Case Presentation

Frontiers in Upper Extremity Surgery
November 3, 2018

Peter Tang, MD, MPH, FAOA
Director
Center for Brachial Plexus and Nerve Injury
Program Director
Hand, Upper Extremity & Microvascular Surgery Fellowship
Associate Professor
Drexel University College of Medicine
Allegheny General Hospital
peter.tang@ahn.org

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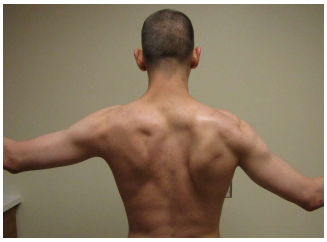
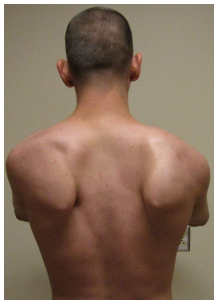
Case

28 year-old male bread maker who was moving a 50 lb pail of dough from a top shelf to the ground. He felt a pop and pain in his right, posterior scapular area.

Case

Case





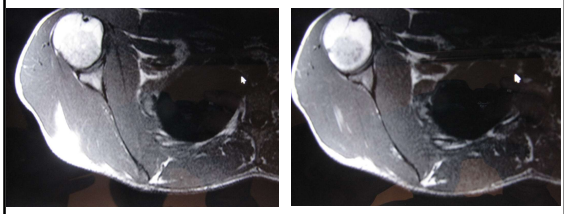
Case

Diagnosis?

Does he have medial or lateral winging?

Any other studies?

Case



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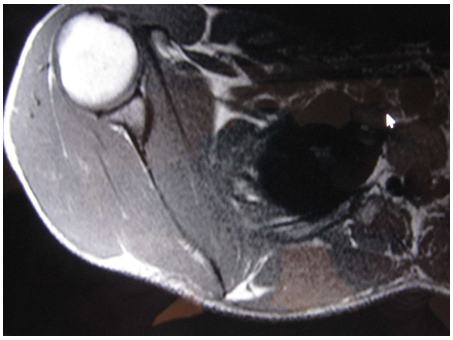

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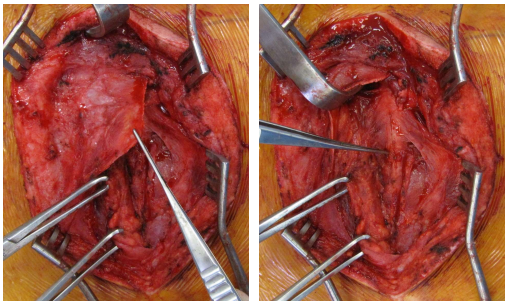

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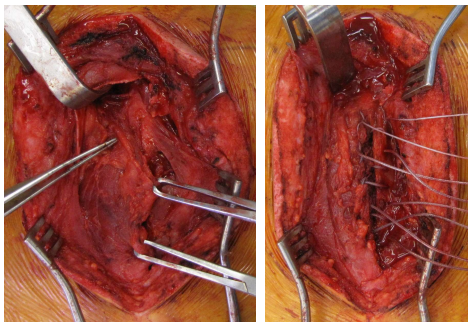

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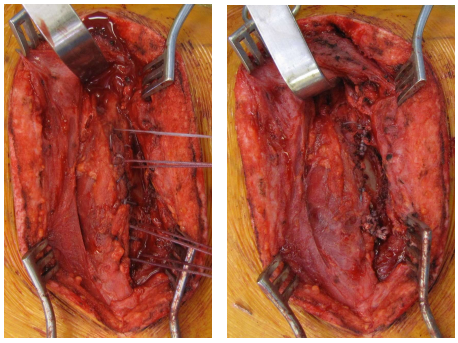

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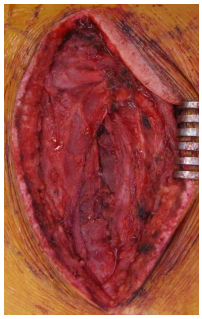


3 months post-op

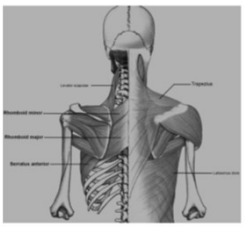
3 months post-op

Definitions

- Primary Scapular Dyskinesis - is abnormal movement of the scapula due to nerve, muscle or tendon dysfunction of the scapulothoracic muscles (trapezius, levator scapulae, rhomboid minor, rhomboid major, serratus anterior, pectoralis minor)
- Secondary Scapular Dyskinesis – is abnormal movement of the scapula not due to primary dysfunction of the scapulothoracic neuromuscular unit

