

# **SNS COLLEGE OF ALLIED HEALTH SCIENCE**

Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai

## **DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE TECHNOLOGY**

**COURSE NAME:** Anatomy

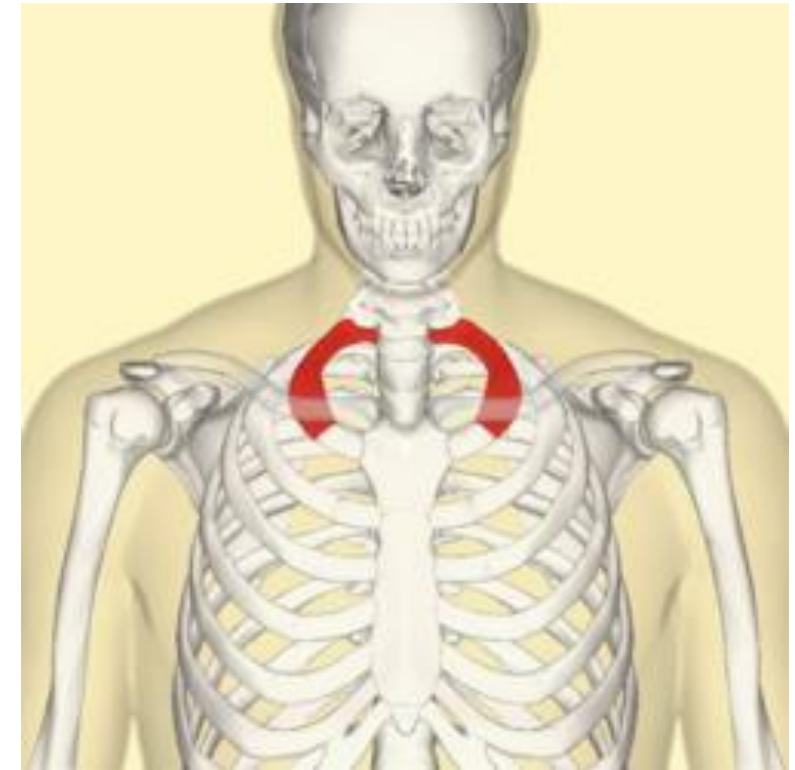
**UNIT II – Thorax & Lungs**

**TOPIC:** Atypical Ribs

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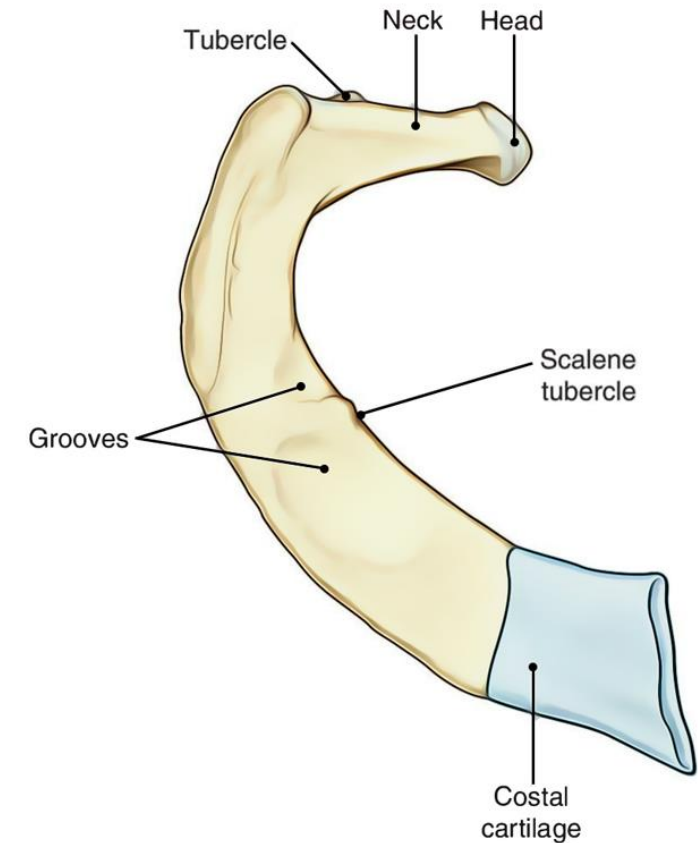
# Empathize: Understanding Rib Classification

