

Costochondritis and Tietze's Syndrome: The published medical research on how to fix them.

This is the more detailed text (with links to the papers) to accompany the YouTube video 'Costochondritis and Tietze's Syndrome: The published medical research on how to fix them.' The link to the video is <https://youtu.be/t8k2LCLeR24>

This video is a brief overview of the existing (at August 2019) published medical research on what costochondritis (and Tietze's Syndrome) is, and how to actually fix it. It is NOT what most doctors and the popular medical sites will tell you - that it's a "mysterious inflammation" of no known cause that will settle down soon. That's why treating it like that usually does not work - it is NOT supported by the existing published peer-reviewed medical research, and is in fact contradicted by it. Yes - this is nuts, and responsible for literally millions of people still in pain after caring treatments that miss the point.

WHAT IT IS: Nearly all costochondritis is simply mechanical strain at the joints where your ribs hinge onto your sternum (breastbone). This happens because the joints at the other ends of the same ribs where they hinge onto your spine are tight or immobile. When those joints at the back of the rib cage cannot move, then the joints at the other ends of those same ribs where they hinge onto your sternum MUST move excessively just to let you breathe and move around. This is unequivocal. So these more delicate rib joints on your sternum strain, 'give' with clicking, popping and often sharp stabbing pain, get irritated and then locally inflamed - and that's your costochondritis. Tietze's Syndrome is simply costochondritis with enough local swelling to be noticeable - it is not a whole different entity.

For a general explanation of costochondritis (and Tietze's Syndrome) and how to fix it, see the 'Costochondritis' page of the Backpod's website - link is <https://www.bodystance.co.nz/en/costochondritis/> For costochondritis from much hunching over computers and phones, see also the 'iHunch' and 'Perfect Posture' pages. For costochondritis after chest surgery, see also the 'Pain after surgery' section on the 'Other Conditions' page.

"INFLAMMATION": This is the core of the confusion about costochondritis, and it's all due to a semantic red herring. The word "costochondritis" means "inflammation of the rib cartilage." It started being used in the 1960s to describe the problem, and rapidly became the defining term for it. There is absolutely no justification for adopting this particular label that we can find in the research literature - the problem was also known by several earlier terms, including "chest wall pain."

But to busy doctors, just the word itself seemed to carry an explanation of the problem ("It's an inflammation!"), and therefore a logical treatment approach ("We'll suppress the inflammation, hence anti-inflammatory medications, steroid shots, Rheumatology specialists, etc."). When these didn't fix it, the patients sought their own ways to bring down the "inflammation", with diet and many, many non-medical supplements, potions, etc.

THE EVIDENCE ON INFLAMMATION: A 1994 paper in the American Medical Association Archives of Internal Medicine by Disla et al (<https://www.ncbi.nlm.nih.gov/pubmed/7979843>) shows NO significant difference in blood inflammation levels (ESR) between a group of patients with costochondritis and a group without it ($P > .38$).

This is conclusive - costochondritis is NOT a systemic auto-immune inflammation, no matter who's told you it is. Reality check: OF COURSE it isn't - why would any general systemic inflammation just manifest solely at some rib joints on the breastbone and nowhere else in the body? So just treating it like one is usually not going to fix it. (Note that in Disla's full paper 55% of the costochondritis patients were still in pain after one year - mostly, it doesn't just "go away." The statement in their abstract that 'Spontaneous resolution is seen in most cases at 1 year.' is not justified by their own data in their full paper.)

I have lectured to various medical conferences on costochondritis. I've asked each audience of New Zealand GPs (family physicians) if they've ever seen raised inflammatory markers in blood tests done for costochondritis. Out of about 600 experienced doctors, not one ever had.

There IS some local inflammatory response involved at the straining rib joints on the sternum. This is a completely normal body response to mechanical strain and trauma, like a sprained ankle swelling up, or a blister in your boot. It can happen at the rib joints on the sternum too, as they strain and 'give' - and unlike all other joints in the body, they never get a rest as long as the patient keeps breathing. It's the rib joint equivalent of spraining your ankle and never stopping running on it. When the swelling is obvious, the problem is usually called Tiezte's Syndrome. But it is simply a specific localised inflammatory response to ongoing strain at the joints, NOT a "mysterious inflammation" arriving for no known reason out of a clear blue sky.

