

GALEAZZI FRACTURE



North, wall, Mortuary Temple of Ramses III (r. 1186 - 1155 BC) at Medinet Habu, 20th Dynasty, New Kingdom Period, 11th Century B.C, West Bank, Luxor, Egypt.

*I met a traveller from an antique land
Who said: Two vast and trunkless legs of stone
Stand in the desert. Near them, on the sand,
Half sunk, a shattered visage lies, whose frown,
And wrinkled lip, and sneer of cold command,
Tell that its sculptor well those passions read
Which yet survive, stamped on these lifeless things,*

*The hand that mocked them and the heart that fed;
And on the pedestal these words appear:
“My name is Ozymandias, king of kings;
Look on my works, ye Mighty, and despair!”
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away*

Percy Bysshe Shelley “Ozymandias”, 1818

The foreign Sea Peoples made a conspiracy in their islands. All at once the lands were removed and scattered in the fray. No land could stand before their arms, from Khatti, Qode, Carchemish, Arzawa and Alashiya on, being destroyed at one time. A camp was set up in Amurru. They desolated its people, and its land was like that which has never come into being. They were coming forward toward Egypt, while the flame was prepared before them. Their confederation was the Peleset, Tjekker, Shekelesh, Danuna and Weshesh, lands united. They laid their hands upon the lands as far as the circuit of the earth, their hearts confident and trusting.

Medinet Habu inscription of Ramses III in the 8th year of his reign, 1,178 B.C

...I overthrew those who invaded them from their lands. I slew the Danuna (who are) in their isles, the Tjekker and the Peleset were made ashes. The Shardana and the Weshesh of the sea, they were made as those that exist not, taken captive at one time, brought as captives to Egypt, like the sand on the shore. I settled them in strongholds bound in my name. Numerous were their classes like hundred - thousands. I taxed them all, in clothing and grain and from the store houses and granaries each year...

Ramses III, Papyrus Harris, British Museum.

In 1177 B.C, the Egyptian Pharaoh, Ramses III found himself locked in deadly combat with a terrifying horde of “Sea Peoples”. This mysterious host had been attacking and enslaving kingdoms throughout the known world, the Aegean, Anatolia and the Near East. Kingdom after kingdom had succumbed to their arms, and in turn were enslaved or utterly destroyed, their victims simply disappearing from the written historical record. They had been raiding the Mediterranean world for several generations, but now they finally felt strong and confident enough to dare attack the greatest civilization on Earth - Egypt.

The Sea Peoples were an enigmatic group. Like the Barbarian hordes who attacked the latter Roman Empire, they left no written records of themselves, and everything we know about them has come from ancient contemporary Egyptian records. Their motives are obscure as are their exact origins and they were not a homogenous group. Egyptian hieroglyphs describe their widely varying dress and appearances. At least six different races were involved in the attack on Egypt, the Peleset, which are thought to be the “Philistines” that ancient Hebrew texts talk of, and who were possibly from Crete, the Tjekker, the Shekelesh, possibly from Sicily, the Danuna, thought to be Aegean Greeks, possibly Homer’s Achaeans, the Weshesh, and the Shardana, possibly from Sardinia. They met the Egyptians under Ramses III in a titanic battle, the Battle of the Delta in

1177 B.C. The Egyptians were victorious, the only power apparently that had successfully resisted the Sea Peoples. However it appears that their victory was Pyrrhic in the extreme. New Kingdom Egypt was never the same again following its war with the Sea Peoples. Succeeding Pharaohs for the rest of the second millennium B.C ruled over an empire far diminished and less powerful than had their predecessors. Egypt became a second rate power a mere shadow of its former self. It entered a dark age of some two and half centuries, until the until the founding of the Twenty Second Dynasty under Pharaoh Shoshenq I, possibly the biblical Pharaoh Shishaq.

But this is not the whole story. What is profoundly interesting to archeologists, is that the protracted decline of Egyptian civilization at the end of the Second Millennium B.C, whether or not it was a direct consequence of its conflict with the Sea Peoples, occurred in exact parallel with the dramatic demise of every other major civilization of the time. It is around this period, often within just decades we see the sudden decline of the civilizations of the Minoans of Crete, the Mycenaean Greeks (of King Agamemnon's time), the Hittites, the Assyrians, the Canaanites, the Cypriots and the Babylonians. The eminent professor of classics and archeology, Eric H. Cline, indeed has symbolically marked out the year 1177 B.C as the end of the Bronze Age. For around the next three centuries, very little is known. Only the Egyptian civilization would reemerge from the old order, the others now disappearing from history. It was every bit a B.C "Dark Age", as the far better known one that spanned the Sixth to Fourteenth centuries A.D. There is nothing new under the Sun. This original Dark Age would define a shadowy interregnum between the demise of the Bronze Age and the rise of the Iron Age.