Scapular Mechanics

- Scapula only connected to clavicle and otherwise only stabilized by muscles
- Has to support large loads generated by long lever arm of the upper extremity as well as position the glenohumeral joint in space
- The shoulder complex consists of 14 muscles: 8 cross the glenohumeral joint and 6 stabilize the scapulothoracic articulation



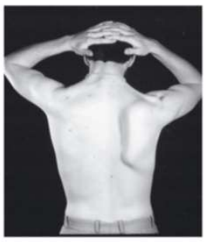
(Martin, Curr Rev Musculoskelet Med 2008)

Scapulohumeral Rhythm

- Describes the ratio and coordination of scapulothoracic and glenohumeral motion
- Some studies show 30 to 60 deg of upward scapular rotation when the arm is maximally raised
- Glenohumeral to scapulothoracic motion (scapulohumeral rhythm) is routinely reported at 2:1
- Giphart found the ratio to be 1.1:1 for elevation, 1.6:1 for scaption, and 2:1 for abduction (JBJS 2013)
- Other studies with simulated lifting activities found wide range of values from 2.6 to 4.6 (Forte, Phys Ther Sport 2009; Yoshizaki, JSES 2009)

Serratus Anterior Palsy → Medial Winging

(Srikumaran, JBJS 2014)



(Gooding, Shoulder & Elbow 2013)

Trapezius Palsy → Lateral Winging

Figs. 2-A and 2-B Clinical example of a patient with trapezius palsy and lateral winging. **Fig. 2-A** The shoulder "droops" down (inferior translation of the scapula) and is positioned more laterally compared with the normal left side. **Fig. 2-B** The lateral winging is more prominent with attempted forward elevation of the shoulder.

(Srikumaran, JBJS 2014)

NB: the entire trapezius is not working

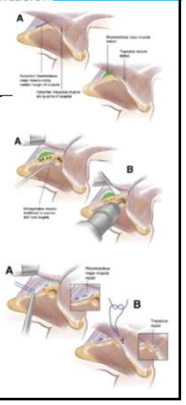
Causes of Scapular Dyskinesis

- Serratus anterior palsy → medial winging
- Trapezius or rhomboid palsy → lateral winging
- Most common causes is probably neurogenic (laceration, neuropraxia) - confirm with nerve study (serratus anterior palsy 0.0026% to 0.21%)
- Classic story is cervical lymph node exploration leading to spinal accessory nerve laceration
- Another cause is muscle/tendon rupture (this is not well taught) - Traumatic history; nerve study is normal

Medial scapular muscle detachment: clinical presentation and surgical treatment

W. Ben Kibler, MD[a], Aaron Sciascia, MS, ATC, NASM-PES[a,*], Tim Uhl, PhD, ATC, PT, FNATA[b]

J Shoulder Elbow Surg (2014) 23, 58-67



- 72 pts: 63 (86%) had detachment of lower trapezius; 55 (76%) had detachment of rhomboid muscles
- Injury involved acute tensile mechanism (seat-belt restrained MVA, direct blow or compressive mechanism (direct trauma), repetitive overload tensile mechanism (throwing), or generalized muscle activity (electric shock, cardioversion)
- Pain at medial scapular border, inability to elevate arm above 90 degrees
- They reported imaging was NOT helpful

Case Study

18 year-old female who was playing basketball and running up the court when her teammate tripped her up from behind and the patient fell forward bending at the waist 90 deg and her hands touched the ground but she did not fall to the ground. Her teammate fell on top of her and her teammate's flexed elbow hit her left scapula. She felt immediate pain at her scapula area.