TREATING THE INFLAMMATION: This can help a bit. Anti-inflammatory medications and diets can reduce the levels of inflammation in the body generally, thereby taking some of the heat out of the straining and locally inflamed joints on the sternum. But this approach does not treat the ongoing cause of the costochondritis, which is specific rib joint strain on the sternum because of specific rib joint immobility at the spine. It's like continuing to run unceasingly on a sprained ankle and expecting anti-inflammatories to "heal" the sprain and swelling - of course they can't. To date (June 2019) there has never been a clinical trial to test if anti-inflammatory medications (NSAIDs) or steroid shots into the sternal rib joints are effective in fixing costochondritis. Anecdotally, they're not.

THE VERY BEST EVIDENCE ON FIXING COSTOCHONDRITIS: The single best piece of evidence on how to fix costochondritis is from Zaruba and Wilson (2017) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5455195/>), who fixed eight chronic costochondritis patients by freeing up their tight thoracic and posterior spinal (costovertebral and costotransverse) joints. This is only a case series of eight patients, but it is better than anything else so far published in English (as of June, 2019).

It is further supported by several individual case studies which essentially demonstrated the same thing, e.g. Martin Rabey (2008) ([https://www.mskscienceandpractice.com/article/S1356-689X\(07\)00027-6/abstract](https://www.mskscienceandpractice.com/article/S1356-689X(07)00027-6/abstract)); Grindstaff et al (2010) (<https://www.tandfonline.com/doi/abs/10.1179/106698110X12640740712653>); Gijsbers and Knaap (2011) (<https://www.sciencedirect.com/science/article/abs/pii/S1556370710001495>); Karen Hudes (2008) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2597886/>); Cubos et al (2010) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989400/>); and Aspegren et al (2007) (<https://www.ncbi.nlm.nih.gov/pubmed/17509441>). These all entirely conform with and support my New Zealand manual physiotherapy understanding of costochondritis - that it is essentially strain at the rib joints

on the sternum, because the rib joints round the back can't move, and that you fix it by freeing these up again.

This view is biologically plausible, sensible, explains the specificity of the joint pain on the sternum, explains the clicking and popping on the sternum as the rib joints strain and 'give', explains the sharp stabbing pain, explains the common breathlessness with costochondritis as the hypomobile rib joints restrict full inspiration (breathing in), is readily demonstrable with manual physiotherapy tests and treatment response, is validated by the best peer-reviewed evidence on fixing costochondritis, and is the explanation and therefore correct treatment approach to almost all cases of costochondritis. It is explained clearly on a New Zealand YouTube video <https://www.youtube.com/watch?v=JsfPzEOJ0hE&t=104s>

OTHER SUGGESTED CAUSES OF COSTOCHONDRITIS:

(1) VITAMIN D DEFICIENCY: Oh and Johnson (2012) (<https://www.hindawi.com/journals/crim/2012/375730/>) reported two patients with costochondritis and low vitamin D levels. Three months later vitamin D levels in one patient were normal and her costochondritis pain had gone; in the second patient her "chest pain resolved with treatment" after two months while taking vitamin D supplements. My comment: It's a step too far to conclude from two cases that low Vitamin D causes costochondritis. Research quoted in their paper states 36% of young adults have low vitamin D anyway - but less than 1% will have costochondritis. The specificity objection applies - why should low systemic vitamin D cause such specific pain just at the rib joints on the sternum and nowhere else in the body? However, low vitamin D levels are an easy thing to test and correct, and this is reasonable to trial with a costochondritis patient - along with a manual approach to test and free up the tight movement round the back of the rib cage.

(2) INFECTION: Costochondritis from infection is very rare, found in the literature only a few case studies, all resulting from obvious introduction pathways of trauma, drug addict needle sharing, and surgery (<https://www.ncbi.nlm.nih.gov/pubmed/10959658> <https://www.ncbi.nlm.nih.gov/pubmed/21681074> <https://www.tandfonline.com/doi/abs/10.3109/14017439709058088?journalCode=icdv20>) My comment: Infection is NOT a general or common cause of costochondritis.

(3) COELIAC DISEASE AND GLUTEN SENSITIVITY: There is no existing medical evidence to show that coeliac disease or gluten sensitivity causes costochondritis. My comment: Like low levels of vitamin D, gluten sensitivity can make joints readier to ache. However the same specificity objection as with vitamin D applies - why should a generalised systemic problem cause the specific costochondritis pain only at some of the rib joints on the breastbone and nowhere else in the body? Also, very few coeliacs get costochondritis. However as with vitamin D, it's an easy thing for the patient to stop all wheat flour for a week and see if their symptoms improve - along with a manual approach to free the hypomobile posterior rib cage movement.

