CHAPTER II
ANATOMY OF THE LOWER END OF RADIUS AND ULNA

INTRODUCTION

Distal radius fractures (DRFs) crush the mechanical foundation of man's most elegant tool, the hand. No other fracture has a greater potential to devastate hand function, and no metaphysis of bone is embraced by more precious soft tissues. The same ligaments, retinaculum, tendons and periosteum that envelop the fracture and help mold its reduction; create a surgical barrier to open reduction of its multiple fragments ***(Agee, 1993).***

These fractures continue to be one of the most common skeletal injuries treated by orthopaedic or trauma surgeons. In fact, these injuries account for approximately one-sixth of all fractures seen and treated in emergency rooms ***(Ark and Jupiter, 1993).*** Of all of the fractures that affect the upper extremity, the distal radius fracture is the most common ***(Viegas et al., 1987).***

Historically, the accurate descriptions of these fractures are ascribed to Pouteau (1783) and Colles (1814), for whom it is classically named. In times, other descriptions of the distal radius fractures were credited by Barton (1838); Dupuytren (1847) and Smith (1854); ***(Green and Gay, 1956).***

It is important today to determine the nature of the fracture and to describe the pathology involved than to link diagnosis and treatment to a single name ***(Johnson, 1980).*** Although a number of different classifications have been advanced for fractures of the distal radius, yet non accurately describes all fracture patterns or accounts for degrees of comminution ***(Szabo, 1992).***

Despite the frequency and narrowly defined anatomical localization, DRFs display infinite variety, behaving individually enough to lead some authors to conclude that no two DRFs are alike ***(Osterman and Bora, 1980).*** So, there is still controversy surrounding the management of fractures of the distal radius, especially unstable fractures, despite the large numbers treated ***(McBirnie et al., 1995)***. The principles involve obtaining an anatomic reduction and maintaining that reduction with appropriate methods of immobilization ***(Knirk and Jupiter, 1986).***

Although fractures of the distal end of the radius can be easily reduced by means of traction and manipulation, but it is not infrequent to observe a secondary displacement during plaster cast treatment ***(Vaughan et al., 1985).***

The frequency of secondary displacement is related to the instability of the fracture, which is conditioned by the comminution, articular involvement, and the extent of initial displacement. The functional results will depend to a large extent on the degree of anatomic deformity ***(Stewart et al., 1985).***

To avoid secondary displacement, there has been recourse to different methods of fixation, e.g., wire transfixation of the fracture ***(Clancey, 1984),*** or in the focus of the fracture ***(Lenoble et al., 1995),*** traction maintained by means of Kirschner pins included in the plaster cast ***(Green, 1975 and Suman, 1983),*** open reduction and osteosynthesis, use of bone cement in the focus of the fracture ***(Suso et al., 1993),*** isolated external fixation ***(Cooney et al., 1979; Weber and Szabo, 1986 and Jakim et al., 1991)*** or in conjunction with a bone graft ***(Leung et al., 1989)***, and dynamic fixators ***(Clyburn, 1987).***