

# Pathoanatomy vs Psychosocial– Back to the Future?

With Dr Mark Laslett, Dr Angela Cadogan & Flavio Bonnet

On the 18<sup>th</sup> March 2019, Dr Mark Laslett and I were involved in a live social media discussion about the relationship between patho-anatomic diagnosis and psychosocial factors hosted by Flavio Bonnet from the [Agence EBP](#).



We streamed live on Facebook, Twitter and Instagram (in English) from Christchurch, New Zealand. The event was viewed by more than 7,500 people from around the world.

We discussed four main topics. In this series I have provided a summary of the transcript for each topic.



1. Is it possible to make a diagnosis?
2. Does the pathoanatomic approach ignore the psychosocial aspect of the pain experience?
3. What do you say to colleagues who say that diagnosis does not change treatment?
4. How does imaging relate to diagnosis?

Link to video on Twitter: [https://twitter.com/marklaslett\\_NZ/status/1107733389300240384](https://twitter.com/marklaslett_NZ/status/1107733389300240384)

## PART 4: How does imaging relate to diagnosis?

### SUMMARY:

- *Clinical examination is the start point from which you decide if imaging is even necessary.*
- *The high prevalence of asymptomatic findings on imaging means you cannot make a diagnosis of symptomatic pathology based on imaging alone.*
- *Don't treat the imaging, but equally, don't write off imaging findings as 'asymptomatic' if the clinical picture fits.*
- *Some imaging findings DO give us a diagnosis and are useful.*
- *Imaging or surgical visualisation as a reference standard in diagnostic research tells you nothing about whether the 'structure' is symptomatic.*

### Dr Mark Laslett:

- Imaging is a picture of the anatomy. That's it. Imaging will not tell you whether what you see is the source of pain and it tells us nothing about the modifiers.
- The clinical examination is the start point where I decide whether I use imaging at all, and if I do I'm looking for something that matches my clinical findings. It is important to keep that sequence in mind. E.g A patient comes in with an MRI that shows disc bulges on the right but the pain is on the left; the right sided disc bulge is not likely to be the cause of pain.
- I disapprove of the trend we are by the patient has to have had imaging before even being examined. To me that is simply wrong. The imaging diagnosis is not the type of diagnosis that Angela and I are talking about.

- There are a few imaging findings that do give us a diagnosis that can be immensely helpful but they are in the minority. Some examples are:
  - Fracture
  - High intensity zone (high specificity to provocation discography)
  - Modic changes
  - Scintigrams for stress fractures

### Dr Angela Cadogan:

#### In clinical practice:

- We can't make a diagnosis based on imaging alone without clinical information to help correlate the findings.
- Imaging findings are not always relevant to patient symptoms. Clinical correlation is required.
- There is a high prevalence of imaging pathology in asymptomatic populations. This means some imaging findings may be red herrings. However we are not seeing asymptomatic populations, we see patients who have symptoms. So we have to be careful not to write off the imaging findings as being a symptomatic in all cases. This is where the clinical examination is critical.

#### In research:

- Previous diagnostic studies have compared results of clinical tests with imaging or surgical visualisation reference standards. The problem is we have no idea whether the imaging findings or surgically visualised pathology were in fact symptomatic. All these studies tell us is the probability that the pathology will be seen on imaging or during surgery, not whether this is the source of their pain.
- In my research we compared clinical tests and imaging findings with the results of anaesthetic injections into the Subacromial Bursa, AC joint and glenohumeral joint to find clinical and imaging predictors of symptoms arising from these structures:
  - Most imaging findings were not associated with response to anaesthetic injections and this is why a clinical correlation is important.
  - A full thickness Supraspinatus tear on ultrasound was associated with a positive response to the bursal injection
  - LHB tendon sheath effusion was correlated with a positive response to the glenohumeral joint injection.

