Introduction

Complex intra- articular tibial fractures are severe high energy injuries and requires careful judgment and merits of their management have often been debated. The tremendous energy release that occurs with such fractures injuries the vulnerable soft tissue in an area where there is muscle cover and where the vasularity is marginal due to limited anastomosis between major vessels, associated soft tissue injuries include contusion, fracture blisters, open wounds compartment syndrome and neuro vascular injury (***Marsh 1999***).

The treatment of high energy plateau and plafond fractures has hunted orthopaedic surgeon for many years. Treatment protocols have shifted over the years from non operative management to formal open reduction and internal fixation to limited internal fixation, to limited internal fixation, and external fixation and even spanning external fixation. (***Borrelli and Catalano 1999***).

Methods of stabilizing fractures that respect the fracture vascularity such as cast treatment neither allow accurate reduction nor provide adequate stability. Internal fixation with plates and screws achieves early stability but at the cost of bone vascularity and soft tissue integrity which are usually compromised complications include surgical wound dehiscence, joint stiffness, non union, mal union, deep infection, osteomyelitis and amputation.

Traditional external fixation respects the vascularity of the fracture segments but early weight bearing isn't always permitted.

The goals of treatment of tibial plateau fracture are to obtain a stable, aligned, mobile, painless joint to minimize to risk of post traumatic osteoarthritis (***Wiss et al 1996***) Techniques used in management include closed treatment with casting or external fixation, wide surgical exposure and fixation with plates and screws, limited open reduction and cannulated screw fixation, limited open reduction with external fixation using a small wire circular frame (***Perry et al, 1999***).

The llizarov circular fixator is method of treatment of these high energy factures when extensive dissection and internal fixation are hazardous or contraindicated due to trauma to soft tissues, deficiency of bone stock and bony comminution (***MC Donald et al, 1996., morandi et al, 1997; Watson and Caufal 1998, Marsh, 1999***).

Its advantages over other methods is the circular fixation apparatus facilitated a better over all reduction than was possible with closed reduction alone or with traction treatment methods (Murphy et al 1991). The circular fixation frame allows excellent stabilization of the fracture for early ambulation of the patient reducing the length of hospital stay (***Murphy et al 1991***).

Circular external fixation frame allows access to skin for continued care of skin abrasions a wounds, this isn't possible with cast treatment (***Murphy et al, 1991***).

The use of the closed reduction technique or the perctaneous limited open reduction eliminated further soft tissue trauma, which is a mjor benefit. Furtheromore, by avoiding opening the fracture, the risk of infection and osteomyelitis is minimized (***Mc Donald et al., 1996***).

The tensioned transfixion wires allow capture of small periarticular fracture fragments and provide a support for the soft cancellous osteoporotic bone. A subchnondral cluster of K-wires has been proven biomechanically to enhance load tolerance of the tibial plateau articular cartilage (***Beris et al., 1996***).

Olive wires are particularly helpful in obtaining a better reduction of the metabphyseal fracture component. They facilitate fine adjustment to correct angular deformities . Olive wires also provide interfragmentary compression of fracture fragments. The modified llizarov pushing wires can act as a “motor” to move individual bone fragments (***Atkins et al., 1998***).

By using circular frames, we are able to stabilize periarticular injuries without having to span the joint . Such placement would allow early ROM and improve the viability of the articular cartilage (***McDonald et al., 1996***).

