Newborn with history withheld

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• Fracture of the mid clavicle
2 years later
Lossy Compression 14:1
Pseudarthrosis of the right clavicle

- Epiphysis and physis of the distal aspect of the medial moiety
- Suggestion of tiny calcification center at medial aspect of distal moiety likely representing an additional epiphysis/physis
- Epiphyses on both sides of pseudarthrosis
• Pseudo-arthrosis
• Greek
• Pseudo = false
• Arthrosis = joint
A **pseudoarthrosis** has a differential diagnosis which includes:

- fracture non-union
- failed bone graft
- neurofibromatosis type 1 (NF1)
- Ehlers-Danlos syndrome
- osteogenesis imperfecta
- fibrous dysplasia
- congenital pseudoarthrosis
- ochronosis (alkaptonuria)
- ankylosing spondylitis (post-trauma)
- DISH (post-trauma)
Clavicle Fractures

• Allman classification
  – Group 1: Middle 1/3 (80%)
  – Group 2: Distal 1/3 (15%)
  – Group 3: Medial 1/3 (5%)
Clavicle Fractures

- Common, accounting for 5% of all fractures
- 50% occur in children under age of 10
- Majority heal without difficulty
- Nonunion is rare (1-4% of cases)
  - more likely to occur with unstable distal clavicle or poorly immobilized fracture
- Posttraumatic osteoarthritis is common in type III distal clavicle fractures
Congenital clavicle pseudarthrosis

- Clavicular fracture from birth trauma
  - reported frequency of 15 per 1000 live births.
  - association with brachial plexus injuries is also well-known
Congenital clavicle pseudarthrosis

• First reported by Fitzwilliams in 1910
• Frequency is not well documented in the literature.
• Right-sided involvement;
  – One review of 33 patients found 100% involvement
  – Female predominance (70%) was also observed but not well confirmed
• Possible genetic transmission of the condition has also been suggested with a postulated autosomal dominant trait
  – Nine cases in a single family

Embryology

• first bone to become ossified
• latest to attain full maturation (in the early 20s).
• 2 primary ossification medial and lateral centers
  – 5th and 6th gestational weeks
  – fuse during fetal development;
• extrinsic pressure exerted on the budding clavicle by the adjacent pulsatile subclavian artery
• right subclavian artery is generally located at a higher level
Radiographic Findings

- both ends show bony hypertrophy with well defined corticated borders
- the sternal half typically lies above and anterior to the acromial half
- lack of callus formation and uneventful delivery
• rare yet important differential diagnosis would be cleidocranial dysplasia
• hypoplasia/aplasia of the lateral clavicular ends, retarded cranial ossification
• supernumerary teeth, and short stature.
• dissimilar location (lateral involvement), tapering of both bone ends,
Take Home Points

• Think of congenital pseudarthrosis if correct location, appearance and unremarkable birth history
References

• Clavicle Fracture Stat Dx: https://my.statdx.com/document/clavicle-fracture/c092ed81-9af2-4c55-b478-ee9544ad9ec6?searchTerm=Clavicle%20Fracture


• Congenital pseudarthrosis of the clavicle: a rare and challenging diagnosis; http://www.hkmj.org/system/files/hkm1306p265.pdf