



CHAPTER I

INTRODUCTION

Rationale and background

Fracture of the distal end of radius, 2-2.5 cm. from wrist joint, described by Abraham Colles' in 1814, is caused by a fall on an outstretched hand. The majority of cases seen with this fracture usually have shortened radius bones relative to the intact ulna. This relationship accounts for the radial deviate and dorsal prominent distal forearm described as "dinner fork" deformity. The incidence of Colles' fracture was 1.7 and 7.3 per 1000 persons / year in old age males and females.⁽¹⁾ The incidence of this injury appears to be both gender and age specific. There are three main peaks of fracture distribution: the first peak is in children age 5 to 14, the second peak is in males aged 50 years and the third peak is in females over 40 years. More importantly, the difference in the two peak incidences indicates that these fractures represent two very different injuries: one is an osteoporotic fracture in elderly patients and the other is a traumatic injury in younger males⁽²⁾.

The plain x-ray is useful to visualize a suspected distal radius fracture. For extra articular fractures, anteroposterior view (AP view) is used to assess (a) radial shortening (b) comminution (c) ulnar styloid fracture and (d) radial displacement. The lateral view is used to assess (a) dorsal tilt angle (b) extent of metaphyseal comminution and (c) dorsal displacement⁽³⁾. After reduction and at the end of treatment, wrist radiography is also a simple and inexpensive tool to visualize and measure distal radius fracture parameters such as dorsal tilt angle, radioulnar index and radial inclination⁽⁴⁾.

Several classification systems have been proposed to assess outcome after treatment. The good classification of every fracture should have all of the following:

- 1 reproducible diagnosis
- 2 prognostic consideration
- 3 associated soft tissue lesion
- 4 recommended treatment option
- 5 management modality

6 outcome expectations

Until now, there is no classification that has all the factors mentioned above. Frykman (1967) established a classification that incorporated involvement of the radiocarpal and radioulnar joints. Melone emphasized the effect of lunate's impaction on the radial articular surface to create fracture fragments. AO classification (the comprehensive classification of fracture of long bones) emphasized the increasing severity of the bony injury. Their use for determining the direction of treatment or for the comparison of results among different studies is not warranted, because of their poor interobserver reliability and intraobserver reproducibility^(5, 6) and their failure to show association between fracture type and functional outcome^(7, 8) Hove (1994), showed that the redisplacement of Colles' fracture was able to be predicted by using Oder's classification.⁽⁹⁾

The successful treatment should provide sufficient pain-free motion and stability to permit functional activities without the risk of future degenerative changes. An optimal outcome of closed treatment of a Colles' fracture may depend on accurate reduction⁽¹⁰⁻¹²⁾ and adequate immobilization. In general, fractures are usually reduced by forceful manual manipulation or by gradually reduced with the use of finger traps with 10 to 15 lb. of counter traction applied to the upper arm. Both techniques produced same rate of satisfactory reductions.⁽¹³⁾ Then, a below-elbow cylindrical cast is applied for a period of 4-6 weeks⁽¹⁴⁾. Surgical intervention should be considered when an acceptable reduction cannot be achieved or maintained by closed means. The difficulty in treating patients with immobilization lies in the ability to predict the fracture's position at the final union. The unstable fracture has tendencies of redisplacement into mal positions, such as dorsal tilting of distal fragment, radial axial shortening and loss of radial inclination was obtained, even with anatomical reduction, especially during the first week of immobilization.^(9, 15)