- 12 pairs of ribs total in human thoracic cage
- Ribs 3-9 are typical (standard features)
- Ribs 1, 2, 10, 11, and 12 are atypical
- Atypical ribs have unique structural variations



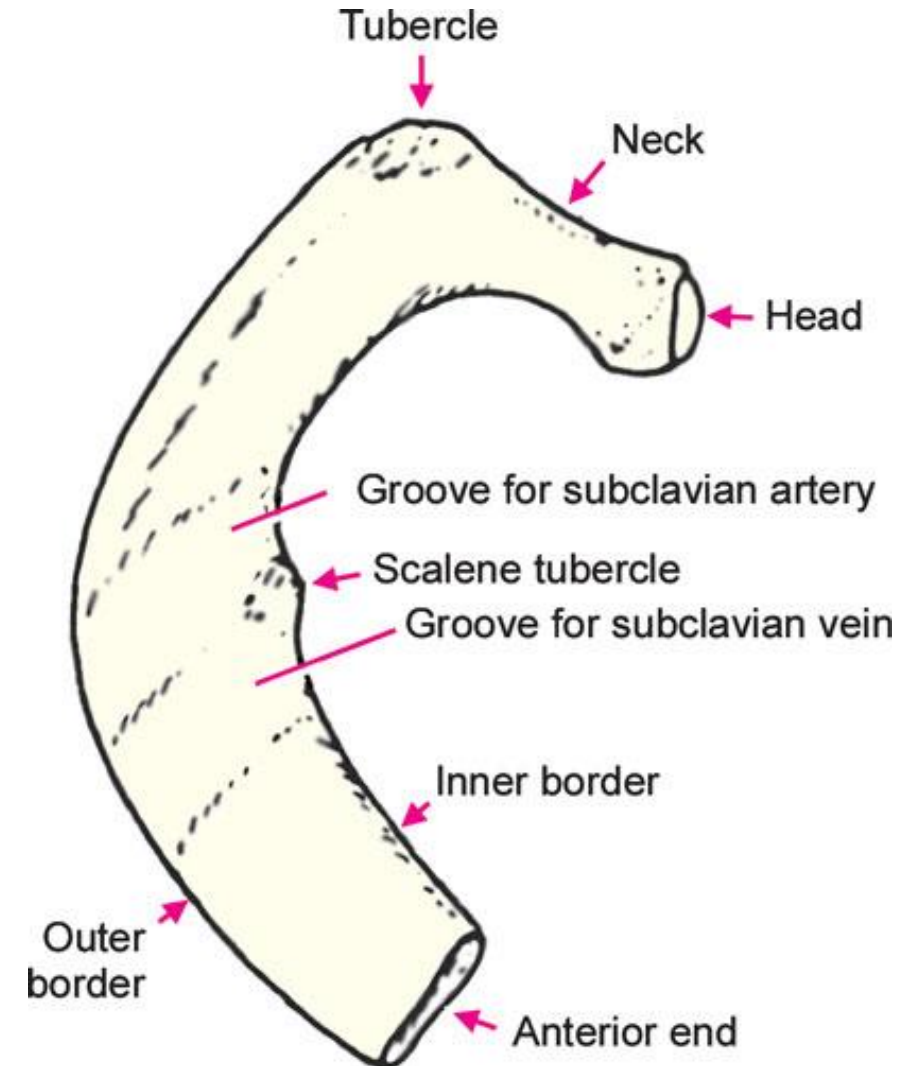
## Define: Atypical Rib Characteristics

- Absence of standard anatomical features
- Modified head, neck, or tubercle structure
- Unique surface markings and grooves
- Different articulation patterns



