

Resolution of Breastfeeding Issues with present Tethered Oral Tissues concomitant with chiropractic care: A series of 7 cases

Nik Dukovac, Ruth Postlethwaite and Clare McIvor

Abstract: Objective/Clinical Features: This case series covers seven cases where breastfeeding issues presented with tethered oral ties, both of which improved concomitant with subluxation-based chiropractic care.

Intervention/Outcome: Chiropractic care for the reduction of subluxation was delivered via diversified technique, modified to suit the age, size and tensile strength of the infant, and complemented by dural stretches, and oral soft tissue therapy. Across all cases, improvements in breastfeeding outcomes and/or tethered oral tissues were noted.

Conclusion: While the attending chiropractor makes no claim to fixing oral ties, rather than subluxation-based care may improve neural connection and reduce cervical subluxations resulting in improved oral muscle tone and breastfeeding outcomes. Further research is required.

Indexing Terms: Chiropractic; Subluxation; breastfeeding; case report; case series; Tethered Oral Tissues.

Introduction

It is widely accepted that breastfeeding is the optimal method of nutrition for neonates and infants, with significant benefits for both mother and baby. Early initiation of breastfeeding is associated with increased immunity for the neonate as the mother's antibodies provide passive protection. Exclusive breastfeeding for the first six months post-birth has been associated with lower rates of gastroenteritis, respiratory tract infections, otitis media, eczema, and asthma in infants. In parallel, breastfeeding has been attributed to a reduction in breast and ovarian cancer, and diabetes in mothers. (1)

These benefits begin to illustrate the true positive potential of breastfeeding, but every story is different. It is important to note that although breastfeeding is recommended, ensuring both baby and mother receive the required nutrients and avoid stress is of greater importance. That said, there are many non-nutritive benefits to breastfeeding. The release of *oxytocin*, colloquially called the love hormone, is known to be released in close skin contact between mother and child.

... chiropractic care to reduce cervical subluxations may result in improved oral muscle tone and breastfeeding outcomes...



Many mothers seek support when they face breastfeeding challenges, especially early on. It is also well known that breastfeeding plays an important role in oro-facial development of a child, shaping the height and width of the palate, and therefore the child's maxilla and mandible width. This can have a big impact on breathing function as the roof of the mouth forms the floor of the nasal cavity. Also, the width of the mouth also impacts the amount of space for teeth to come in, impacting possible crowding or proper spacing of teeth.

There are many factors that can influence an infant's ability to breastfeed effectively. Tethered oral ties, either lip or tongue, can greatly impact the breastfeeding experience and negatively influence a baby's quality of life. Tethered oral ties (TOTs) can be addressed surgically either by making an incision in the frenum (*frenotomy*) or by a complete removal of the frenum (*frenectomy*). (2)

As with any surgical intervention there are risks involved. The common complications following a frenectomy include pain, bleeding, poor breastfeeding, weight loss, and delayed diagnosis of underlying conditions. Due to the risk of developing various side effects, surgical treatment of TOTs should be reserved for circumstances in which it is truly necessary. (3) It is also worth adding that due to the potential emotional stress for both mother and baby, it is best only performed when deemed truly necessary.

There is a paucity of research surrounding the efficacy of chiropractic care in resolving symptoms mimicked as mouth tie complications and supporting optimal breastfeeding practices. Often the research published contains strong biases in the form of utilising reports from mothers as the predominant method of evaluating changes following chiropractic intervention. However, these studies do report a significant improvement in breastfeeding concomitantly with objective reduction of vertebral subluxation grading. It should be made clear at the outset that chiropractic does not directly resolve tethered oral tissues. Rather, it appears to resolve the breastfeeding issues or underlying challenges that may mistakenly be identified as being caused by TOTs. (4)

The following series of cases cover infants and neonates who are presented with breastfeeding difficulties, tongue and lip ties, and vertebral subluxations or subluxations findings consistent with diagnoses of vertebral subluxation complexes. The aim of care was to provide subluxation-based care which may lead to non-surgical resolution of breastfeeding issues. The idea being that it may be possible that the infant with breastfeeding issues may in fact be suffering due to the subluxations rather than from the TOTs. In some cases, it may be due to a combination; and therefore a team approach required for optimal outcome.

