

## Introduction

- Chest pain has a wide differential that should include cervical radiculopathy in the appropriate clinical setting
- Cervical spine disease is important to consider preoperatively given the risk of spinal cord injury and permanent neurologic damage.

## Case Description

- A 67-year-old gentleman presented to the emergency department with five days of left chest, shoulder, and arm pain following two months of exertional left arm pain. The chest pain was sharp, constant, radiating to the left arm and associated with exertional dyspnea relieved by rest.
- Vitals were notable for elevated blood pressure. Physical exam revealed regular rate, III/VI high-pitched holosystolic murmur with radiation to the axilla, normal JVP, clear lungs, and no edema.

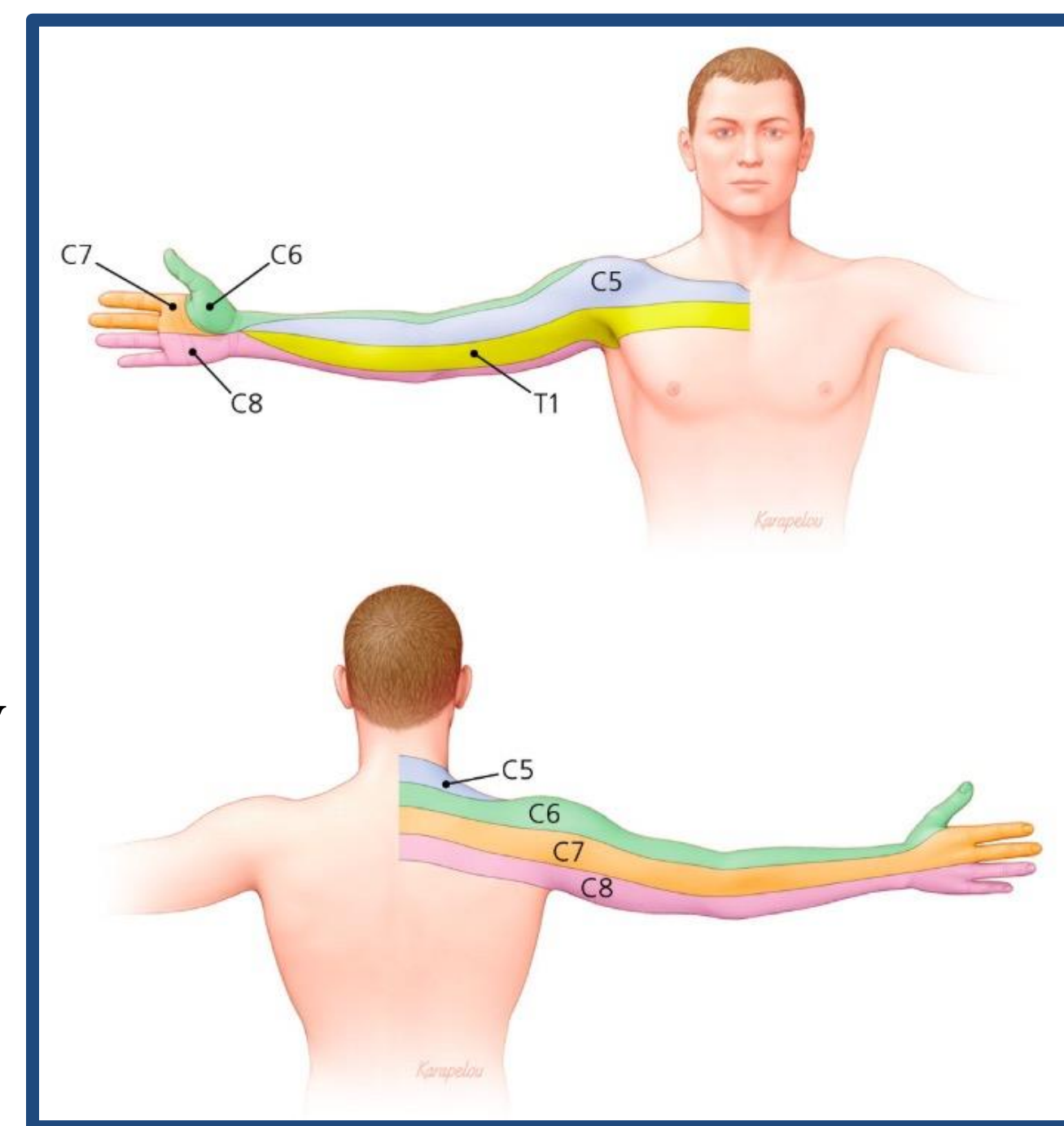
## Labs and Imaging

CBC / BMP	Unremarkable
Troponin	<0.02 – 0.04 – 0.03 ng/ml
NT-proBNP	85 pg/ml
EKG	Sinus without ischemic changes
Chest Radiograph	Unremarkable
TTE	Normal EF, Severe MR
TEE	Flail posterior mitral valve leaflet
Coronary Angiogram	Non-obstructive CAD

The patient was discharged home with plans to perform mitral valve repair as an outpatient, with the “atypical chest pain” deemed a musculoskeletal red herring helping to identify his incidental MR.

## Pre-operative Assessment

On his preoperative evaluation, he continued to endorse left upper “chest” pain that was localized to the left anterior deltoid with burning pain radiating to the left elbow and wrist. Careful review of surgical history identified emergent C3-6 laminectomy 7 years prior for acute central cord syndrome and severe cervical stenosis after a fall.



Preoperative exam was notable for limited neck extension, left hand abduction weakness, and pain localized to the left C5-6 dermatomes. C-Spine MRI revealed several foci of myelomalacia and multilevel foraminal stenosis, worse at C4-5 and C5-6, without central canal stenosis. Spine precautions were utilized during intubation and mitral valve surgery. The mitral valve repair was successful without neurologic injury.



## Discussion

This case highlights the importance of a complete past surgical history during the workup of any medical complaint and pre-operatively. The patient’s upper chest pain was secondary to C5 radiculopathy.

A complete history at the time of index admission may have raised awareness of the correct diagnosis sooner, shedding light on an alternative etiology of his chest pain. While the “hallmark” of pre-operative evaluation and risk assessment is cardiac evaluation, pre-op history and physical exam might address any or all organ systems including musculoskeletal.

Cervical spine disease is important to consider before intubation given the risk of spinal cord injury and permanent neurologic damage. Case reports in the literature document acute paralysis after open heart surgery, which often utilizes hyperextension of the neck and upper torso to facilitate sternotomy.<sup>1-4</sup>

Spinal precautions, including head holding, application of a cervical collar, maintaining neutral alignment, and log rolling, should be employed during surgery in patients with cervical spine disease in order to prevent spinal cord injury.