## Ideate: First Rib Structure

- Shortest, widest, and most curved rib
- Has superior and inferior surfaces (not medial/lateral)
- Single articular facet on head
- It has 2 tubercle
- Scalene tubercle on inner border
- Two grooves for subclavian vessels
- **Anterior groove:** subclavian vein
- **Posterior groove:** subclavian artery
- Scalene anterior muscle attaches to scalene tubercle



# First Rib: Blood Supply, Attachment

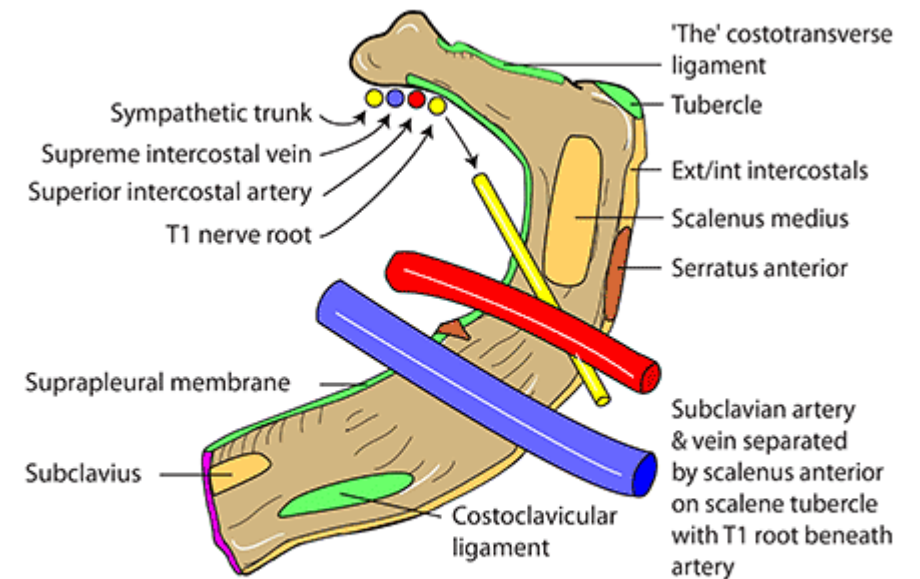
The only rib that articulates with one thoracic vertebra only (T1)

**Blood Supply:** Anterior intercostal arteries, Posterior intercostal arteries

**Nerve Supply:** First Intercostal Nerve

**Attachments:** Anterior scalene muscle, Middle scalene muscle, Intercostal muscles, Subclavius muscle, Parietal pleura, Costoclavicular ligament, Costotransverse Ligament