Case 1: Breastfeeding difficulty

Patient details

A two-month-old male was presented for care with parents citing primary concerns of oral ties, spinal tightness, and a preference to have his neck turned to the left that had been present since birth. While the infant was fully breastfed, the mother was concerned that he was very slow to gain weight. While the infant was doing well with tummy time, and parents were happy to not have his TOTs surgically released if it could be avoided. Generally speaking, his parents were concerned with the infant's spinal and oral health as it pertained to breastfeeding effectiveness.

History and Examination

Upon initial presentation a thorough history and examination was undertaken in order to ascertain the appropriate course of care. It was noted that the infant was born via planned c-section. In-utero constraint had been noted with his head lodged on one side of the pelvis, and turned one way for the last three weeks of gestation. Mother reported a GP diagnosis of silent reflux.

Examination revealed that the infant had a sensitive gag reflex. While the pull-to-sit and prone head control tests were within normal limits, cervical spine range of motion was decreased by 25% on the right. Tongue mobility to passive elevation exhibited moderate restriction, while the palate height was noted to be within normal limits.

Additional findings included a general sense of normal muscle tone with horizontal and vertical suspension. Muscle tone with horizontal suspension was moderately poor, and with vertical suspension mildly poor. Hip assessments including the *Ortoloni*, *Barlow* and *Hip external rotation in flexion* were all within normal limits. The infant's head shape was 'good'. Intra-oral palpation revealed *buccinators* and the *mylohyoid* to be mild and severe in response respectively.

Assessment by palpation for vertebral subluxations was performed using a scale of mild, moderate, or severe as taught by Chestnut in *Spinal Health Assessments*, (5) revealing involvement of C1 on the both sides and also at C2 and T3 bilaterally, and T12, L1 and Sacroiliac on the right.

The infant was diagnosed with a vertebral subluxation complex and placed on a course of chiropractic care. In accord with Best Practice the chiropractor and parent worked together on each visit to review presenting symptomatology and objective findings to identify the preferred way forward.

Management

The initial care plan schedule was three sessions per week for eight visits followed by a re-assessment. This was tailored to fit the family's vacation plans. Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted subluxations. Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirial Resources Australia* (The Keatings). Oral soft tissue therapy (STT) was performed with gentle massage of hypertonic oral muscles.

The second care plan schedule was one session per week for five visits followed by a reassessment. It was noted that the left subluxation at C1 persisted. The third care plan schedule was one session every two weeks for five visits.

Outcomes

At the first review the found subluxations had been reduced to a moderate spinal tension at C1 on both sides, and C2 on the right, as well as only mild tension at C2 on the left, C3, on the right, T3 and T4 bilaterally.

By the second review, vertebral subluxations had now reduced to mild tension at C1 on both sides, C2 on the right.

These clinical findings were consistent with an improvement in cervical spine range of motion which was now within normal limits bilaterally. Oral muscle tone had improved and was now within normal limits both in terms of horizontal and vertical tongue suspension. There had been a significant improvement in mouth muscle tone, which was still hypertonic to palpation, however, *buccinators* were now within normal limits, and oral muscle tone on the floor of mouth was now only moderate.

Tongue mobility now showed no restriction to passive elevation. Indicating that muscle tension at floor of the mouth was the main limiting factor affecting tongue mobility rather than the TOTs. If the latter was the limiting factor, there would be no change in tongue mobility despite a decrease in hypertonicity of muscles at the floor of the mouth.

During the first care plan, significant improvements included an increase in weight gain and a decrease in vomiting with the mother noting that the infant was '*rarely vomiting now, feeding much better/easier, and no longer preferring to have the neck turned to the left*'.

At the first review the infant was breastfeeding very well, putting on weight, and the tongue tie release procedure was no longer indicated. The patient was less irritable at night and rarely vomited. By the second review, the improvements from the first care plan had continued, and the infant no longer favoured his neck turning to the left.

Case 2: Breastfeeding at 4mo

Patient details

A four-month-old male was referred by a lactation consultant for consideration for care with primary concerns of high palate, oral ties and difficulties with breastfeeding. It was reported that he screamed when feeding, with no clicking noise present. At the time of initial assessment, he was feeding 2 - 3 times per day, and the goal of care was to improve breastfeeding outcomes.

