SUMMARY

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Colles' fracture is a fracture of the lower end of the radius, within one and a half inch of the articular surface of the radius, which may or may not be accompanied by a fracture of the styloid process of the ulna. The usual deformity is six impaction, lateral displacement, lateral rotation, dorsal displacement, dorsal rotation, and supination. The injury results from a fall on the outstretched hand, and this accounts for the type of deformity produced [*Benjamin, 1982*].

In this work, evaluation of Colles' fracture, has been described in the following items:

The anatomy of the region is described, and this included, the anatomy of the carpal bones and the lower ends of both radius and ulna. The anatomy of the wrist joint (radio-carpal joint) and the inferior radio-ulnar joint.

Then the biomechanics of both the wrist and the inferior radio-ulnar joints were described. This was followed by discussing the mechanism of injury of Colles' fractures.

A brief account was given on the:

* Incidence: Colles' fracture is a fracture of elderly, occurring more commonly in women that men [*Benjamin, 1982*].
* Different types of classifications: All of them try to differentiate between extra-articular and intra-articular patterns of Colles' fractures.

These are:

I- **Classification of Gartland and Werley (1951):** based upon the presence, but not the extent, of the displacement, and radio-carpal involvement.

II- **Classification of Lidstrom (1959):** based upon the presence, but not the extent, of displacement (dorsal angle and dorsal displacement), articular involvement and comminution.

III- **Classification of Older et al., (1965):** based upon the extent of displacement (dorsal angle and radial shortening) and the presence of comminutin.

IV- **Classification of Frykman (1967):** based upon the pattern of intra-articular involvement.

V- **Classification of Sarmiento et al., (1975):** according to the degree of displacement of the fragments and presence of absence of intra-articular involvement.

VI- **Classification of Hadidi (1978):** is a modification of Frykman's classification.

VII- **Melone, (1984):** developed a classification for intra-articular fractures of the lower end of radius. It is based on his observations that the components of articular fractures consistently fall into four basic parts:

1- Radial shaft.
2- Radial styloid.
3- Dorsal medial fragment.
4- Palmar medial fragment.

VIII- **The A/O system of classification of fractures of the distal radius** [*Broadway et al., 1989*].

IX- **Classification of Jenkins (1989):** based entirely upon comminutin.

* Different means of diagnosis of Colles' fracture either clinically or radiologically.
* Radiological evaluation and evaluation of the functional end results of Colles' fracture have been described.
* Different methods of treatment have been also discussed in the next chapter, where the fractures were classified into stable and unstable types, conservative treatments were recommended by some authors [*Cooney, 1989*] for stable fractures, while operative treatment were recommended for unstable fractures.

Conservative treatments of Colles' fractures included:

I- Reduction of the fracture and immobilization in simple plaster cast below-the - elbow or a dorso-radial slab. [*Charnley, 1961*].

II- Cast bracing in Supinaton [*Sarmientso et al., 1975*]: based on his assumption that the brachio-radialis is the main deforming agent of the distal fragment in Colles' fracture, *Sarmiento (1975),* suggested the position of supination in immobilization of the wrist, where the brachio-radials muscle is least active in the position of suppination. He used a special synthetic brace which allows the movements at elbow and flexion of the wrist, but extension is restricted. Immobilization for simple Colles' fracture is kept for 6 weeks while comminuted fractures may need 8 weeks of immobilization [*Stewart et al., 1985b*].

Several forms of anaesthesia for the reduction in displaced Colles' fractures exist, including local infiltration into the fracture haematoma [*Fahey, 1957, Lidstrom, 1959, Frykman, 1967, Lugnegard, 1969*].

The operative measures included:

1- The skeletal transfixation in plaster cast.

2- Percutaneous kirschner wires fixation.

3- Comminuted Colles' fractures treated by ulnar pinning.

4- The use of rush rod in treatment of Colles' fracture.

5- The use of external fixate in treatment of unstable Colles' fractures.

6- Open reduction and internal fixation of disposed, comminuted intra-articular Colles' fractures.

7- Intra-medullary methylmethacrylate for treatment of comminuted fractures in elderly patients.

Complication of Colles' fracture have been described in the last chapter, and they included:

I- Compression neuropathies of :

a. The median nerve.
b. The ulnar nerve.
c. The radial nerve.

II- Tendon injuries included: rupture of extensor pollices longus tendon.

III- Malposition malunion of Colles' fractures.

IV- Post-traumatic arthritis.

V- Injuries of the distal radio-ulnar joint.

a. Injuries to the ligaments apparatus causing instability.
b. Dis-alignment in the distal radio-ulnar joint.
c. Changes in the articular surfaces.

VI- Algodystrophy following Colles' fractures.

VII- Stiffness, of the fingers.

VIII- Acute compartment syndrome.

IX- persistence of pain.