

# The high-neck syndrome in newborn. The Suspension Manoeuvre.

Mayta Sickness MD (1) and Peter J. VanDerSchaar MD. PhD. (2)

(1) Institute for Orthomanual Therapy, The Hague, The Netherlands; (2) International Biomedical Center, Leende, The Netherlands

**Abstract:** Neonatal cervical subluxations are often neglected and may lead to symptoms in later life, varying from abnormal behaviour to autism-like patterns, Duchenne-Erb palsy or torticollis. A very simple, effective and safe manoeuvre: suspension of the baby from the head for a few seconds, may prevent a considerable number of these complications.

Keywords: cervical, neonatal, subluxation, correction

## Introduction

Cervical subluxations are not always recognized at birth and spinal cord and brain stem injuries during the process of birth frequently escape diagnosis. There is a growing appreciation that these abnormal positions should be corrected at birth or early age, due to possible complications with lifelong impairment. These complications may vary from abnormal behaviour, restlessness and frequent crying to autism-like patterns and more serious neurological symptoms and sometimes torticollis.

According to Gottlieb (1993) birth trauma remains an underpublicized and, therefore, an undertreated problem. There is a need for further documentation and especially more studies directed toward prevention. In the meantime, manual treatment of birth trauma injuries to the neuromusculoskeletal system could be beneficial to many patients not now receiving such treatment, and it is well within the means of current practice in chiropractic and manual medicine

In our practice we have seen several hundred of newborns with cervical vertebral subluxations after abnormal deliveries.

## Anatomy

The subluxation may be limited to the atlas but may also include misalignments of multiple lower cervical vertebrae.

In case of the atlas, it usually deals with a unilateral frontal displacement of the transverse process underneath the skull, whereby this process pushes against the stylohyoid ligament, causing the hyoid bone to be pulled in dorsal and cranial direction on the affected side. The stylohyoid ligament is a fibrous cord, which is attached to the tip of the styloid process of the temporal and the lesser cornu of the hyoid bone. The displacement of the hyoid bone may be verified when observed from the front by placing the index fingers on both lesser cornua. At the displaced side the index finger shows an elevated and dorsally displaced cornu, compared with the other index finger. This is called the hyoid bone phenomenon.

When the neck is faced from dorsal, the same procedure may be followed for diagnosis of atlas subluxation, by placing the index fingers on each transverse process of the atlas.

(Sickesz et al, 2004) just dorsally and underneath of the petrous bone. The result of the atlas sublaxation is that translation between the skull and C1 is no longer possible. If only C1 is sublaxated, the consequences may be minor and restricted to some introvert behaviour later, but occasionally the clinical picture may include frequent crying, problems with nursing, lowered resistance to infections, especially to ear-, nose-, and throat infections due to pressure of the transverse process on the Eustachian tube, insomnia, cranial bone asymmetry and neck hypersensitivity. Occasionally bilateral luxation of the atlas may occur. These babies may show epileptic-like seizures, without the characteristic electroencephalographic changes. We were able to correct this anomaly in several instances, one transverse process at the time, with several days interval. The technique of adjusting a cervical vertebra is described by Sickesz and VanDerSchaar (2004).

The sublaxation may not only be restricted to C1. Other abnormal vertebral positions include unilateral frontal luxation of the transverse process of C2 over the transverse process of C3; C3 over C4 extending to C7 over Th1. Multiple luxations may lead to ADHD and autistic symptoms.

Luxation of C4, C5 and C6 are known for causing Duchenne-Erb's paralysis of the arm, a nerve lesion of the brachial plexus, manifested as flaccid paralysis of a group of muscles of shoulder and upper arm, involving cervical roots of 4th, 5th, and 6th cranial nerves. The arm hangs limp, the hand rotates inward, and normal movements are lost. Usually there is no loss of sensation, or only a limited sensation loss in a small area in the lower border of the deltoid muscle. Early adjustment means usually a satisfactory remedy.

Simplified, the normal movement of a vertebra occurs along three axes: the anteroposterior axis, the craniosacral or longitudinal axis and the transverse axis, through the facet joints. Each movement along an axis includes some shifting, or translation over the adjoining vertebra.

The above-described sublaxations include rotation along its longitudinal axis and anteroposterior axis as well, in order to "tuck under" the transverse process of the preceding vertebra. Severe luxations may also lead to displacement along the transverse axis. This eventually completes the picture of torticollis, which is torsion of the cervical spine along its longitudinal axis as well as along the posterobasal axis of each individual vertebra. The displacement along the posterobasal axis renders the cervical spine "longer" on the affected side, causing the head to be tilted towards the heterolateral side. Usually this complexed by spastic contracture of the cervical musculature.

With regard to torticollis: Ozer T et al (2004) report that occipital plagiocephaly, maxillary and orbital deformity were commonly found in cases of congenital torticollis, most dominant asymmetry was observed in lower hemifacial region, zygomatic arcus and mandible by 3D-CT imaging. Rotational movement of first cervical vertebra over the second one was determined in all cases.

