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Infant Vertical Suspension testing

Martin G. Rosen

Narrative: In 2018 a Melbourne Chiropractor placed on social media a video of him safely and professionally performing an infant vertical suspension test. Leaving aside the stupidity of any Chiropractor using social media to show videos of their professional activities which are private interactions with a patient, the video of the test was used by Deep Medicine to hysterically and politically attack Chiropractors for inappropriate treatment of children.

In turn this led to the Government of the State of Victoria, Australia, in 2019 commissioning an agency of its Department of Health and Human Services, Safer Care Victoria (SCV), to undertake a review of chiropractic manipulative care for children under 12 years of age. This review found Chiropractic care to be safe.

However as of September 2024 the care of children in Australia by Chiropractors remains in question given the Federal Minister for Health, again under medical pressure, required the Chiropractic Board of Australia to restore its warning against Chiropractors providing spinal manipulation to children under 2.

The actual test in question sits within the standard protocols of safe care of infants in both medicine and chiropractic, a reality obfuscated by the medical enemies of Chiropractic in their eagerness to advance the Iowa Plan for containment of the profession.

This paper by a world-renown paediatric Chiropractor and educator examines the 'infant vertical suspension test' and gives clinical meaning to the observations provided by this safe and effective, gentle clinical test.

Indexing Terms: Chiropractic; evidence based practice; paediatrics; Safer Care Victoria; infant vertical suspension test; hanging baby.

Introduction

Holding an infant by their heels and gently spanking their backside is a procedure used by doctors for centuries purportedly to help encourage a child to breathe shortly after their birth. By the mid 20th Century this procedure fell out of favour because it was not found to have any particular supportive evidence. However around that time Vaclav Vojta began publishing his studies investigating infant neurokineslogical developmental related postures using infant vertical suspension procedures looking for the Peiper-Isbert reaction. (1, 2, 3, 4)

'... clinically this procedure is safe and is an effective indicator of how to diagnose and guide treatment of abnormal dural meningeal tension in infants ...'

Since the 1970s chiropractors who studied under Major Bertrand DeJarnette have used the vertical suspension or its pseudonyms, the inverted swing test or heel hang test, performed very gently and carefully, as a procedure to help diagnose dural meningeal stress patterns in the pre-ambulatory infant. (5, 6, 7, 8, 9) Vertically suspending the child for approximately 5-15 seconds is a

procedure commonly utilised in the field of medicine to assess neurological development in high high-risk infants. (1, 2, 3, 4)

Chiropractors can similarly use this medical related diagnostic procedure to assess meningeal and any associated myofascial compensatory patterns. This procedure has been taught in Sacro Occipital Technique (SOT) paediatric seminars since for over 50 years. (5, 6, 7, 8, 9) While there have been thousands of SOT practitioners using this procedure on infants, to date, there has never been a report of any adverse reaction or side effect. Still there are cautions that include, but are not limited to, conditions such as possible hip dysplasia, a cranial shunt, recent head trauma causing inflammation, cranial haematoma, or any presentation where increased cranial haemodynamic pressure may be contraindicated.

The goal of this gentle and brief vertical suspension test in the field of Chiropractic is to use gravity to gently increase the traction on the dural meningeal system while at the same time assessing any compensatory myofascial patterns. (10) Over decades of clinical study with thousands of infants treated by thousands of SOT chiropractic practitioners the consensus is that using this vertical suspension pre- and post-assessment can help localise then guide correction of any abnormal infant myofascial compensatory patterns.

Traditionally dural stress and the dural system were considered to be very flexible, but current findings suggest that the dural meningeal system is not as flexible as we had previously assumed. What does give some 'flexibility' to this dural meningeal system are tiny 'folds' in the meningeal tissues. Clinically SOT practitioners have found that when you stretch these meningeal folds, it is possible to release or reduce the amount of excess flexibility in that system. In the 1970s neurosurgeon Alf Breig published research on his findings concerning how normal dynamic tension in the meningeal system and neurological conductivity and function is best achieved when that meningeal tension is balanced, essentially when there is not too much or not too little tension. (11)

There is a normal natural dynamic tension which is present in the function of the neural tissues within the brain and spinal cord. These tensions are maintained through positions and connections existing in and around the neural substance via the pia mater. (11)

Therefore, as more meningeal distortions occur in the spinal canal and cranial vault, they increase tension in the system by increasing the folds within the meningeal system. If this tension persists over time it is theorised that it can lead to micro-tears in the dura and subsequently to adhesive scaring, which can further reduce the flexibility of the dural system and its attachments. Hence, it is very important to determine where there is the greatest tension in the system and balance it, when possible, before any scar tissue may be formed. (12, 13)

Important clinical point

'*The primary mechanisms of injury to the infant spinal cord appears to be excessive traction applied to the spinal canal and cord during the birth process*'. (12) This test is a safe, gentle, and clinically relevant way to assess for such suspicion.

