero-laterally. He no longer rested in left cervical side-bending and kept head in neutral mid-line. His passive range of motion for cervical side bending improved to 70 degrees bilaterally (from 30 right and 58 degrees left.) He could rotate his head within normal limits bilaterally (85-90 degrees) up to 60 degrees right and 55 degrees left. Mother also noticed that his hearing became hypersensitive to any loud noises for a period of 4-5 weeks, then resolved, and she remembered that he had failed his hearing screening at infancy on one side. In all, Brandon made remarkable progress with frequent intervention, and cranial contouring took place naturally as the cranial restrictions were freed up. This provides a measurable and very encouraging alternative to orthotic helmets for cranial shaping and typical physical therapy stretching for cervical tightness. Research regarding this diagnosis comparing multiple interventions would be very instructive, and I hope to get a grant to pursue this research.