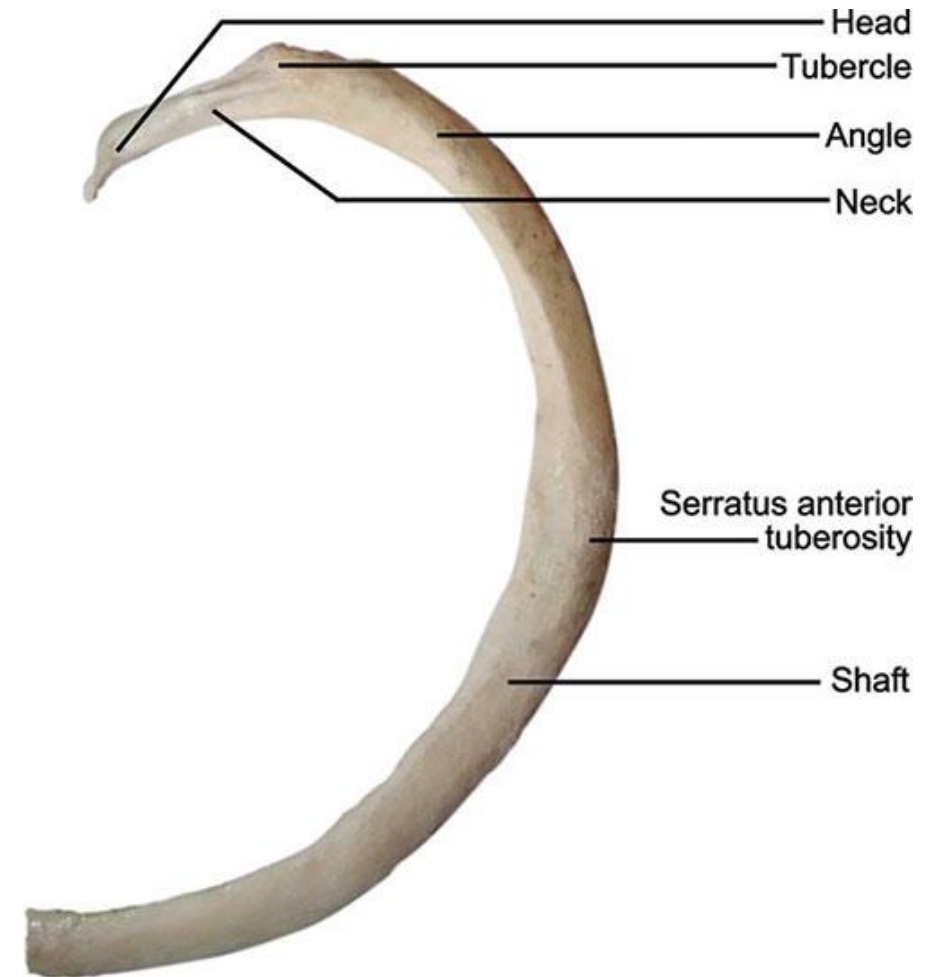
RELATIONS AND ATTACHMENTS OF LEFT FIRST RIB



The under surface of the 1st rib is smoother. When the rib is laid on a flat surface, the head touches the flat surface when the rib is the correct way up

