

# Spinal Cord Compression following Traditional Confinement Massage

**R Sahathevan, MMed\***, **H J Tan, MMed\***, **Suhail Abdullah, MMed (Orth)\*\***, **Shahizon A M M, MMed (Rad)\***, **Hamidon B B, MMed\*\*\***, **A A Raymond, MD\***

\*PPUKM, Jln Yaacob Latif, Bandar Tun Razak, Cheras, Kuala Lumpur, Kuala Lumpur 56000, Malaysia, \*\*Sunway Medical Centre, \*\*\*Faculty of Medicine and Health Sciences UPM

## SUMMARY

**We describe a case of tetraparesis in a 33-year-old woman following neck manipulation performed by a traditional confinement mid-wife. An MRI of the cervical spine revealed a fracture of the second cervical vertebra with atlanto-axial subluxation that resulted in cord compression.**

## KEY WORDS:

*Tetraparesis, Neck manipulation, Cord compression*

## INTRODUCTION

Reports of CNS injury resulting from neck manipulation are well documented in medical literature. Chiropractic spinal manipulations by trained practitioners are responsible for most, if not all reported cases. Published reports documenting injury resulting from traditional and complementary medicine (TCM) treatments are rare. TCM includes common postnatal confinement practises in Malaysia.

## CASE REPORT

The patient was referred to the Neurology unit in the 27th week of her second pregnancy for investigation of an incidental finding of spastic paresis of the upper and lower limbs. Based on the patient's account, the weakness began following neck manipulation that occurred two years before. The patient was in confinement-care of the village midwife or 'bidan' following delivery of her first child at the time. She described the neck manipulation as follows: she was asked to sit on the floor with lower limbs extended while the midwife took position behind her. The midwife then proceeded to lift the patient's trunk off the floor using the mandible as an anchor and swiftly rotated her head to either side. The patient recalls a stabbing pain in the back of her neck as this was done. She immediately developed numbness and weakness of the upper limbs.

She also developed weakness of her lower limbs but this was not as worrisome to her as she was less ambulant due to hip pain. She denied any bowel or urinary incontinence. There were no episodes of vertigo or incoordination. She denied progression of the symptoms over the two years and denied further manipulations or significant trauma. She reported regular use of traditional herbal remedies predating her initial presentation.

She was first seen in the Orthopaedic clinic with a complaint of worsening hip pain before being referred to us. She had

been seen two years prior while in early stages of her first pregnancy with a similar complaint. Investigations at that point revealed bilateral osteonecrosis of the hip but she was lost to follow-up before an underlying cause could be ascertained. Her functional level when she presented had deteriorated to the point that she was wheel-chair bound and only ambulating with assistance.

A full neurological assessment of her upper limbs revealed generalised muscle wasting and spastic tetraparesis. Muscle power was generally graded 3/5. All tendon reflexes were exaggerated and the plantar responses were extensor. There was clonus of the lower limbs with reduction to pin-prick sensation up to the neck. Her other sensory modalities were intact and the rest of her clinical examination was unremarkable.

MRI of the cervical spine shown in Figure 1 and Figure 2 demonstrates a fractured odontoid process of the second cervical vertebra with atlanto-axial subluxation. There is angulation of the fracture fragment posteriorly with significant spinal canal stenosis and cord compression. The underlying cord also shows evidence of haematoma and cord gliosis. There is evidence of degenerative change of the vertebral bodies.

The patient subsequently delivered her second child by elective caesarean section and agreed to a bilateral tubal ligation. Decompressive surgery of the spine would not have been beneficial as the cord injury was old. She declined hip arthroplasty and chose not to keep her outpatient appointments.

## DISCUSSION

The pattern of spastic tetraparesis seen in this patient is in keeping with a cervical cord compression. The compression resulted from the vertebral fracture that was probably sustained during neck manipulation. The patient was susceptible to the injury due to significant degenerative vertebral pathology noted in the cervical spine.

Using online databases we searched for cases of cervical cord pathology secondary to neck manipulation carried out by practitioners of TCM. Our search returned no results. However there are numerous case reports documenting related injuries attributed to chiropractic misadventure. In a recent systematic review, the injury most associated with neck manipulation was dissection of the vertebral-basilar

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*Corresponding Author: Ramesh Sahathevan, Jabatan Perubatan PPUKM, Jln Yaacob Latif, Bandar Tun Razak, Cheras, Kuala Lumpur, Kuala Lumpur 56000 Malaysia Email: rameshsahathevan@gmail.com*



**Fig. 1:** T2WI of the cervical spine in sagittal, showing the dens fracture (black arrow) with posterior angulation of the fracture fragment. Significant spinal canal stenosis with resultant spinal cord compression is seen.



**Fig. 2:** Axial T2WI of the cervical spine at the C1/C2 level. Widening of the atlantoaxial joint is seen (white double arrow). The spinal cord is compressed and it showed gliotic change (black arrow).

artery<sup>1</sup>. Incidence data is variable but it is estimated that 1.3 cases of dissection occur for every 100,000 professional spinal adjustments<sup>2</sup>. Injury was attributed to a high velocity rotational thrust opposite the side of dissection. This is of interest to us as the same procedure was used in our patient.

The description of the procedure that probably caused our patient’s injury is best worded in chiropractic terminology. The ‘bidan’ used a ‘dynamic thrust’ technique which involves a sudden and forceful passive movement of the joint at high velocity exerted through a short lever arm applied close to the joint<sup>3</sup>. This manoeuvre is commonly used to facilitate joint realignment. In the case of our patient it was coupled with being lifted off the floor causing the weight of her upper body to hinge on the atlanto-axial joint while the thrust was applied. In this, the mechanics of our patient’s injury is undeniably and regrettably unique. We postulate that the combination of bony pathology and the manner in which the cervical spine was forced to bear the weight of the patient predisposed her to sustain a fracture when the force of the thrust was exerted. Unstable arthropathies are recognised absolute contraindications to spinal manipulation<sup>4</sup>.

Although idiopathic osteonecrosis of the hip is a known complication of pregnancy it cannot account for the presence of degenerative vertebral disease<sup>5</sup>. We were unable to determine a cause for osteo-degenerative disease in this young patient but it is most probable that degenerative disease of her hip and spine were caused by a single disorder. Steroid use may be the culprit and her use of traditional medications does raise suspicion. However, this is purely conjecture on our part.

TCM practitioners are culturally influential on medical practises in Malaysia. They play a major if somewhat questionable role in providing for the healthcare needs of the populace. Traditional post-natal confinement practices in Malaysia fall into the category of TCM. Many of these practises are harmless but there are a harmful few as illustrated in this case report. While it is not our intention to vilify we would like to share our knowledge of this case as a cautionary tale concerning the dangers of a potentially hazardous procedure in unskilled hands.

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