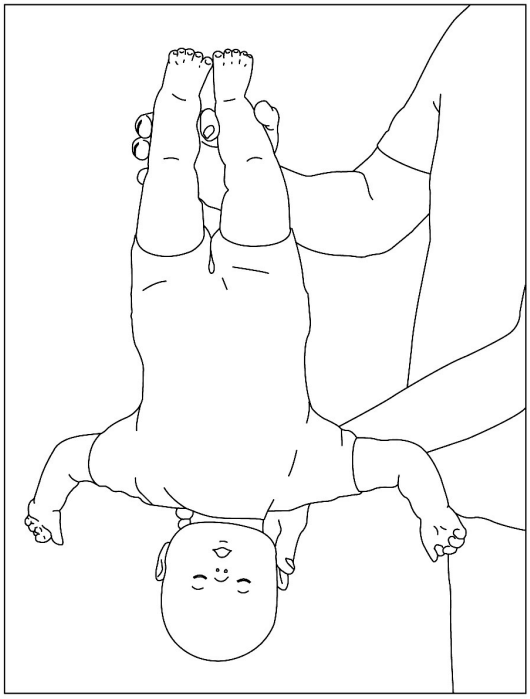
The pia-dural meningeal system is one contiguous structure that attaches from the filum terminale, attaches to the base of the foramen magnum, with has a very strong attachment at C2, enters the cranium through the foramen magnum and forms both the cranial periosteal and

meningeal dural membranes, the basic reciprocal membranes of the cranial vault (Falx Cerebri, Falx Cerebelli and Tentorium Cerebelli).

There are dural meningeal muscle connections to the spine via the *rectus capitis posterior major/minor* (14, 15) and *obliquus capitis inferior* muscles. (16) Also there are meningeal ligamentous connections via the *ligamentum flav*a to the posterior aspect of the spinal dura, (17) in the thoracic and lumbar regions there are ligaments of Hoffman which have attachment to the spinal dura, (18) and the anterior sacral Trolard ligaments which help anchor into the spinal dura at that level. (19)

Changes in tension in this meningeal system can not only affect spinal, pelvic and cranial bone movement, but also the ability of the cerebrospinal fluid's (CSF) very low pressure circulatory system that flows through the meningeal/periosteal dural folds that create the venous sinuses where the CSF drains into the subarachnoid space.

The vertical suspension test is one way to localise where in the spine or cranium abnormal dura tension may be present. When a 'normal' state of tension is in the system and an infant is suspended upside down they will hang relaxed. Depending on the child's lower extremity degree of joint flexibility sometimes it can be better to suspend the child from their thighs or pelvis. In cases where there is abnormal dura tension as the child is suspended upside down the increase tension created to the dura system will create a compensatory reaction. How this compensation occurs can give the Chiropractor an indicator where the major cranial or spinal distortion is located, whether it is an ascending or descending pattern, or whether it is a primary pelvic, cervical or cranial issue.



Key clinical indicators

- In general when the infant is suspended vertically if they laterally bend or rotate their head it suggests that there is cervical spine imbalance

- If the infant exhibits imbalanced leg lengths it suggest that the child may have some posterior sacroiliac joint imbalance
- If the infant exhibits balanced leg lengths but the child's body tenses it suggest that the child may have some anterior sacroiliac joint imbalance affecting sacral nutation
- If the infant's head flexes or extends or there is significant blanching and flushing then that suggests a cranial condition that needs to be treated. (10)

Conclusion

Over decades of thousands of chiropractors performing this procedure we have found clinically that this procedure is safe and is an effective indicator of how to diagnose and guide treatment of abnormal dural meningeal tension in infants. It can also be used as a follow up examination protocol to determine when and if the primary distortion to the cranium or spine has been reduced, as well as if further care is needed. While this vertical suspension technique can be a valuable tool for infant diagnostic purposes a recent study has also found that it can also be helpful from a therapeutic perspective to treat plagiocephaly. (20)

With all chiropractic diagnostic and therapeutic procedures greater research is always needed. While information is gathered caution must be maintained so that low risk safe interventions are always paramount.

Since the vertical suspension testing used in medical and chiropractic fields has had a good safety track record and clinically Chiropractors have found that it helps lead to guiding good therapeutic outcomes, this procedure is an important aspect of the paediatric chiropractic encounter.

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References

1. Sadowska L. Vaclav Vojta's neurokinesiological concept for the diagnosis and therapy of children with disturbances of motor development. Ortop Traumatol Rehabil. 2001;3(4):519-26.
2. Hamer EG, Hadders-Algra M. Prognostic significance of neurological signs in high-risk infants - a systematic review. Dev Med Child Neurol. 2016 Mar;58 Suppl 4:53-60.
3. Zafeiriou DI, Tsikoulas IG, Kremenopoulos GM, Kontopoulos EE. Using postural reactions as a screening test to identify high-risk infants for cerebral palsy: a prospective study. Brain Dev. 1998 Aug;20(5):307-11.

