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# EARLY FAILURE ON DISTAL RADIUS FIXATION

**G. MANTOVANI**

Sao Paulo Hand Center - Hand Surgery and Robotic Surgery

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CORSO DI ISTRUZIONE: FALLIMENTO DEL TRATTAMENTO DELLE FRATTURE DI POLSO: DIAGNOSI E  
POSSIBILI SOLUZIONI

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The volar approach and use of volar fixed angle plates on the treatment of Distal Radius Fractures becomes today the gold standard treatment to most types of these fractures.

The spreading of this technique during the last 10 years brought new complications and consequently, new understandings about the complex anatomy and biomechanics of this bone.

It is critical to understand the principles behind the fixation by volar approach, in order to determine which situations this technique can be applied, and when it is not indicated. In the same way a complete recognition of the anatomical and biomechanical behavior of the fracture must be accomplished to determine the ideal fixation method and best implants to be chosen. The inadequate decision or wrong technique on surgery may lead to the early failure on Distal Radius Fixation.

The volar approach and the volar fixed angle plates stabilize the bone fragments by the volar buttressing of the plate and by the subchondral support by the cantilever effect of the fixed angle screws. On this way the bone fragments where the force stress tends to displace it volarly, must be neutralized by buttressing using the plate, meanwhile the fragments with dorsal displacement tendency must be supported subchondrally by the screws or pegs. The misunderstanding on this concept is commonly found on the inadequate fixation of the volar part of the lunate buttress facet fragment, and it is one of the most common and seri-

ous types of early failure on these fractures. If this small fragment is not properly identified and supported, a volar collapse of the entire carpus may occur.

The second important cause of early failure is the insufficient subchondral support for the articular fragments. This fixation tends to neutralize a tendency of dorsal displacement. The major causes of failure is too proximal positioning of the plate and screws, or insufficient number of screws. On the first, maintaining too much osteoporotic bone between the rigid subchondral bone and the line of screws, may lead to bone collapse and loosening of reduction with dorsal displacement and shortening. On the second, using few screws may not achieve the sufficient mechanical resistance for the stress force applied on the wrist, leading to screws loosening and failure again.

As mentioned before, not all fractures can be properly treated by the volar approach. Understanding the mechanism of trauma can show us some fractures presented on the x-rays are in fact wrist dislocations with severe ligament injuries, and a whole different approach and fixation methods must be defined for it. The use of tension-bands, intra-osseus sutures, dorsal plates, external fixators, can provide specific solutions for specific kind of fractures and fragments, and avoid the early failures.

In the same way, a wrong post-operative protocol can ruin the results if associated ligament in-

juries are not diagnosed and treated properly. The combined use of arthroscopy is playing a major role on those fractures, and is relevant when an associated ligament injury is suspected. The recent capacity of post op early mobilization when using the volar plates shown us the undesirable effects of those mistreated associated ligament injuries,

which used, in the past, to be after the long cast immobilizations.

The simple knowledge of the major causes of early failures on distal radius fixation can open our eyes during the surgery and provide us the ability to recognize and avoid them.