History and Examination

Upon presentation the infant underwent a thorough history and examination during which it was revealed that the infant was born via a very quick vaginal birth with perineal tearing. He also favoured turning his head to the right, both in rotation and lateral flexion.

He was checked for vertebral subluxations which revealed gradings of severe at C1 and C2 on the right, moderate at C1 on the left and C1 and sacroiliac on the right, and finally, mild at C4 on the right and T4 on both sides.

Additional testing revealed very high palate, mild-moderate restriction to mid-tongue elevation, and hypertonic oral muscles (floor of mouth) and *buccinators*. He was subsequently diagnosed with a vertebral subluxation complex and placed on a chiropractic care plan. As with the previous patient, the care plan was agreed upon with the parent and in accordance with objective findings revealed during the progress (report of findings) sessions.

Management

The infant was placed on an initial care plan comprising two sessions per week for four weeks (totalling eight visits). After the first progress exam, this was then revised down to one session per week for four weeks for a second care plan, and then a third care plan comprising one session every two weeks for four visits. Following the third care plan, the infant was placed on maintenance care every 2-4 weeks.

His home-care regime included tummy time and oral STT.

Outcomes

At the first review the subluxations had reduced to mild at C1 bilaterally as well as C2 on the right and sacroiliac on the left. At the second review, the mild vertebral subluxations remained at C1 and sacroiliac on the right, and were now present at T3 and T4. By the third review, vertebral subluxations had reduced to mild at C2 on the left and at the sacroiliac on the right, all other segments had cleared.

The infant was now turning his neck both ways with ease, and both tummy time and breastfeeding outcomes were improving. His mother stated that he was no longer favouring looking to the right, was feeding '*much better*', pushing up onto his hands and his demeanour was '*like a new baby*'. Notably, he was no longer mouth breathing while sleeping, and his mother noted that his palate was much broader now than it was before.

Case 3: Breastfeeding at 9 days

Patient details

A nine-day-old female infant was presented for care with parents citing a primary concern of breastfeeding issues. She had been referred by a lactation consultant who suggested having the

infant's spine assessed in the hopes that a surgical release of TOTs would not be required to improve breastfeeding.

History and examination

Assessment revealed that the infant had observable TOTs and the mm floor of the mouth had severe hypertonicity, significantly inhibiting passive mid tongue elevation and therefore likely affecting breastfeeding. Further examination revealed vertebral subluxations rated as severe at C1 on the right and C2 bilaterally, as well as moderate at C1 on the left as well as T2 and T3 bilaterally.

The infant was subsequently diagnosed with a vertebral subluxation complex and placed on a chiropractic care plan. The frequency of care for each phase was agreed upon with parents on review of progress to date and current subluxation findings. Frequency was not pre-determined.

Management

The first care plan schedule comprised two sessions per week for eight sessions (over four weeks) followed by a reassessment. At the second review, it was recommended that the infant continue at two sessions per week, reducing in frequency if the adjustments held well. Finally, a third care plan was initiated at one session every four weeks.

Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted vertebral subluxations, Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirational Resources Australia*. Oral STT was performed with gentle massage of hypertonic oral muscles.

Home-care recommendations included tummy time and oral STT.

Outcomes

At the second visit it was noted that the infant showed more passive elevation of mid tongue. Tension on the left floor of the mouth remained but showed improvement. By the first review, it was noted that breastfeeding outcomes were continuing to improve. Vertebral subluxations had reduced to moderate at C2 on the right and mild at C1 bilaterally. Subluxations at all other segments had been resolved.

By the second review, vertebral subluxations had further reduced to mild at C1, T4 and T5 bilaterally, and at C2 and sacroiliac on the right. Breastfeeding outcomes were significantly improved, as were tummy time outcomes.

Case 4: Breastfeeding at 3 mo

Patient Details

A three-month-old male was presented for care with parents citing primary concerns of breastfeeding difficulty. Parents of the infant were hoping to avoid needing the oral restrictions released surgically by a dentist. In addition to the primary concerns, the infant was described as unsettled and showing difficulties with constipation.