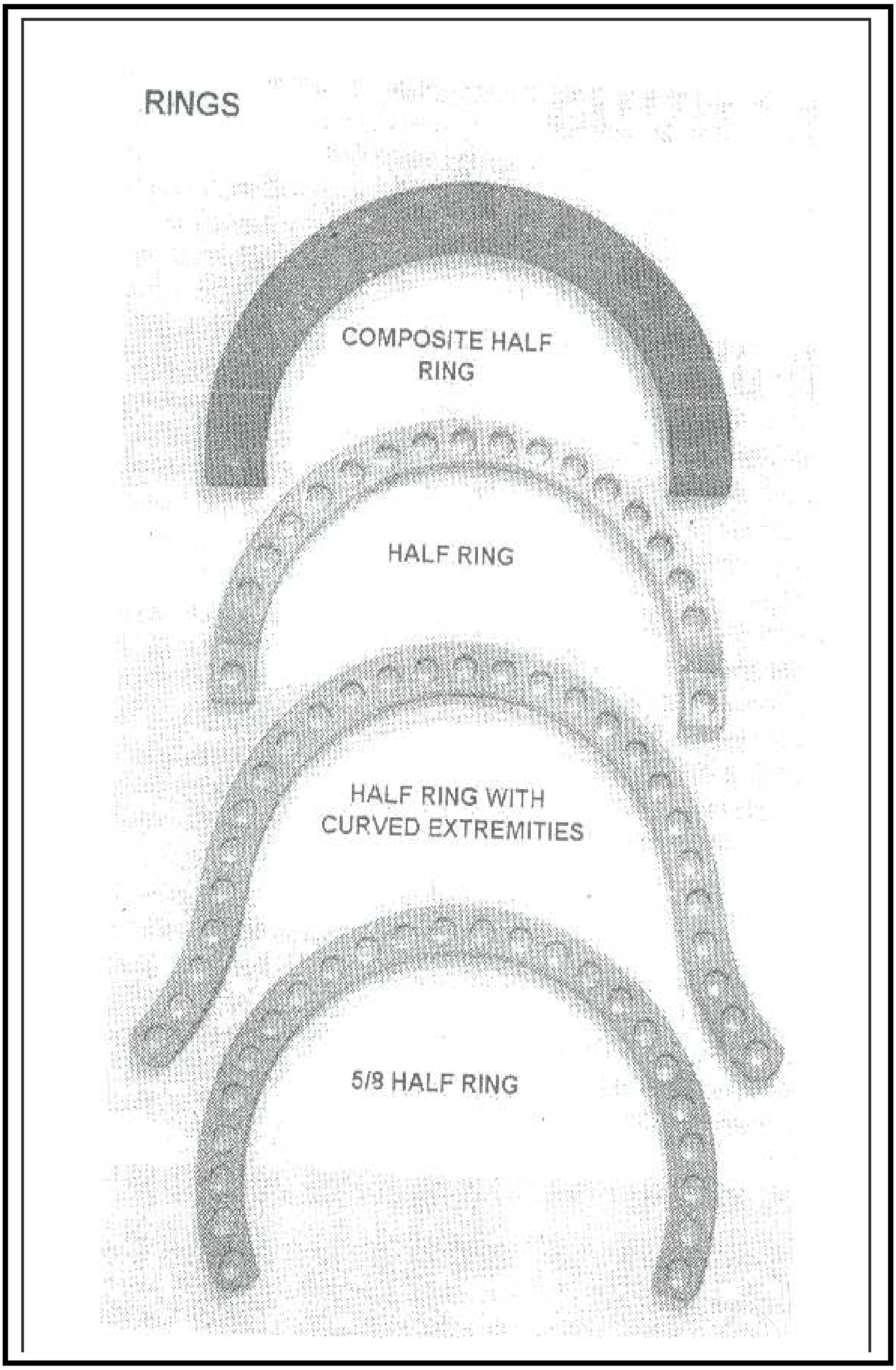

Fig. 1: **Different forms of Ilizarov rings (Maiocchi, 1998)**

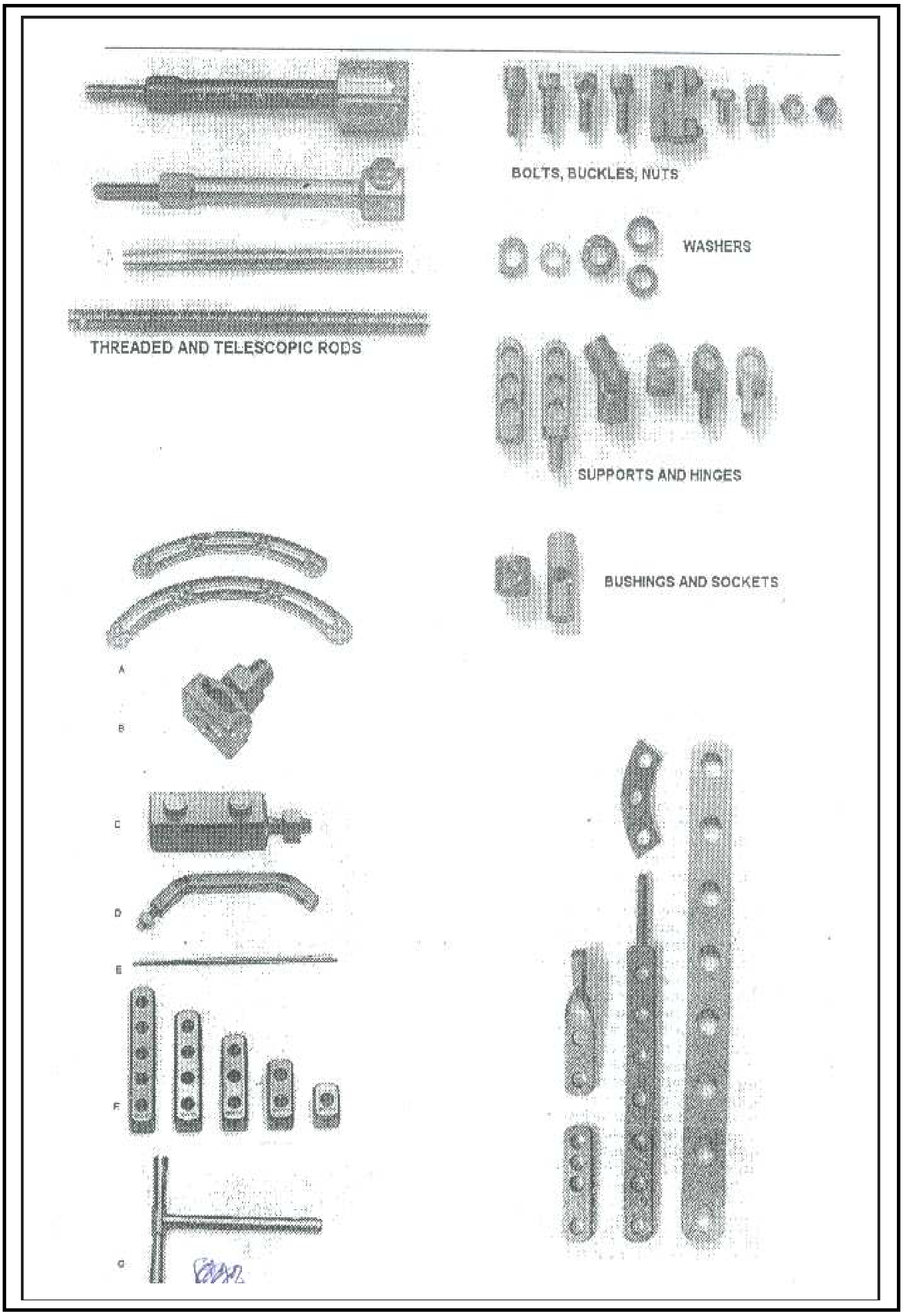