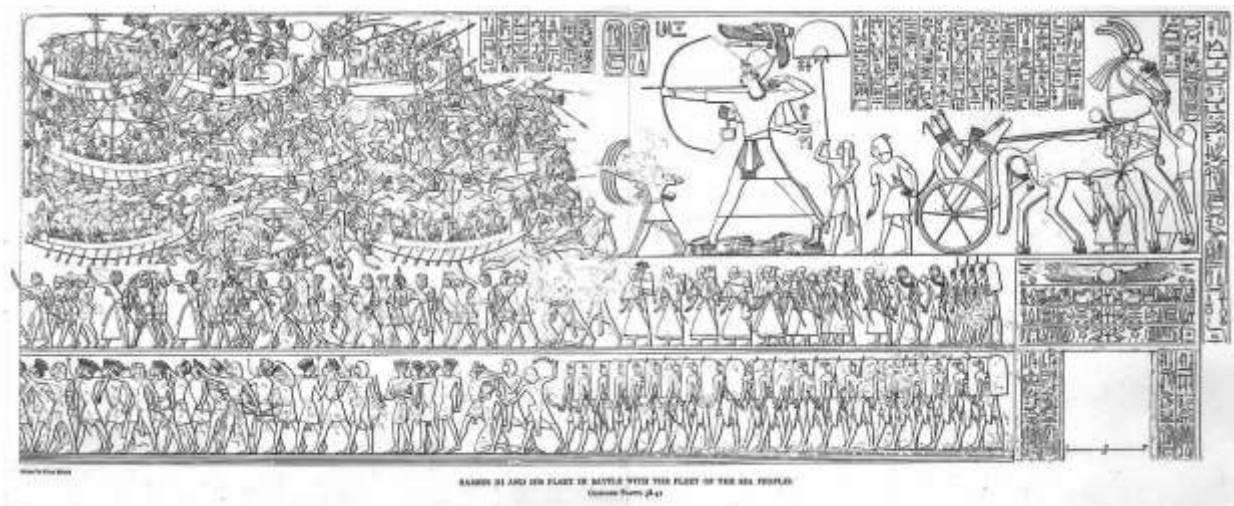
Finally an Iron Age Renaissance, led by city states of Archaic Greeks, and a restored Egypt, dawned around 800 B.C, along with the emergence of a renewed Israel under King David. The Age of Classical Greece would follow four centuries later, which would form the bedrock of Western civilization that has lasted to the present day. Long tradition has had it that the first Dark Age was the result the sustained Viking-like raids of the Sea Peoples that destroyed civilizations and brought about an end to the Bronze Age. However more recent archeological evidence now suggests that the demise of these civilizations was a very much more complex matter than this. Indeed Cline points out that rather than being the cause, the Sea Peoples were in all likelihood just a symptom of a complex set of disasters that came together in the proverbial perfect storm. The Sea People were as much victims, as they were accomplices in the collapse of civilization in the Late Bronze Age. The period was one of closely interconnected societies, who had become inter-dependent upon each other in a surprisingly sophisticated and complex network of mutual trade. The trade in tin and copper for example, had become what the trade in crude oil is to the present day. They are the essential elemental components of the bronze alloy, which defined the age. The period represented humanity's first attempt at globalization, which would not be equaled again until the present day! Although this proto-globalization brought about many mutual benefits it was also was not without inherent dangers. Now when disaster affected one civilization, the effects would be felt throughout all civilizations. Recent sophisticated geological evidence says that the Late Bronze Age was a time of extreme drought and earthquake "storms" i.e repeated earthquakes that occurred in regular cycles, over fifty years from 1225 to 1175 BC. Drought, and the famine that follow it, together with the destruction of cities, led to immense waves of desperate refugees in search of richer lands, the theory now goes. It is a compelling argument and one that is consistent with the story of the Sea Peoples, not

only in their desperate search for new lands but also in their heterogeneity. It was a desperate time of struggle for natural resources. The extreme disruption of societies in turn led to both internal rebellion within empires, and external battle between them, the most famous echo of the dim memory of these struggles being the haunting legend of the Trojan War.