Case Study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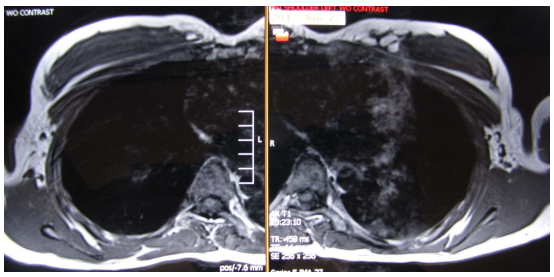
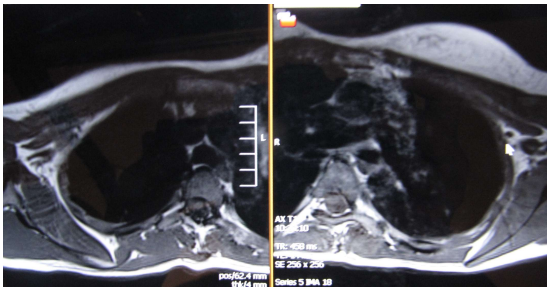


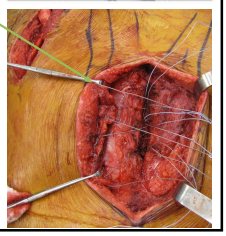
Case Study



Case Study

Findings:

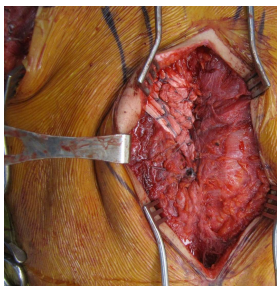
- Tear of the origin of the inferior trapezius from the spinous processes (but no tendon was found)
- Tear of the origin of the latissimus dorsi from the spinous processes (4 cm from origin)
- Tear superior and middle trapezius from the scapular spine (1 cm from insertion)



Case Study

Plan:

- To provide a static restraint I decided to use an achilles allograft to connect the medial scapular spine to the spinous processes
- To provide a dynamic restraint I transferred the rhomboid major and minor to the medial scapular spine (the rhomboids had already been initially taken down to evaluate them)



Eden-Lange Procedure

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FIGURE 5: Drawing depicting the Eden-Lange transfer in which the levator scapulae is transferred to the spine of the scapula while the rhomboid minor and rhomboid major are transferred to the body of the scapula (curved arrows). The inset drawing shows the trapezius anatomy and its proposed function, which shows the major difference in the line of pull (straight arrows) of the middle-lower trapezius and the rhomboids) transfer in the Eden-Lange procedure. © Copyright Mayo Foundation 2010.

Triple Transfer Procedure

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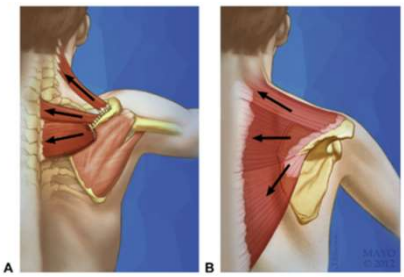

FIGURE 6: Drawing showing similarities of the lines of pull (arrows) between **A** the triple muscle transfer and **B** the normal trapezius. © Copyright Mayo Foundation 2012.

Case Study

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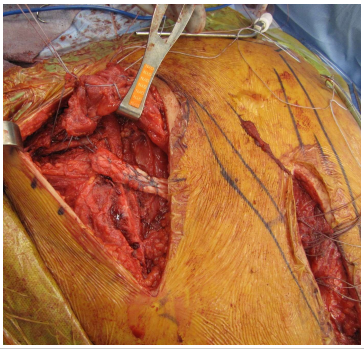

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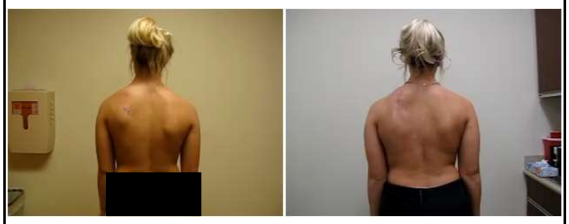

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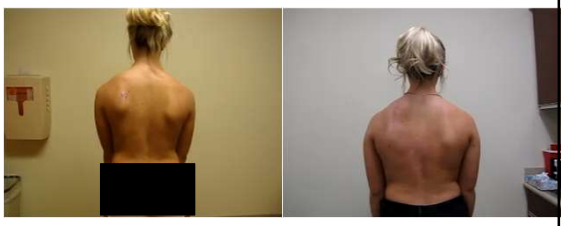

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Thank You!

Peter Tang, MD, MPH, FAOA
Cell – 646-251-4958
ptang2214@gmail.com

Medial Winging

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56 yo male who started noticing problems moving his right shoulder in December of 2017. Before that he was having shoulder pain but he does not describe it as severe or anything he has never had before. No procedures or surgeries. No trauma.