Ribs don't Sublux, Ribs don't "go out"…so what's going on?

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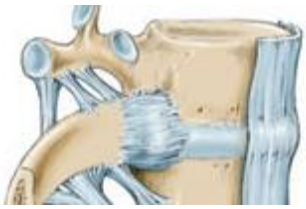
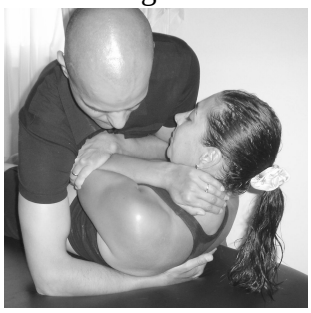
The term ñsubluxationò is a medical term meaning a partial dislocation. A ñrib subluxationò is therefore a partial dislocation of a rib usually described as occurring at the costo-vertebral (CV) and or the costo-transverse (CTr) joints. A number of textbooks and health care providers have described rib subluxations in detail and proclaim it as a common clinical occurrence found in patients with localized unilateral thoracic pain. Various methods of manual therapies to identify and treat torsioned or subluxed ribs have been described by osteopaths[1], chiropractors[2], physiotherapists[3] and massage therapists[4].



Although rib subluxations or ribs ñgoing outò are claimed to be a common finding by various health care providers, the existence of this condition remains quite controversial. Despite the lack of any scientific evidence, some clinicians argue to have diagnosed hundreds of individuals with rib subluxations and to have successfully treated these patients by a course of rib manipulations (é or by ñputting the ribs back inò). One simply has to Google ñrib subluxationsò to find dozens of web sites describing in detail the diagnosis and the treatment of this painful condition.



The reason for the controversy over the existence of subluxing ribs is that, to date, there is a lack of radiological evidence supporting the notion that CV and CTr joints actually ñcome outò. In addition, there are no studies to date that support the notion that a rib subluxation can be reliably diagnosed by manual palpation or that manipulation of ribs can result in the ribs ñgoing back to their placeò.

In fact, on a PubMed search for ñrib subluxationò (as of October 2015) you will find only one paper discussing a very unique case study of a single patient post severe upper thoracic trauma that presented with a superior subluxation of the first rib as seen on a CT scan[5]. Considering how rampant rib subluxations are claimed to be, one would surely expect more than just one patient case study in all of medical research. A PubMed search on ñrib dislocationsò will also not show a single study demonstrating that a human rib dislocates. On the other hand a PubMed search on ñrib fracturesò will produce hundreds of papers on this condition with topics ranging from radiological findings[6] to conservative management options[7].

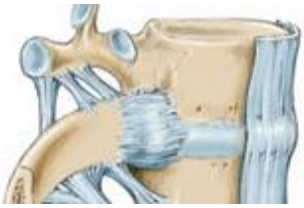
Some health care providers claim the only method of treating a subluxed rib is by performing rib manipulations to ñreposition it back into placeò or else the condition is unlikely to recover. The rationale behind this argument fails as there are thousands of patients post traumatic rib fractures who fully recover without ever undergoing a rib manipulation procedure. If fact, rib manipulation is strongly contraindicated for anyone with a rib fracture, yet when the ribs radiologically heal, the painful condition also spontaneously resolves.

Some clinicians very confidently maintain that a rib subluxation can easily occur following a quick rotation of the spine, a pull to start a lawn mower or even after a sneeze. If these relatively benign traumatic events can cause a rib to sublux, surely

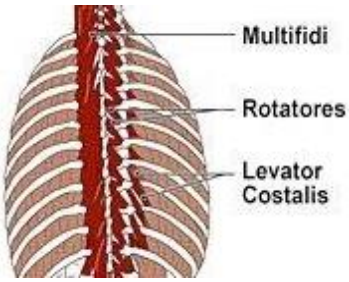
major thoracic traumas must inevitably produce multiple rib subluxations. One would expect of the thousands of rib fracture cases described in the literature some of them would have mentioned a rib ñgoing outò in addition to their fracture. If the forces were strong enough to fracture ribs, would one not think the force should have also caused torsions or subluxations?

Here is a sample study to demonstrate the point. The majority of blunt thoracic traumas seen in emergency departments are associated with motor vehicle collisions and account for almost 25% of all trauma-related deaths, second only to head injuries[8]. A comprehensive review study on CT scan imaging of patients post blunt thoracic traumas revealed an array of potential thoracic injuries diagnosed by radiologists such as pneumothorax, hemothorax, pulmonary contusion, tracheobronchial lacerations, rib fractures, sternal fractures and sternoclavicular dislocations.[9] Considering the severity of the traumas described in this paper, **not one patient was ever radiologically diagnosed as having a "displaced rib" or a "rib subluxation".**

So what could be the cause of this <u>perceived</u> rib being out?