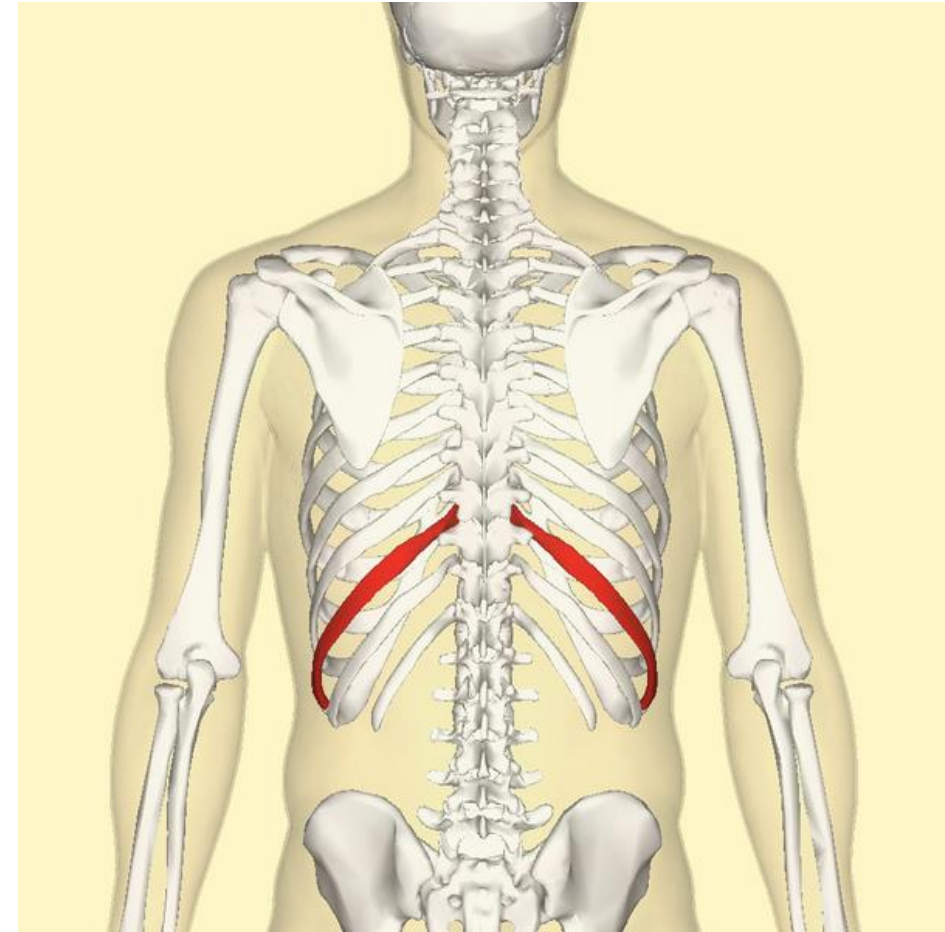
## Second Rib

- Its length is twice that of the next rib
- Its shaft is sharply/ tremendously bent
- The shaft isn't twisted
- The outer convex surface of shaft has a rough impression or notable tubercle
- The tubercle is attached with serratus anterior muscle
- Prominent tuberosity on superior surface



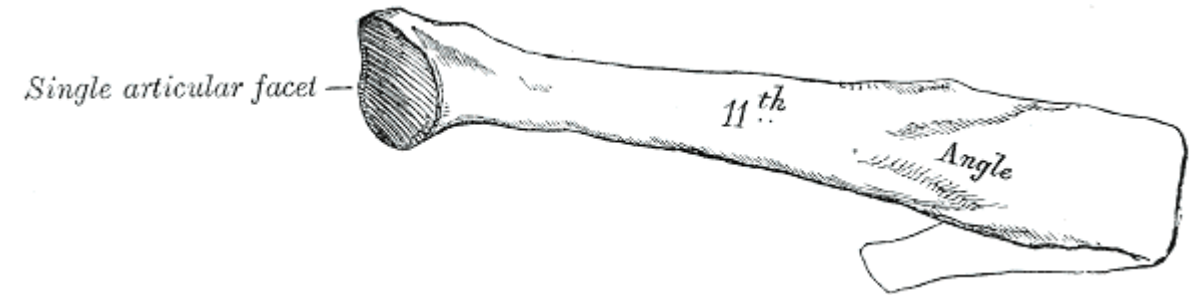
# Tenth Rib

- Single articular facet on head
- Articulates only with T10 vertebra
- Retains neck and tubercle (unlike 11th and 12th)



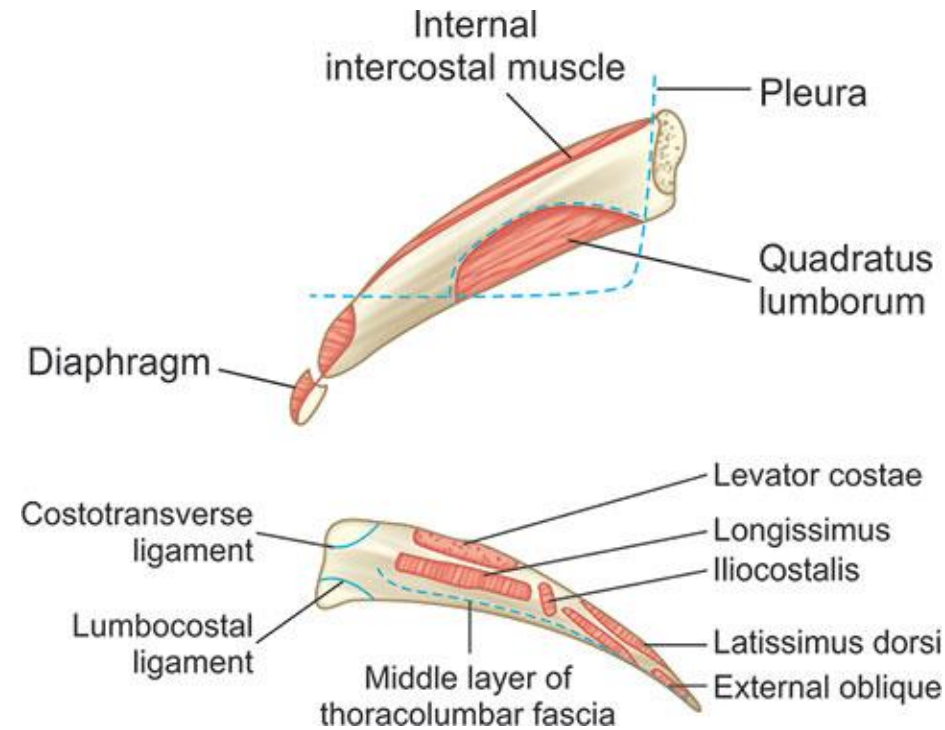
## Floating Ribs (11<sup>th</sup> Rib)