History and examination

Upon presentation a thorough history and chiropractic examination was undertaken, during which it was revealed that the infant was born via C-section due to breech position in utero.

At the time of his presentation, he was exhibiting severe, right-sided plagiocephaly, a moderately high palate, and mildly restricted passive tongue elevation (mid-level). Oral examination also revealed that mm tone on the floor of the mouth was mildly hypertonic, as were his *buccinators*

Further examination revealed vertebral subluxations were severe at C1 bilaterally and at C2 on the right.

Management

Following examination the infant was placed on an initial care plan comprising two sessions per week for four weeks (totalling eight visits) followed by a re-assessment. In this case, the reassessment triggered a second care plan comprising one visit per week for eight weeks and then a third care plan comprising visits every two-three weeks for eight visits.

The frequency of care for each phase of care was agreed upon with parents on reviewing the results of the most recent exam findings of severity of vertebral subluxations. They were not pre-determined from the initial assessment report.

Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted vertebral subluxations, Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirational Resources Australia*. Oral STT was performed with gentle massage of hypertonic oral muscles. The latter was especially directed for the floor of the mouth in this case. Additionally, ileocecal valve pressure was applied to address constipation issues.

Outcomes

Towards the end of the first care plan the mother reported that breast feeding had improved significantly (visit 5). At the last session before review, the mother reported bowel motions were occurring daily for the last five days.

At the first review, it was found that vertebral subluxations had reduced to moderate at C1 and C2 on the right, and mild at C1 on the left. While the palate remained moderately high, there was minimal muscle tension at the floor of the mouth, the *buccals* were within normal limits and there was no restricted passive tongue elevation.

The mother reported that the infant was now breastfeeding '*much better*', enjoying tummy time and his head shape was improving significantly.

At the second review, vertebral subluxations were moderate at C5 on the right and mild at C1 and C2 on the right. The mother noted that she was still very happy with his progress, that his constipation was improving, and that breastfeeding was '*great*'. His head shape was much improved, and now rated as only mild plagiocephaly going into the next care plan.

Case 5: Breastfeeding at 2 mo

Patient details

A two-month-old female infant was referred by a lactation consultant for chiropractic assessment with parents citing concerns related to breastfeeding. The patient was sucking in excessive air with feeding and had been diagnosed with TOTs. Parents also noted that the infant struggled with excessive wind.

History and examination

Upon presentation the infant underwent a thorough history and examination during which it was revealed that she was born at 31 weeks' gestation, and vaginally induced at 22 hours labour.

At the time of presentation, parents were concerned with the oral function of the child, as well as breastfeeding and wind difficulties. They were hoping to not require surgical tongue tie release. Additionally, they noted that the infant often had her right arm elevated.

During the examination TOTs were observed, with abnormal muscle tension noted on the floor of the mouth and a moderately high palate also noted. Vertebral Subluxations were graded as severe at C1 and C2 on the right, and moderate at C1 on the left. The infant was diagnosed with a vertebral subluxation complex and placed on a chiropractic care plan.

Management

The initial care plan comprised two sessions per week for eight visits followed by a reassessment. However, the review was brought forward to the 5th visit at the mother's request and the care plan was revised to one session a week for four visits followed by another reassessment. After the second review, the care plan was revised to one session every three to four weeks for six visits.

The frequency of care for each phase of care was agreed upon with parents on reviewing the results of the most recent exam findings of severity of vertebral subluxations. They were not pre-determined.

Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted vertebral subluxations, Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirational Resources Australia*. Oral soft tissue therapy (STT) was performed with gentle massage of hypertonic oral muscles.

Outcomes

The infant responded quite well to care, with the mother noting significant changes within the first few visits. At the 3rd visit, the mother reported there were less snack feeds and that feeds were less frequent but better volume.

At the 5th visit the mother reported that the child was not liking tummy time lately. During the second care plan gradual improvement was noted, with the infant liking tummy time more in the mornings than in the evenings.

At the first review, vertebral subluxations had significantly reduced and was now moderate at C2 on the right and mild at C1 and T3 bilaterally. No subluxations were noted. At this point, the infant's arm was moving freely, and breastfeeding had improved greatly overall. However, the infant still struggled with excessive wind.