At the heart of the great mystery of the collapse of civilization at the end of the Bronze Age, however is the general consensus among modern day archeologists, that no one single factor could have been responsible. Cities have survived earthquakes in the past and civilizations, likewise have survived periods of drought and famine as well as internal rebellion and war. One or some of these may explain the demise of one or some of the late Bronze Age civilizations, however it is difficult to see that any one cause could have destroyed every single one of them. Current best theory holds, that civilization collapsed as a result of what archeologists term a “systems collapse”. In other words the late Bronze Age civilizations had become so inter-dependent upon each other, the collapse of any one of them profoundly affected the others in a runaway “domino” or “multiplier” affect. Perhaps with effects of drought and famine, and the subsequent enforced migration of countless displaced economic refugees, which the Egyptians simply termed “Sea Peoples” the globalized system of the time suffered a catastrophic collapse which ended the bronze Age civilizations in its wake, the one following the other.

Eric E Cline has made the arresting observation that there have been very few times in history when all the world’s major civilizations have been linked as globalized whole - indeed perhaps only twice, the first during the Late Bronze Age, and the second today. With our planet on the edge of the abyss of a dramatic and irreversible change in global climate, the lessons of archeology seem to sound out a dire warning to us. Globalization has many advantages, but in its single system of interdependence resides the potential for catastrophic collapse and Malthusian Armageddon.

When we evaluate our patients with a distal radial fracture, we may do well to recall the lessons of ancient archeology. Catastrophe in one region may have unforeseen domino effects upon others - always look for an associated injury at the distal ulna!



Transcript of the Mortuary Temple of Ramses III

GALEAZZI FRACTURE

Introduction

In the **galeazzi fracture-dislocation** there is a fracture of the **distal third of the shaft of the radius** *in association with* a **subluxation or dislocation of the distal radio-ulna joint**.

It is more common than the Monteggia type fracture-dislocation.

Galeazzi fracture-dislocations can be difficult to recognize and are often not initially appreciated.

If there is an **isolated radius fracture**, the **distal radioulnar joint** should always be examined carefully for the presence of an associated subluxation or dislocation.

History

This injury was first described by the Italian orthopaedic surgeon, **Riccardo Galeazzi** (1866 - 1952) in 1934.

Epidemiology

These fractures are uncommon.

They are seen more commonly in adults, and are rare in children.

The **Galeazzi Equivalent** fracture is seen somewhat more commonly in children.

Mechanism

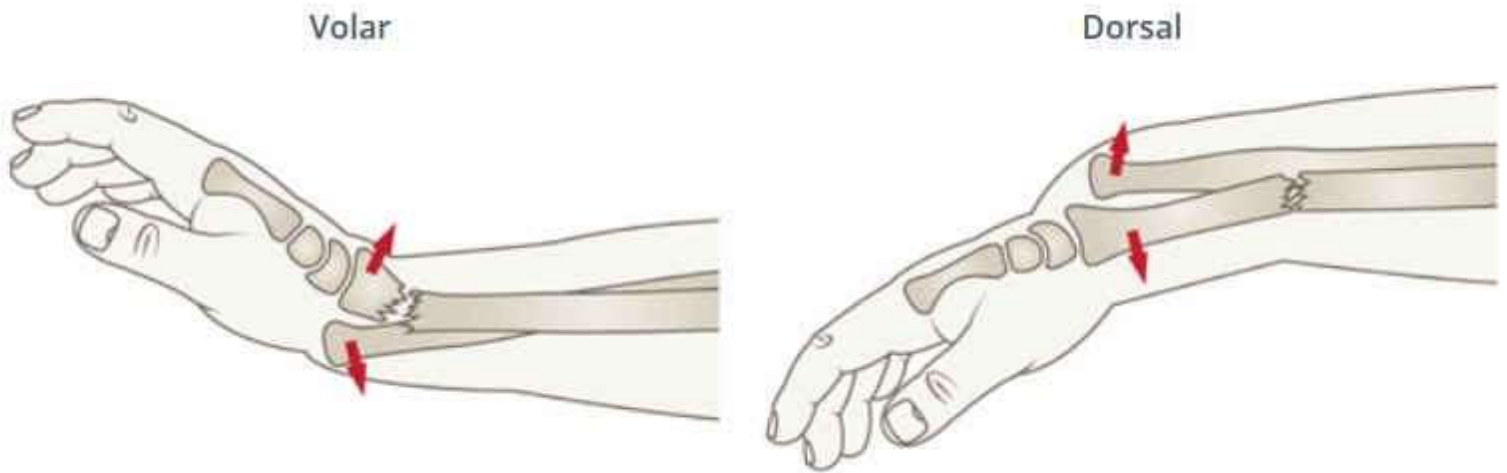
Fall on the outstretched hand in association with hyper-pronation of the forearm.

Severe angulation of a forearm bone is normally accompanied by a fracture or dislocation of the other.