Fig.2 **: Varoius components of the Ilizzrov fixator (Maiocchi,1998)**

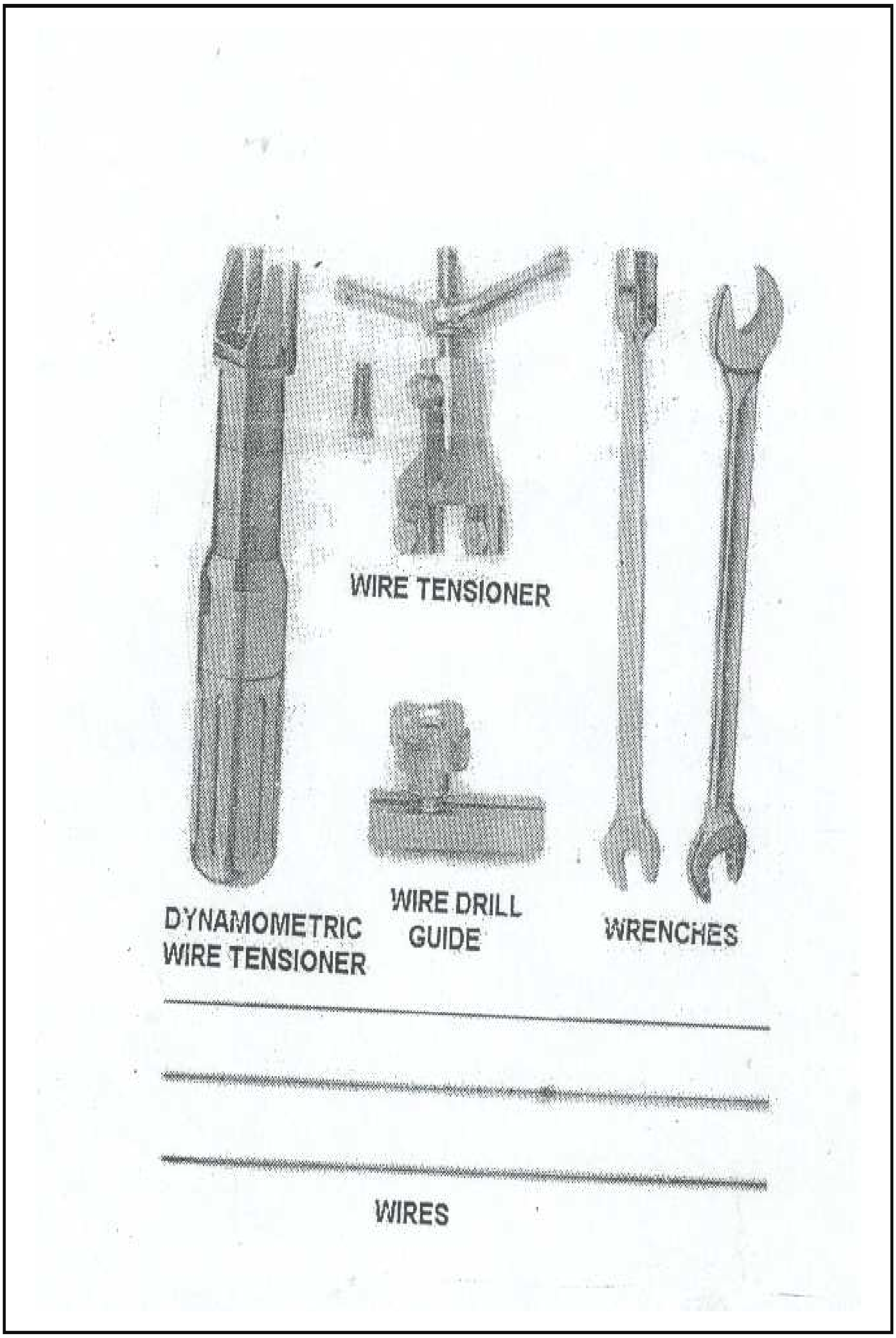

Fig.3: **Wires and instruments used in frame assembly (Maiocchi, 1998)**