4. Postural Responses: Postural Responses in Development Kinesiology. Peiper's Suspension Test (Peiper-Isbert 1927). Internationale Vojta Gesellshaft e. V. Website. [https://www.vojta.com/en/the-vojta-principle/vojta-diagnostic/postural-responses] Last accessed July 9, 2024.
5. DeJarnette MB. Cranial Technique 1979-1980. Privately Published: Nebraska City, Nebraska. 1979:146.
6. DeJarnette MB. Cranial Technique 1978. Privately Published: Nebraska City, Nebraska. 1978:146.
7. DeJarnette MB. Cranial Technique 1976. Privately Published: Nebraska City, Nebraska. 1976:94.
8. DeJarnette MB. Cranial Technique 1975. Privately Published: Nebraska City, Nebraska. 1975:74.
9. DeJarnette MB. Cranial Technique 1974. Privately Published: Nebraska City, Nebraska. 1974:79.
10. Rosen MG. Pediatric Chiropractic Care. RoseWat Publishing, Natick, Massachusetts. 2015.
11. Breig A. Adverse Mechanical Tension in the central nervous system. John Wiley & Sons: New York City, New York. 1978:11-53.
12. Rayburn W. Symposium on operative obstetrics,1983;10(2): 282-523.
13. Holland E. Cranial Stress in the Fetus during Labour and on the effects of Excessive Stress on the Intracranial Contents; with an analysis of eighty-one cases of Torn Tentorium Cerebelli and Subdural Cerebral Hemorrhage. J Obstetrics and Gynecology British Empire. 1922;29(4):549-571.
14. Hack GD, Koritzer RT, Robinson WL, Hallgren REC, Greenman PE. Anatomical relation between the rectus capitis posterior minor muscle and dura mater. Spine. Dec 1995;20(23): 2484-6.
15. Scali F, Marsili ES, Pontell ME. Anatomical connection between the rectus capitis posterior major and the dura mater. Spine (Phila Pa 1976). 2011 Dec 1;36(25):E1612-4.
16. Pontell ME, Scali F, Enix DE, Battaglia PJ, Marshall E. Histological examination of the human obliquus capitis inferior myodural bridge. Ann Anat. 2013 Dec;195(6):522-6.
17. Shinomiya K, Dawson J, Spengler DM, Konrad P, Blumenkopf. An analysis of the posterior epidural ligament role on the cervical spinal cord. Spine. Sep 1996;21(18):2081-8.
18. Bashline SD, Bilott JR, Ellis JP. Meningovertebral ligaments and their putative significance in low back pain. Journal of Manipulative and Physiological Therapeutics. Nov/Dec 1996; 19(9): 592-6.
19. BarbaixE, GirardinMD, Hoppner JP, Van Roy P, Claris JP. Anterior sacrodural attachments Trolard's ligaments revisited. Manual Therapy. Mar 2000; 1(2):88-91.
20. Blum CL, Mersky JA. Utilizing cranial and infant inversion therapy in the treatment of plagiocephaly: Two case reports. J Chiropr Educ 2021; 35(1): 82.

About the author

Dr.Martin G Rosen is an internationally renowned chiropractor and educator in paediatric Sacro Occipital Technique (SOT)® and Cranial Adjusting. He has been practicing in Wellesley, Massachusetts, United States of America since 1982.

Dr Rosen has advanced proficiency in the Sacro Occipital Technique (SOT) and is certified in SOT, through various certification organisations: Sacro Occipital Research Society International (SORSI), and Sacro Occipital Technique Organisation (SOTO)-USA, functioning as an instructor, practitioner and craniopath for decades. He is a past instructor for the International Chiropractic Paediatric Association (ICPA), on the post-graduate faculty of several chiropractic colleges, president emeritus of SOTO-USA and the SORSI Research board, and was a consulting member of the Committee for Chiropractic Practice.

He is considered an expert in the Chiropractic paediatric field regarding teaching and authoring books and has produced research on chiropractic paediatrics with a specialty in SOT and cranial methodologies.

He authored the comprehensive '*Pediatric Chiropractic Care*' text, has written the only *Paediatric Participant Guide for SOT*, the *Pediatric SOT Spinal and Cranial Adjusting Manuals*, a chapter on SOT in the 2nd and 3rd Editions of *Chiropractic Paediatrics* text,

has been intimately involved in the rewriting of numerous texts on SOT, Cranial adjusting and Soft Tissue Reflex Manipulation. He has been featured in countless other articles, books, podcasts, and published works.

Dr Rosen is currently instructing at multiple SOT paediatric certification programs with ongoing hands-on workshops and seminars, guest lectures, online programs, and one-on-one interviews. Information about his work and publications can be viewed at: DrMartinRosen.com.

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