THE MANAGEMENT OF OPEN FRACTURES OF THE TIBIA AND FIBULA BY THE EXTERNAL FIXATOR

THESIS

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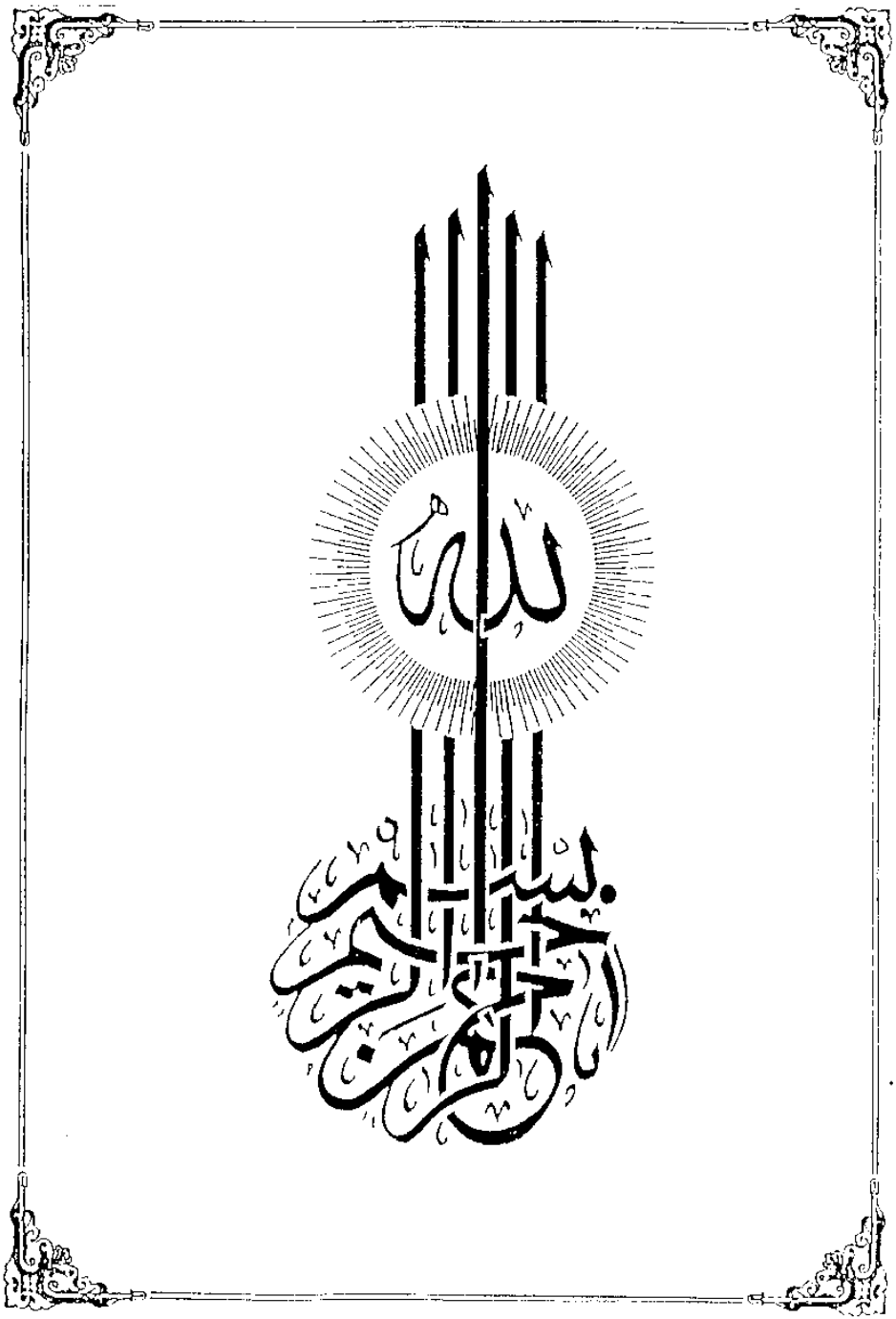

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INTRODUCTION AND THE AIM OF THE WORK

The management of open fracture of the tibia and fibula presents a major challenge to the surgeon as this fracture may be caused by high energy trauma and accompanied by unavoidable high rate of complication like soft tissue necrosis, infection, instability, delayed union or malunion with often resulting permanent disability.

All authors agreed in the first step which is thorough debridement of the soft tissue and osseous tissue, but the stabilization of the fracture was different.

The results of previous lectures proves that the External Fixator (E.F.). is the best method to stabilize the open tibial fracture grade II - III. Grade I open fracture can be managed as closed injury.