(4) CHEST BINDING: Anecdotally, chest binding as part of female to male transition can cause costochondritis (<https://www.ftmtopsurgery.ca/blog/ftm-faq/health-consequences-chest-binding/>). My comment: This is clearly completely mechanical, with the corset restriction of the rib cage forcing the costosternal rib joints on the sternum to strain and give, just to allow breathing. Anyone doing this should also be using a Backpod to keep the rib joints round the back free, thereby reducing the strain of the rib joints on the sternum.

OVERVIEW AND CONCLUSION: The popular medical paradigm in most of the world is that costochondritis (and its subgroup with observable swelling called Tietze's Syndrome) is a "mysterious inflammation" of no known cause that will settle down soon. This assertion is NOT supported by the existing medical research and is essentially wrong. That is why a treatment approach based on this view to suppress this "mysterious inflammation" generally does not fix costochondritis.

The best peer-reviewed medical research evidence fully supports my New Zealand manual physiotherapy view of costochondritis as excessive strain at the costosternal joints (rib joints on the sternum) caused by lack of movement at the posterior rib articulations (rib joints on the spine). This view explains the very specific pain at only some rib joints on the sternum, which no systemic suggestion such as low vitamin D or gluten sensitivity can account for. It also explains the sharp stabbing pains and clicking and popping of the rib joints on the sternum as they strain and 'give' under the excessive load. (These are mechanical symptoms, NOT inflammatory ones - inflammation is silent and constant.) It is also biologically plausible, sensible, and explains why treating just the pain on the sternum alone tends not to work. It gives a clear treatment path for fixing costochondritis fully and permanently - free up the immobile rib machinery around the back which is causing the strain at the front.

Costochondritis is demonstrably NOT a "mysterious inflammation" and it is highly unfortunate that the adoption of a name implying that it is sends busy, caring doctors down a treatment path for it that, for most patients, doesn't work. Research into and treatment of the clinical entity known as costochondritis have mostly been attempts to force it into an assumed "mysterious inflammation" paradigm, which it doesn't fit - for this Snark is a Boojum, you see (<https://www.poetryfoundation.org/poems/43909/the-hunting-of-the-snark>).

DISCLOSURE: I have a personal feeling for costochondritis victims, having had the problem for seven years myself after a climbing fall in my 20s. I fixed it by freeing up the immobile patch of rib and spinal joints after qualifying as a New Zealand physiotherapist, and have had no pain whatsoever from it for the last 30 plus years. Having costo yourself does concentrate your mind on how to fix it! It has remained a special interest; I've lectured on it to various medical conferences, and have been asked by the British Medical Journal (Australian office) to submit a paper reassessing costochondritis. Lord knows this is needed - we were astounded to discover that the world outside New Zealand and Australian manual physiotherapy generally does not see costochondritis in the sensible, effective, validated way we do. This video is a light summation of what we found in the actual research evidence.

I am also the clinical member of the team that developed the Backpod - a New Zealand spinal stretching fulcrum built primarily to counter the iHunch (<https://www.bodystance.co.nz/en/ihunch/>). The Backpod also has the apparently unique capability of giving an effective, strong, specific stretch to the shortened collagen surrounding tight and immobile posterior rib joints. Hence its valid and practical relevance - freeing up these joints is the irreducible core of fixing almost all costochondritis. Having built something useful out of 30 years of expertise in this area does NOT automatically invalidate that expertise. The Backpod gets a valid mention in discussing practical details of how to actually fix costochondritis, just as oranges would in a discussion of scurvy.

CONTACT: I am happy to discuss costochondritis and Tietze's Syndrome. If you are a medical professional, please first read any articles you wish to discuss. I am usually available to talk at conferences. If you are a patient, please let me know in full detail how things have been for you - I need a clear picture to try to make sense of. I am pretty swamped, so may not always respond quickly. My email is bodystance@gmail.com

WARNING: Always, chest pain should be seen urgently by your doctor or Emergency Room first. They are extremely good at checking out dire and scary possibilities like your heart - they're just usually off target with costochondritis.

FURTHER INFO: There is a more general explanation on how we'd see and treat costochondritis on the Backpod's Costochondritis page: <https://www.bodystance.co.nz/en/costochondritis/> Also a YouTube video with more detail on fixing costochondritis from a manual physiotherapy viewpoint: <https://www.youtube.com/watch?v=r7ve6nNVdWc&t=836s>

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