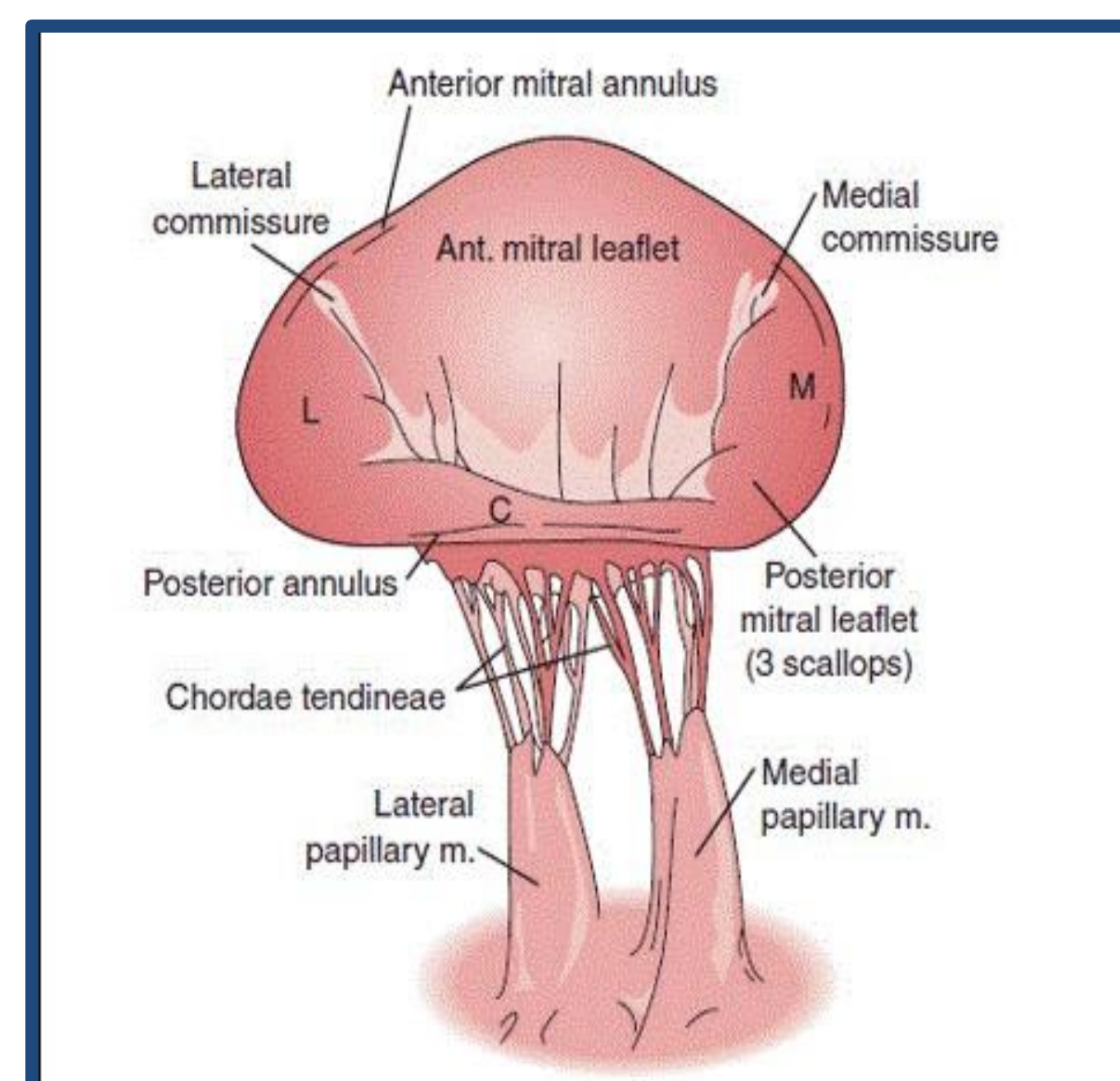
## Teaching Points

**Not all chest pain is cardiac in origin but may instead lead to the diagnosis of other active pathology, including ones that affect peri-operative risk and management**