Classification

Galeazzi fractures can be classified by the direction of the **ulna** displacement, hence:

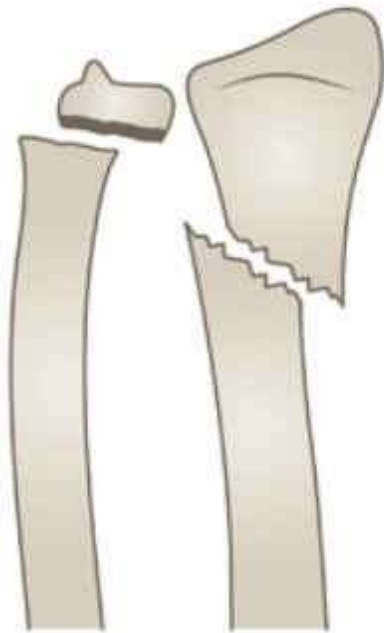
1. Volar Galeazzi
 - There is **volar** displacement of the **ulna**.
2. Dorsal Galeazzi
 - There is **dorsal** displacement of the **ulna**



The Galeazzi Equivalent:

This is similar to a true Galeazzi with distal third radial fracture accompanied by a distal ulna physeal fracture, instead of a radio ulnar subluxation or dislocation.

The distal radioulnar joint remains intact.



The Galeazzi Equivalent fracture, in a child, (RCH Fracture Guidelines).

Complications

1. Neurovascular compromise:

- The ulna nerve may be damaged, however this is uncommon.
2. Compartment syndrome.
 3. Chronic disability:
 - Non-union, deformity and secondary degenerative changes will result if the distal radio-ulnar dislocation is missed.
 4. Physeal Injury:
 - There is a high risk (up to 50 %) of ulnar physeal disturbances with Galeazzi equivalent injuries.
 - This can lead to ulna shortening and chronic distal radioulnar joint problems depending on the amount of growth remaining in the radius.
 5. Malunion of the radius:
 - Malunion of the radius can lead to chronic subluxation of the distal radioulnar joint, leading to chronic pain and impaired movement.

Clinical features

1. Swelling and deformity are usually obvious
2. Check the distal neurovascular status
3. Rule out compound injury.

Investigations

Plain radiography:

This will make the diagnosis in most cases.

Views:

- 1 A-P:
 - Widening of the distal radio-ulnar joint may be seen.
 - An associated fracture of the ulnar styloid may be seen, (Galeazzi Equivalent)
- 2 Lateral:

- The ulna does not overlies the radius, (volar or dorsal displacement is seen).
- The ulnar styloid is not aligned with the dorsal triquetrum

The views should include the entire radius and ulnar as well as the elbow joint.

If there is an isolated radius fracture, the distal radioulnar joint should always be examined carefully for the presence of an associated subluxation or dislocation.

CT scan

This is often done to more fully define the extent and nature of the injury and to plan surgery.

Management

1. Splint/ elevate
2. Analgesia as required.
3. Reduction:
 - In **children closed** reduction is preferred and most cases can be managed in this way

Fluoroscopy should be used to assess stability of the distal radioulnar joint after reduction.
 - **Adolescents** and **adults** will generally be treated with **ORIF**, in order to stabilize the distal radioulnar joint after reduction.
4. Ulnar nerve neurapraxia usually resolves spontaneously.

Disposition:

All Galeazzi fractures should be referred to the Orthopaedic Unit.

Following reduction check radiographs should be taken at 1 and 6 weeks.

Fractures with ulnar physeal injury need long-term follow-up review at 6-9 months to assess for any growth arrest and subsequent management of this.

The child needs to have full strength and range of movement prior to return to sport. It will take **2-3 months** for return to **full contact** sports.

Fractures with ulnar **physeal injury** need **long-term** review at **6 - 9 months** to assess for growth arrest and any subsequent management

Appendix 1



Left: Galeazzi fracture showing typical radio-ulna dislocation (volar type) on the lateral view and displaced fracture of the distal third of the radius on the A-P view.



Left: Galeazzi Fracture, (arrow shows widening of the radio-ulnar joint on the A-P view) and radio-ulna dislocation (dorsal type) on the lateral view.



Relief from the sanctuary of the Temple of Khonsu at Karnak depicting Ramses III

References

1. Pitfalls in Orthopedic Radiography Interpretation. Michelle Lin, MD FAAEM Assistant Clinical Professor of Medicine, UC San Francisco San Francisco General Hospital Emergency Services 2008.
2. RCH Paediatric Fracture Guidelines Website, Accessed May 2018.

Dr J. Hayes

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