- It presents a single facet on the head.
- There is no neck and no tubercle
- Angle is faintly marked on the outer surface
- Faintly marked costal groove on the internal surface.
- Anterior end is pointed



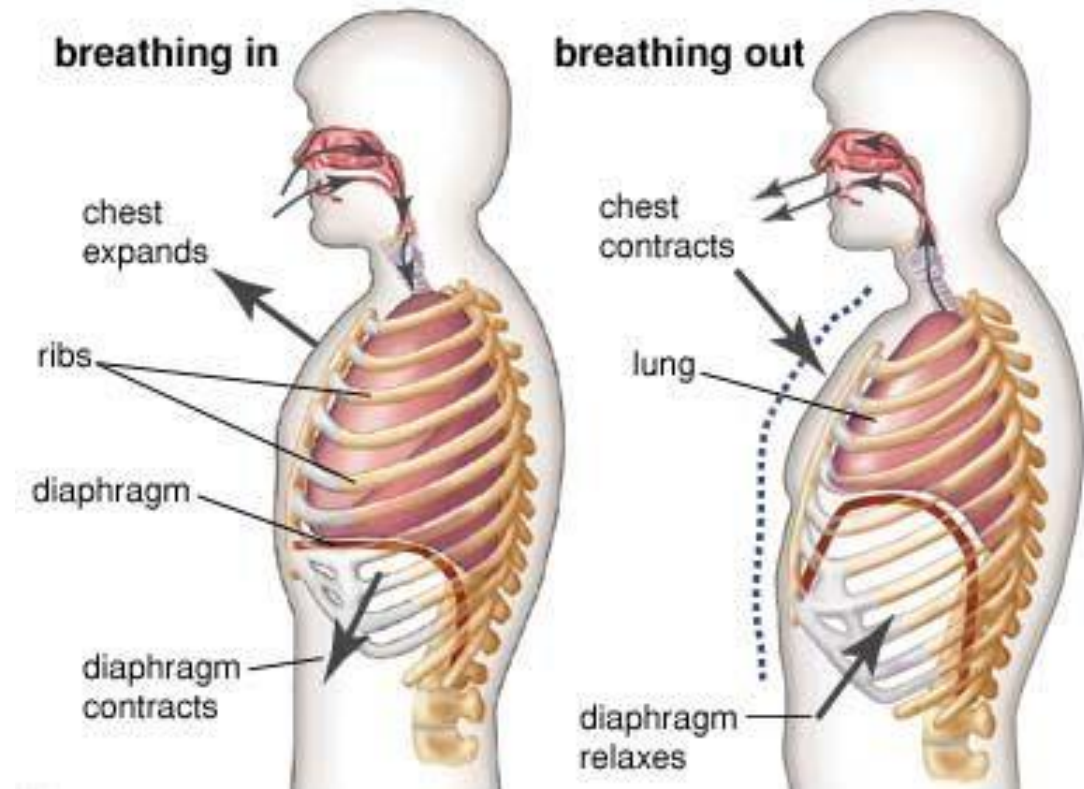
## Floating Ribs (12<sup>th</sup> Rib)

- The 12th rib is the final and lowest rib in the human ribcage.
- It is shorter and less curved than the others
- Presents a single facet on its head.
- Anterior end is pointed.
- It has no neck, no tubercle
- It has no angle, no costal groove.
- The 12th rib provides attachment points for muscles like the quadratus lumborum and diaphragm