One explanation may be that the costo-transverse, inter-transverse and radiate (costovertebral) ligaments, being similar to all other supportive ligaments, can get sprained when stressed. A local ligament sprain following a major or a minor trauma (such as sneeze or a sudden twist) can result in local inflammation and local protective muscle spasms of the relatively small local muscles such as the multifidi, rotatores and levator costalis that are simply attempting to stabilize sprained CV and CTr joints. This increased protective muscle tone may explain what is felt as a ñbumpò in the area of the pain and assumed to be a subluxed head of a rib.



Perhaps, the various soft tissue techniques, mobilizations and manipulations have the effect of reducing the protective tone of these muscles. Once the muscle spasm and local inflammation are reduced, the perceived ñbumpò over the CV region is also reduced and the patient reports of reduced symptoms with thoracic rotation and breathing.

A technique with which I have anecdotally had success with in managing my patients with rib sprains is rib mobilization with movement (MWM) as proposed by Brian Mulligan[10]. With the patient in sitting, they are asked to rotate their trunk in the direction that produces their localized rib pain and return back to neutral. The range of motion (ROM) and pain level are evaluated.

A cranial glide is applied over the lateral aspect of the rib above the painful region. While sustaining this rib elevation/unloading, the patient is asked to rotate again while ROM and pain are once again evaluated. If there is no change, the technique is repeated on a rib above or below. If MWM on a rib at a specific level is found to reduce or eliminate the pain, it is repeated 10 times.

Rib MWM

Lift the rib up with both hands and have the patient actively repeat the aggravating rotation. If pain free, repeat up to 10 repetitions.

A home program of self-MWM may be provided although it is awkward for some patients to do on themselves.

Rib Self-MWM

Lift the rib up with the web space of one hand and actively rotate towards the painful direction. Repeat as often as necessary.

The goal is to move the irritated CV joint short of pain as often as possible to reduce both the protective muscle spasm and the local inflammation.

I have also found taping of ribs sometimes provides at least temporary relief. To decide on the location and direction of taping, apply a manual superior compression force through the postero-lateral aspect of the rib cage. Now ask the patient to take in a deep breath or rotate. If the patient notes a significant improvement in symptoms, then apply the tape at that level.

Rib Taping Step #1

Apply a manual superior compression through the rib cage to determine which level best reduced pain on breathing or rotation.

Rib Taping Step #2

Apply a rigid tape in a superior direction at the level that provided the most symptomatic relief with step #1. Often 2-3 levels of tapes are required. The aim of the tape is to compress and stabilize the CV joint.

In conclusion, rib subluxations have been described, identified and treated for over a hundred years, yet there is still a lack of any scientific evidence supporting the existence of such a phenomenon. Perhaps as clinicians we should embrace evidence and not instill fear into patients by describing their ribs as having ñgone outò or ñsubluxedò, but instead describe the same condition as ribs that have been simply sprained

é this is likely closer to the truth, far more re-assuring to a patient and inevitably better for their recovery which is the aim of all health care providers.

References:

1. Greenman's principles of manual medicine. Lisa A DeStefano; Ph E Greenman English : 4th ed. Baltimore, MD : Lippincott Williams & Wilkins/Wollters Kluwer
2. Foundations of chiropractic : subluxation Meridel I Gatterman 2nd ed St. Louis, Missouri. : Elsevier Mosby
3. Spinal Manipulation Made Simple: A Manual of Soft Tissue Techniques Jeffrey Maitland North Atlantic Books, 2012
4. Textbook of remedial massage Sandra Grace; Mark Philip Deal Chatswood, 1st ed N.S.W. : Elsevier Australia
5. Kaczynski J1, Dillon M, Hilton J. Superior subluxation of an anterior end of the first rib in a trauma patient. BMJ Case Rep. 2012 May 30;2012.
6. Assi AA1, Nazal Y. Rib fracture: Different radiographic projections. Pol J Radiol. 2012 Oct;77(4):13-6.
7. Sclafani MP, Amin NH, Delehanty E, Figler R, Williams J. Rehabilitation following an acute traumatic first rib fracture in a collegiate football player: a case report and literature review. Int J Sports Phys Ther. 2014 Dec;9(7):1021-9.
8. Scaglione M, Pinto A, Pedrosa I, Sparano A, Romano L Multi-detector row computed tomography and blunt chest trauma. Eur J Radiol. 2008 Mar; 65(3):377-88.
9. Oikonomou A1, Prassopoulos P. CT imaging of blunt chest trauma. Insights Imaging. 2011 Jun;2(3):281-295. Epub 2011 Feb 11.
10. Mobilisation with Movement: The Art and the Science Bill Vicenzino, Wayne Hing, Darren Rivett Churchill Livingstone/Elsevier, 2011