The forearm is an essential structure in the human body crucial for completing activities of daily living. Forearm fractures can lead to significant short-term and long-term disability, mainly if treated incorrectly. Sir Astley Cooper first described this particular fracture in 1822, but it was not until 1934 that the eponym took hold when Riccardo Galeazzi presented the mechanism, incidence, and management of this injury. The Galeazzi fracture is a fracture of the middle to distal one-third of the radius associated with dislocation or subluxation of the distal radioulnar joint (DRUJ). Advances in radiography and fracture research have helped define, classify, and guide operative management. Galeazzi fractures remain difficult to diagnose clinically, and debilitating complications can occur (40%) if proper treatment is not started.

In most cases, surgical intervention is warranted in adults. Adults tend to have poor outcomes with closed reduction and immobilization. Classic approach involves radial shaft fracture is first repaired with rigid fixation (ORIF). Intra-operatively, after rigid fixation of the radius, the DRUJ stability should be assessed while in supination. If the joint is stable, two K-wires pinned.

If instability is noted, the TFCC should be repaired followed by pinning. If an ulnar styloid fracture accompanies the unstable DRUJ, the TFCC should be repaired followed by fixation of the styloid using a lag screw or tension band wire. Patients with irreducible DRUJ will require open reduction with the removal of obstructing soft tissue and repair of the TFCC. Patients are placed in an above the elbow splint/cast in supination.

As with all fractures, length of recovery is dependent on multiple variables including the severity of the injury, individual's ability to heal, and the intended use of the extremity. Rehabilitation usually begins six to eight weeks after surgical fixation. The goal of rehab is the return of full range of motion and fine motor skills with the absence of pain.

When should I use more than ORIF (open reduction and internal fixation)?

The first step is to determine the correct approach (volar or dorso-lateral) and to assess subsequent measures necessary, to prevent secondary dislocation of the DRUJ (to check ligament lesions associated the bone-ligaments fragments). This seems to be more important than a perfect reduction.

Aita et al. (5) conducted a clinical study by using the brachioradialis tendon as a graft for the reconstruction of distal band of the interosseous membrane in patients with distal radioulnar instability (ELI, Galeazzi) and achieved positive results. We observed that the best relationship between the ulnar head and the sigmoid fossa of the radio was achieved in the supination position of the forearm. All four anatomical variations of the DRUJ (radial sigmoid fossa) have varying degrees of physiological translation in the axial and longitudinal axes (depends on the position of the forearm). While performing radial shaft ORIF, we should consider the shape of the distal ulnar and the radial sigmoid fossa, we can sometimes to observe some degree of translation or inclination of the DRUJ incongruence , but is physiologic.
Here, author recommend and to suggest palmar (Henry's approach) to ORIF radial shaft fracture and, after, to persist longitudinal and axial instabilities of the forearm, including wrist arthroscopy to diagnosis and treat TFCC lesions and to perform flexible fixation in distal part of the forearm with GMReis Mini Expert. All procedures the radius and ulnar along the longitudinal axis of the forearm (DRUJ to PRUJ), from the center of the radius head to the ulnar head fovea. Additionally, with flexible fixation by GMReis Mini Expert to increase the strength of the stabilization the DRUJ and its protection.

This technique is advantageous since it is a less invasive technique, which allows for active and early mobility, passive, without the need for temporary k-wire fixation or the use of plaster cast, which usually includes the elbow. The case report is interesting because it combines ORIF the shaft fracture by the anterior approach (check the ulnar distal and sigmoid notch type) + DRUJ stabilization with TFCC peripheral repair assisted by wrist arthroscopy and augmentation with flexible fixation in an active patient. The patient was able to achieve early mobility and perform daily living activities independently from the first postoperative week. Moreover, the patient very quickly returned to professional and sports activities, which is increasingly desired by today's active patients and professionals. The technique to stabilization the DRUJ in Galeazzi fractures treatment is a viable solution that is worth sharing to other surgeons. We agree that a long-term result, especially on a young patient as this one, is uncertain, and there will be some known and unknown complications in the future. There might be an additional need of another salvage procedure; however, the excellent functional outcome on this mid-term follow-up seems to justify this indication on these special circumstances.

Tips to stabilization the DRUJ with GMReis Mini Expert Flexible Fixation

There is just propor level of evidence but the present author prefers and recommend to use flexible suture when:

- After ORIF in radial shaft fracture, DRUJ to maintain unstable;
- there is significant DRUJ grossly instability and,
- to prevent secondary dislocation of the DRUJ in high energy trauma in younger and active patients.

This is typically the case for Galeazzi fracture and also when axial and longitudinal instability of the forearm is evident while reducing and fixing the radius fracture:

Figs.: Radiographic aspects about Galeazzi fracture: Radius shaft fracture DRUJ incongruence and instability (palmar and shortening radius deviation) Sigmoid notch - flat face Distal ulna - type II.

Figs.: To pass guide wire, drill and GMReis Mini Expert flexible fixation radius to ulna direction in supination position and transverse direction.

Figs.: To perform knot suture of the flexible fixation system with forearm in neutral position and to calculate suture tension (little bit touch the ulna head in sigmoid notch of the radius).
Summary

There are indications for to treat DRUJ instability in Galeazzi fractures since cast immobilization, fix with k-wires, TFCC repair assisted by arthroscopy or no and here we suggested and recommend GMReis Mini Expert for flexible fixation. All procedures needs to be carefully evaluated taking into consideration local soft tissue and personal expertise of the surgeon and also general health conditions.

References: