

Introduction

Radial club hand, is classified as radial or preaxial longitudinal deficiency, typically presents with hypoplasia of the radius, radial deviation and pronation of the hand and hypoplasia of the thumb. The ulna also is affected and at birth is generally only 60% of the normal length, a deficiency that persists throughout the growth of the individual [*Bora, 1970*]

Radial club hand involves between 1 in 30000 to 1 in 100000 live births, with the true incidence probably being closer to the higher incidents [*Flatt, 1994*].

Most cases of radial club hand are sporadic, and the cause of syndromes that are known to have a genetic etiology. The drug thalidomide produce an epidemic of phocomelia and radial club hand until withdrawn from the market.

Based on a review of the embryology, genetics & anatomy of radial club hand, Lamb at 1977 is suggested that the damage to the apical ectoderm on the anterior aspect of a developing limb bud leads to the deformity. Following studying of the families of thirty-five children with radial club hand he supposed that the condition is not genetically patterned. The anatomical finding & the

associated congenital abnormalities in the case known to be related to the ingestion thalidomide drug & in those in which thalidomide was not a factor are similar except that other skeletal deficiency was higher in the thalidomide group. [*Lamb, 1977*]

The anatomic features of radial club hand have been well described by several others [*Goldberg, 1985*]. Radial club hand involves a generalized hypoplasia of the upper extremity with shortening and bowing of the forearm, and radial angulations as well as radial displacement of the carpus with respect to the distal ulna. The thumb may be absent or hypoplastic, but is never uninvolved.

Previously, treatment has been directed at correcting the radial deviation of the hand by manipulation and splintage, followed later by surgery to centralize or redialize [*Buck-Gramko, 1985*] the carpus over the distal ulna. Centralization of the carpus may be complicated by epiphyseal arrest in the ulnar head, compounding the problem of ulnar hypoplasia.

The presence of a short on ulna may limit the ability to perform normal activities of daily living, such as reaching the perineum or driving a car [*Catagni et al, 1993*]. Cosmesis also is a consideration. For example, patients who are affected unilaterally

may feel that wearing a long sleeve shirts makes their abnormality more noticeable. There-fore, ulnar lengthening may be desirable in some cases.

Limb lengthening has been used only in the last two or three decades in the upper extremity. Some surgeons use the Wagner technique, which achieve lengthening by distraction followed by bone grafting & internal fixation with plates and screws [*Wagner 1978*]. The Ilizarov technique destruction with new bone formation (callotasis) rather than bone grafting.

The use of external fixation devices to gradually correct the malalignment of the hand and forearm in radial club and by soft tissue stretching has also been reported [*Kessler 1989*].