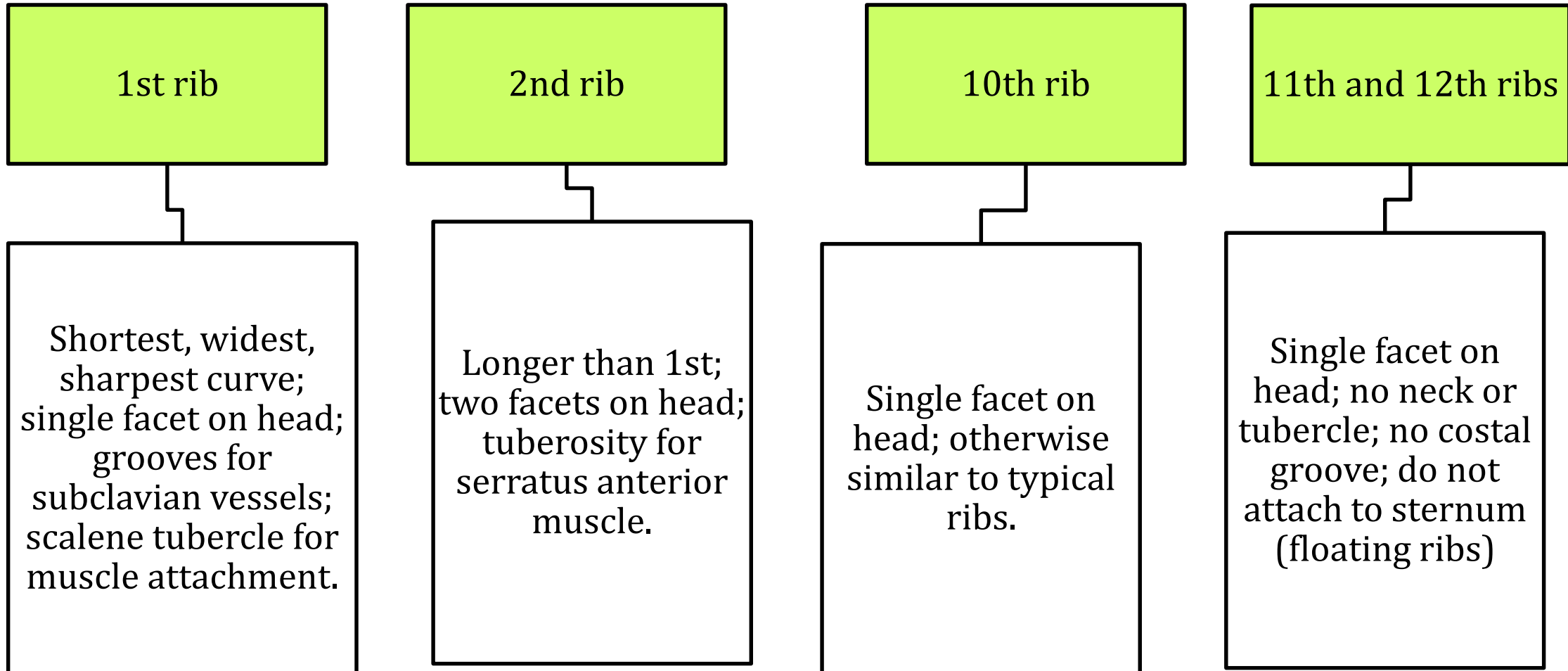


## Test: Clinical Significance

- First rib fractures indicate severe trauma
- Ribs 4-10 most vulnerable to fracture
- Ribs 11-12 mobile, less prone to injury
- First rib hardest to break due to protection
- Important for respiratory mechanics assessment



## Summary



## References

- [https://www.physio-pedia.com/First\\_Rib](https://www.physio-pedia.com/First_Rib)
- <https://teachmeanatomy.info/thorax/bones/ribcage/>
- <https://www.kenhub.com/en/library/anatomy/the-ribs>
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- <https://my.clevelandclinic.org/health/body/rib-cage>

**THANK YOU**