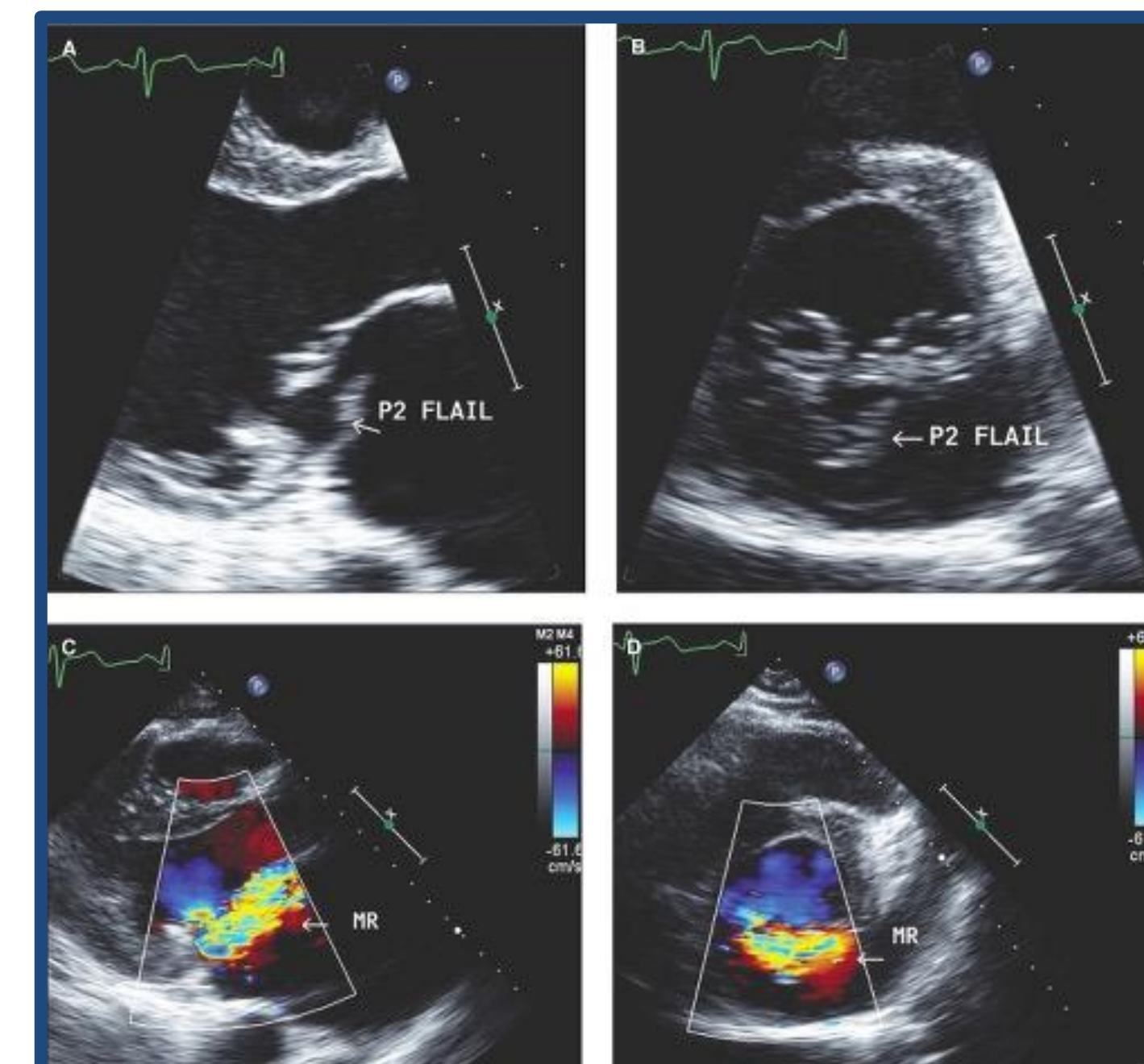
**Advanced imaging should be considered if it will change peri-operative care while weighing the risks and benefits of potentially delaying indicated surgery to obtain cervical spine assessments.**

## References

- Fujioka S, Niimi Y, Hirata K, Nakamura I, Morita S. Tetraplegia after coronary artery bypass grafting. *Anesth Analg*. 2003 Oct;97(4):979-80.
- Li CC, Yie JC, Lai CH, Hung MH. Quadriplegia after off-pump coronary artery bypass surgery: look before you place the neck in an extended position. *J Cardiothorac Vasc Anesth*. 2013 Apr;27(2):e16-7.
- Naja Z, Zeidan A, Maaliki H, Zoubair S, El-Khatib R, Baraka A. Tetraplegia after coronary artery bypass grafting in a patient with undiagnosed cervical stenosis. *Anesth Analg*. 2005 Dec;101(6):1883-4.
- Gorur A, Aydemir NA, Yurtseven N, Salih Bilal M. Tetraplegia after coronary artery bypass surgery in a patient with cervical herniation. *Innovations (Phila)*. 2010 Mar;5(2):134-5.
- [https://www.anatomyexhibits.com/downloads/13128\\_04x/](https://www.anatomyexhibits.com/downloads/13128_04x/)
- <https://aneskey.com/mitral-regurgitation/>
- <http://mvpresource.com/what-are-the-mitral-valve-leaflets/>



Mitral Valve Anatomy



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