SUMMARY AND CONCLUSION

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Plating affords a reliable internal fixation for many types of fractures. Plate failure due to loosening or fracture of the plate leads to loss of fixation. In this study we tried to draw attention to the problem and to clarify its aetiology to reach the ideal way to avoid this complication.

The plate materials have been discussed with special reference to the great advance in metallurgy based on the relation between the structure and the properties. We concentrated on the corrosion of different materials and different methods used to avoid it with reference to the important clinical forms of corrosion.

The biomechanical aspects of plating and different functions of plates have been discussed with special reference to their types and the different ways to employ them. We concentrated on the stability of fixation and preservation of the blood supply to the bone.

Also, we discussed the preoperative planning, timing of the

operation, postoperative care and plate removal. Next, the biomechanics of fracture healing with and without internal fixation has been discussed with special reference to the effect of stability and instability of the fixation. Different forms of bone healing were mentioned. The biological concept has been emphasized.

The next part was concerned with the review of the cases. The patients were reviewed regarding the sex, age, affected side, mechanism of injury, affected bone, associated injuries and diseases, fracture morphology, bone quality, timing of operation, type of the plate used, distribution of screws and presence of empty holes opposite the fracture, accuracy of reduction and bone grafting, postoperative regime and use of external support and the form of failure and time till failure.

After that the possible causes of failure were reviewed as, wrong choice of the plate, improper placement of the plate, wrong contouring of the plate, few number of screws, wrong distribution of the screws, presence of empty holes opposite the fracture site, no bone grafting, no interfragmentary compression, presence of screw in fracture site, bad reduction, deficient far cortex, osteoporosis and improper postoperative regime. The next part

included the discussion of the previous items and the comparison of the results of this work with similar works.

Lastly we reched the following conclusions :

Accurate anatomical reduction is essential to provide the transmission of forces through the column of bone across the fracture site. The goal should be the minimal transmission of force from bone to metal and again from metal to bone at the other side of the fracture.

Reconstruction of the far cortex is very essential in this respect. Also, handling of the plates; surface scratches and sharp indentations concentrate stresses in these damaged areas leading to early fatigue failure.

All our efforts for a stable fixation should not disturb or destroy the biology of the tissue. This means that every effort should be made to preserve the vascular supply of bone and surrounding soft tissue structures.

Preopertive planning is very essential, it will help to avoid many of the possible causes of failure such as improper choice of the plate, improper placement of the plate and wrong distribution of screws.

Also, any possible defects should be grafted. Properly oriented lag screws are the most efficient way of achieving interfragmentary compression and stability. So, whenever possible plates should be combined with lag screw fixation, preferably through the plate. There are factors which are beyond the surgeon's control as the degree of comminution and the degree of osteoporosis.

Education courses have become not only well accepted but, in fact, have become part of the curriculum of many orthopaedic departments. As with any other manual skills the time to learn the correct techniques is at the introductory stage before fault habits are established. With such courses and teaching methods, the general standard of application of surgical implants should improve substantially.