At the second review, vertebral subluxations were now only mild at C1 on the left and the mother was very happy with progress.

Case 6: Poor Latch at 10 weeks

Patient details

A two-and-a-half month old female was presented for care with parents concerned about her poor latch and asymmetrical head shape. At the time of presentation, she was bottle feeding breastmilk and had had her tongue tie released with scissors in hospital.

History and Examination

Upon presentation the patient underwent a thorough examination during which it was revealed she was born via C-section. She had a decreased cervical spine range of motion at 25% rotation to the right and 30% to the left. Oral tension and restrictions were palpable, including *buccals* (with the left being greater than the right) and upper lip, although the latter was still reasonably flexible to passive elevation. Mild, right sided occipital plagiocephaly was noted. Vertebral subluxations were graded as severe at C1 on the right and C2 on the left.

Parents noted that even bottle feeding was difficult on the right side of the parent, and that the child struggled with wind, often taking 30 minutes of discomfort before successfully burping.

Management

Following the initial examination, the infant was placed on a chiropractic care plan comprising two sessions per week for eight visits followed by a reassessment. Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted vertebral subluxations, Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirational Resources Australia*. Oral soft tissue therapy (STT) was performed with

gentle massage of hypertonic oral muscles (the latter being introduced toward the second half of the first care plan. Adjustments were delivered via technique, at C2 left posterior and C1 right posterior (sustained contact), and these adjustments were complemented by a home-care regime including tummy time.

Note that the frequency of care for each phase of care was agreed upon with parents reflecting the patient's progress and was not pre-determined from the initial assessment report.

Following the initial care plan, a second plan comprising one session every one to two weeks for up to six weeks was implemented. During this care plan, C1 right posterior adjustments using sustained contact were repeated, as well as cranial work.

Outcomes

At the third visit, the parents had given up breastfeeding completely. The infant was now bottle feeding only but as a matter for parents' concern, remained very fussy. At the 5th visit, the parents reported the child was looking to the left much more often, and could do tummy time without crying. The latter improvement coincided with a reduction in vertebral subluxation noted at the first review. The infant now had only mild vertebral subluxation grading at C1, was showing no signs of plagiocephaly and had full cervical spine range of motion.

At the second review the vertebral subluxation had slightly increased, with mild tension now noted at T4 bilaterally as well as C1 and sacroiliac on the left. However, bottle feeding was now much improved and parents were happy with progress.

Case 7: Breastfeeding at 6 weeks

Patient details

A six-week-old male was presented for care with parents citing primary concerns of breastfeeding difficulty, concerns regarding tongue tie, reflux, and shallow latch (the latter of which started around two weeks old). They also noted that the infant vomited and hiccupped frequently after feeding.

History and Examination

Following the initial presentation, the infant underwent a thorough history and examination during which it was revealed that he was born via scheduled C-section.

Examination revealed a very mild right sided plagiocephaly and banana shaped posture when supine (convex right with neck turned to the right). Additionally, CN XII dysfunction was observed, with the tongue poking out and to the left. It was further discovered that, while palate height was within normal limits, tongue mobility to passive elevation exhibited mild to moderate restriction. Oral palpation revealed moderate hypertonic (*buccinators* and severely hypertonic *mylohyoid* (+2,+2)). Cervical spinal range of motion was mildly restricted upon left rotation.

The infant's pull-to-sit head control was normal for his age, and general sense of mm tone was otherwise within normal limits.

Vertebral subluxation findings were graded as severe at C1 bilaterally, and C2 and C3 on the right. Additionally, moderate tension was found at T4 and T5 on the left, and mild at T1-T3 (left sided), and T6-sacroiliac on the left.

The infant was diagnosed with a vertebral subluxation complex and placed on a course of chiropractic care.

Management

Following examination the infant was placed on a care plan comprising two-sessions per week for eight visits followed by a reassessment. Adjustments were performed to all subluxations using gentle sustained contact technique in the direction to reduce all noted restrictions. Dural balance and cranial tension were addressed using techniques taught in seminars by *Inspirial Resources Australia*, Oral STT was performed with gentle massage of hypertonic oral muscles. Specific targets of care included the banana shape posture where the infant bent to the right, and oral STT (*Mylohyoid*) as well as mobilisations targeting C1 on the left in the beginning.