### The forces leading to sublaxation

Excessive traction or rotation on the baby's neck during delivery has been considered the most important cause of infant spinal and brain stem injury. Traction is more important in

breech deliveries and torsion is more significant in vertex deliveries. However, we observed cervical subluxations after many different abnormal deliveries, such as

- After expression
- Forceps extraction
- Vacuum extraction
- Caesarean section in normal presentation
- Breech delivery
- Facial (vertex) delivery
- Nuchal cord
- Partus praecipitatus

Especially after vacuum extraction the vertebrae become clearly visible because most of the cervical fluid is sucked away by the vacuum pump. Fortunately this is usually rapidly restored. Respiratory depression in the neonate is a cardinal sign of much injury.

### Treatments

A commonly recommended treatment for cervical subluxations in neonatal children is chiropractic. Peter N. Fysh (1992), However, this intervention is reserved to well trained, experienced chiropractors.

Treatments for torticollis vary from massage and stretching only, to surgical interventions, sometimes at an early age.

According to Luther (2002). a regimen of stretching exercises is the most common form of treatment with positive outcomes for over 90% of the identified cases. Rarely children require surgical intervention to release the tightened muscle. Botox injections to relax the tight muscle are a new form of treatment being used by some practitioners.

P.Fysch (1992): Young children with torticollis should undergo a treatment regimen of passive stretching exercises This protocol is reported to be almost always successful if started before the age of one year. If cervical subluxation is involved, then gentle cervical traction should be followed by an appropriate specific spinal adjusting technique.

Sometimes a brace is recommended. H. Sakamoto (1992)

Burstein (2004) reports of endoscopic repair of congenital torticollis.

### The suspension manoeuvre

Our preferred adjustment, which is very effective in most instances, is to lift the baby by the head and suspend her/him for about three seconds. Each hand is placed on the lateral aspect of the head. Ideally, this should be accomplished immediately after delivery, but even up to six months of age the intervention is tolerated without any problem. The forces exerted by this procedure on a newborn of 2.5 kg are only a fraction of those applied with vacuum or forceps extraction. The average pulling force for vacuum delivery is 10 kg (75gm/cm<sup>2</sup>). Forceps delivery may even amount to 1400gm/cm<sup>2</sup>. The suspension force is sufficient to correct a malposition of the atlas. We never saw a complication in hundreds of cases, on the contrary, the results are often impressive. In case of If a baby is older than 6 months and the child has already started to stand up, the combination of gravity forces and shrunken ligaments, may make it necessary to have

the child lifted at the head by an assistant and to additionally exert some pressure with one's thumb in dorsal direction on the affected transverse process of the atlas.

Some examples.

Boy, delivered via vacuum extraction. Parents noticed that after several weeks he still hardly moved his right arm. After adjustment of the atlas by lifting the baby by the head, the baby immediately started to grip the doctor's finger and after that he used his right arm normally.

Boy, crying almost continuously the first months after delivery, much to despair of his mother. After suspension adjustment almost instant relief.

Torticollis can only be partially repaired by the suspension manoeuvre. In these advanced cases it may be necessary to adjust each vertebra individually while an assistant lifts the baby by the head. First, the transverse process of C7 is pushed into dorsal and upward direction, followed by C6, C5 and so forth. Always adjust the most distant vertebra first. Usually only one or two vertebrae may be adjusted at the time, with intervals of at least one week.

## Conclusion

It becomes more and more accepted that adjustment of the cervical spine in newborn could mean a very useful manoeuvre in the treatment of postnatal problems. However it requires a knowledgeable and well-trained experienced chiropractor to carry out this manipulation, which carries an undeniable risk. Such a specialised chiropractor is not always available on site.

Our opinion, based on more than thirty years experience with hundreds of babies, is that the suspension manoeuvre is a safe and effective method to treat most cases of high neck problems in newborn. Even from a prevention point of view it may be recommended that each baby, immediately after delivery shall be suspended from the head for a few seconds, to correct possible maladjustments. We know of several obstetricians who are already practising this manoeuvre. We never saw a complication resulting from this intervention

We recommend the suspension manoeuvre after each delivery, even when a misalignment is not very obvious. It is simple, safe, has good results and may prevent problems later in life.

## *References:*

Gottlieb MS. 1993. Neglected spinal cord, brain stem and musculoskeletal injuries stemming from birth trauma. *J Manipulative Physiol Ther.* Oct;16(8):537-43.

Peter N. Fysh, 1992. Upper Cervical Trauma and the Birth Process Dynamic Chiropractic November 6, , 10-23

Ozer T, Uzun L, Numanoglu V, Savranlar A, Hosnuter M, Gundogdu S. 2004. 3D-CT investigation of craniofacial and cervical spine anomalies in congenital muscular torticollis Tani Girisim Radyol. Dec;10(4):272-9.

Luther BL. 2002. Congenital muscular torticollis. Orthop Nurs. May-Jun;21(3):21-7;.

Sickesz M, VanDerSchaar P.J., 2004. Correction of the anatomical changes of whiplash injury. *Evidence-Based Integrative Medicine* :1(2)145-153

Peter N.Fysh, 1994. Kids need Chiropractic too. Dynamic Chiropractic - September 1, 12-18

Sakamoto H. Cap brace: a new treatment for newborn and infant congenital muscular torticollis. Nippon Seikeigeka Gakkai Zasshi. 1992 Nov;66(11):1123-36

Burstein FD. 2004. Long-term experience with endoscopic surgical treatment for congenital Muscular Torticollis in Infants and Children: A Review of 85 Cases. Plastic & Reconstructive Surgery. August , 114(2):491-493,.