## IMAGING FINDINGS

**NO association with subacromial pain**  
(OR <1.5):

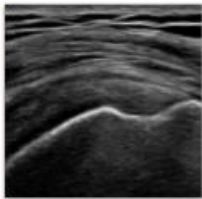


**X-Ray**

- GHJ pathology
- ACJ pathology
- Acromion type

**Ultrasound**

- Subacromial bursa pathology
- Rotator cuff tendinosis
- Rotator cuff – partial thickness tears
- LHB pathology



RESEARCH ARTICLE

**Diagnostic Accuracy of Clinical Examination and Imaging Findings for Identifying Subacromial Pain**

Angela Cadogan<sup>1\*</sup>, Peter J. Michal<sup>2\*</sup>, Mark Lattest<sup>3\*</sup>, Wayne A. Wang<sup>4\*</sup>

1 Health and Rehabilitation Research Institute, AUT University, Auckland, New Zealand, 2 Faculty of Health, Behavioural Medicine, Bond University, Robina, Queensland, Australia

The majority of x-ray & ultrasound findings were not associated with subacromial pain.

Cadogan A, et al. (2016) Diagnostic Accuracy of Clinical Examination & Imaging Findings for Identifying Subacromial Pain. *PLoS ONE* 11(12): e0167738.

## IMAGING FINDINGS

### Increased likelihood of subacromial pain:

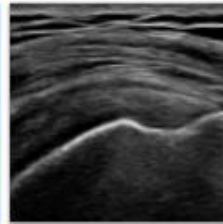


#### X-Ray

- Supraspinatus calcification (OR 2.8)

#### Ultrasound

- Supraspinatus calcification OR 2.1
- Supraspinatus Full Thickness Tear
  - ≥50 yrs OR 5.6
  - <50yrs OR 2.9



#### RESEARCH ARTICLE Diagnostic Accuracy of Clinical Examination and Imaging Findings for Identifying Subacromial Pain

Angela Cadogan<sup>1\*</sup>, Peter J. McPhee<sup>1\*</sup>, Mark Laslett<sup>2\*</sup>, Wayne A. King<sup>3\*</sup>

<sup>1</sup> Health and Rehabilitation Research Institute, AUT University, Auckland, New Zealand; <sup>2</sup> Faculty of Health, Behaviour and Society, Deakin University, Geelong, Queensland, Australia

**Supraspinatus  
calcification & full-  
thickness tear increased  
the likelihood of  
subacromial pain**

Cadogan A, et al. (2016) Diagnostic Accuracy of Clinical Examination & Imaging Findings for Identifying Subacromial Pain. *PLoS ONE* 11(12): e0167738.

## References

- Cadogan, A., et al. (2016). "Diagnostic accuracy of clinical examination and imaging findings for identifying subacromial pain." *PLoS ONE* 11(12): e0167738.
- Cadogan, A., et al. (2013). "Shoulder pain in primary care: Diagnostic accuracy of clinical examination tests for non-traumatic acromioclavicular joint pain." *BMC Musculoskeletal Disorders* **14**.
- Cadogan, A., et al. (2011). "A prospective study of shoulder pain in primary care: Prevalence of imaged pathology and response to guided diagnostic blocks." *BMC Musculoskeletal Disorders* **12**: 119.
- Cadogan, A., et al. (2013). "Diagnostic accuracy of clinical examination features for identifying large rotator cuff tears in primary health care." *Journal of Manual & Manipulative Therapy* **21**(3): 148-159.
- Laslett, M., et al. (2005). "Centralization as a predictor of provocation discography results in chronic low back pain, and the influence of disability and distress on diagnostic power." *Spine Journal* **5**(4): 370-380.
- Laslett, M., et al. (2005). "Agreement between diagnoses reached by clinical examination and available reference standards: A prospective study of 216 patients with lumbopelvic pain." *BMC Musculoskeletal Disorders* **6**.
- Laslett, M., et al. (2006). "Clinical predictors of screening lumbar zygapophyseal joint blocks: development of clinical prediction rules." *Spine Journal* **6**(4): 370-379.
- Laslett, M., et al. (2006). "Clinical predictors of lumbar provocation discography: A study of clinical predictors of lumbar provocation discography." *European Spine Journal* **15**(10): 1473-1484.
- Laslett, M., et al. (2005). "Diagnosis of sacroiliac joint pain: validity of individual provocation tests and composites of tests." *Manual Therapy* **10**: 207-218.