Following the first review, the infant's care plan was revised to one session per week for eight weeks followed by a reassessment. During this time the same care regime continued,

Following the second care plan, the infant's care regime was stretched out from sessions every two weeks to sessions every four weeks, with reviews every eight sessions.

The frequency of care for each phase was agreed upon with parents on review of progress to date and current subluxation findings. Frequency was not pre-determined.

Outcomes

The infant appeared to respond well to care with the mother noting at the 2nd visit that the tongue was moving better. By the 3rd visit, the mother again reported his tongue moving better and more, even when sticking out, it was '*more even*'. By the 4th visit breastfeeding overall was beginning to improve. By the 7th visit, the mother reported that while the child was somewhat unsettled during the day, he was now turning his head to the left more often.

At the first review, vertebral subluxations had reduced to moderate, at C2 bilaterally, C1 on the right, and T8 on the left. It was only mild at C1 on the left. This represented a significant decrease in grade of severity of vertebral subluxations overall since the initial presentation.

The mother estimated that breastfeeding was now '*50% better*'. The chiropractor noted that the infant's head shape and body posture were now normal and that he was not favouring one side over another anymore.

At the second review, vertebral subluxations were mild at C2 on the right, and at C1, C5, and T4 on the left. By the 3rd visit in this care plan (the 11th overall visit), the tongue tie had been released by a dentist; this was a decision made between the mother and dentist outside of my advice.

At the second review the parents were very happy with progress. The only thing not quite perfect was the coordination of the tongue when feeding, for which parents were intending to see a speech pathologist. The tongue no longer deviated when it stuck out though (this improvement had occurred prior to TOTs being surgically released by the dentist).

At the third review, vertebral subluxations were now only mild at C1 on the left, and parents were very happy with the infant's progress. While in this case, surgical release of the TOTs did eventuate, based on the mother's feedback at least 50% was improved by chiropractor care prior to surgical release. The attending chiropractor remarked that '*In other cases, I have seen varying percentages of improvement between the modalities when both chiropractic care and dental surgical release was performed. Sometimes, a release was performed first and symptoms did not fully resolve, and the complete resolution was seen upon reducing vertebral subluxations.*'

Discussion

While it would certainly be desirable to take a simplistic look at tethered oral ties (TOTs) and postulate that chiropractic care addresses them directly, research is yet to support such an association. (4) The existence of case reports and case series like this makes one consider that there may be several infants improperly diagnosed with TOTs as the main cause of their

breastfeeding dysfunction. I have certainly seen in practice cases where only partial resolution of breastfeeding difficulties were achieved with chiropractic care and the remaining improvement was achieved with surgical release of TOTs. I have also seen the reverse; where an infant was brought in for chiropractic care after only having had partial resolution post-surgical release of TOTs, and then complete resolution was achieved. This implies to me that just because TOTs may be visualised and palpated, it may not be the only cause, or even involved at all, in breastfeeding dysfunction.

When we attend to the needs of the nervous system, even in infants and neonates, and remove subluxations, the adaptability of the nervous system is then able to do what it does best. Further research is required to understand the mechanisms behind potential neural connectivity improvements concomitant with chiropractic care in infants with feeding difficulties.

Clare McIvor
BBus(Admin),
GD Comms(ProfWrit,Edit),
GD(Psych)(Cand)
Writer, ASRF

Ruth Postlethwaite
BBiomedSc
Writer, ASRF

Nic M Dukovac
BSc, DC
Chiropractor

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About

Nik Dukovac is a chiropractor, co-owner of Better Back Chiropractic and Adelaide Family Chiropractic in South Australia, and Founder of *MotusPro*, an online platform to assist people who have failed to gain confidence with their lower back despite trying various therapies. He is passionate about paediatric chiropractic care. The first person voice in this report is that of Dr Dukovac.

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ASRF definition of subluxation

'A vertebral subluxation is a diminished state of being, comprising a state of reduced coherence, altered biomechanical function, altered neurological function and altered adaptability.'