But the E.F. has some disadvantages as lack of absolute stability and pin track infection.

The aim of this work is to improve the stability of the external fixator and to avoid its complication as can as possible.

In Rashid Hospital (Dubai - U.A.E.) we used the minimax technique to overcome the defects of E.F. (E.F. + fibular plate or tibial lag screw, small tibi-

al plate and fibulo-tibial holding screws).

The policy to leave the wound open for antiseptic dressing and reconstructive procedures later on had proved to be effective .

Also we could decrease the percentage of the pin track infection by selecting the planes of E.F. and the proper technique of applying the pins.

We are satisfied about the results of this work in the circumstances of our patients and our hospital.

The patience and co-operation of the patient are the most valuable part of this difficult management.

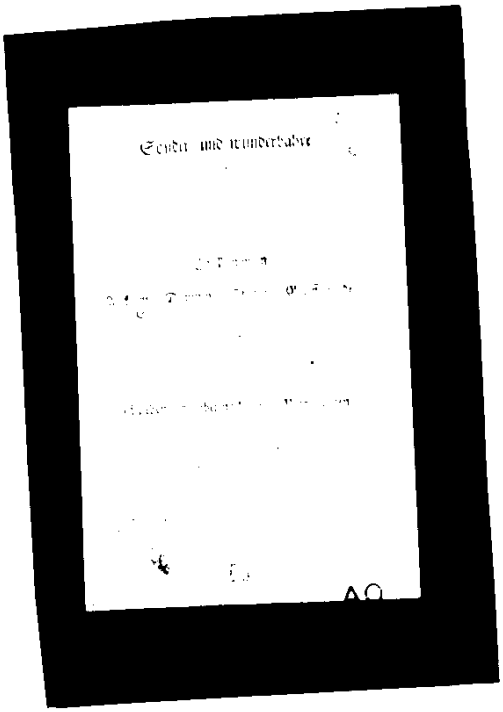

Fig . 1

HISTORICAL REVIEW

Willenegger (1978) gave a brief history about the management of open fractures . He said that the first man who gave rather precise description about the treatment of open fractures was Pürman (1648 - 1711) the barber surgeon in the army of the Grosser kurfürst Brandenburg, who wrote during that time a book (Fig.1) describing 50 cases of open fractures of the lower leg in war time. All healed without amputation or death.

He had already a clear concept:-

1. Surgical treatment as soon as possible to the injury.

2.Surgical cleaning of the wound by means of knife and scissors. Cleaning should be in such a way that the soft tissues look clean and bleeding. Removal of grass, dirt, bullets and other foreign bodies.

By this way he described a procedure which we call today , debridment.

3. Leaving the wound open and covering it with ex-

tracts from herbs.

(Actual investigations on the prescribed material proved it to have a bacteriocidal effect).

4. Immobilization with primitive splints made of wood.

Later on , the principles which had been described by Purman were forgetten. Nevertheless the results were often disastrous due to infections which were not mastered at all, mostly due to the fact that, the time between injury and onset of treatment was too long, so that the previous contamination went over into infection.

Due to this infection especially in times of war and in connection with bigger injuries involving bone and soft tissues 'Larrey' (Army Surgeon of Napoleon 1800 - 1815) advocated the amputation . He achieved such a high degree of surgical skill that he could perform about 30 amputations per hour. In this respect , but later on, the experience of a famous Austrian surgeon Billroth (1866) merit to be quoted. " I can say from my experience that the best visceral operation never gave me as much satisfaction as the successful treatment of a difficult compound fracture". Fig. [2]

During World War I (1914-1918) accurate debridement

became more and more predominant . The difficulty at that time was the insufficient effect of immobilization in casts or splints. An important suggestion during World War I was presented and practised by "Carrel" in the French army as intermittent and continuous irrigation drainage with Dakin solution (chlorinated) (Fig. 3). According to the literature at that time, the infection rate could be reduced but on the other hand the chlorinated antiseptics made problems due to damage of the soft tissues. Böhler during and after World War I already had better results by immobilization of the limb specially the tibial fractures by traction, which became the standard procedure later on of the so-called "Böhler School"

Already before World War I it was well-known that some fractures can be only treated with optimal functional result by open reduction and surgical stabilization. A pioneer in this field was a Belgian surgeon "Lambotte" who developed plates, screws and external fixators (Fig. 4). He published his concept in two volumes 1907- 1913.

They summarise the treatment of fractures specially around joints by open reduction and internal fixation and early mobilization (Fig. 5,6,7,8)

He was the first who advocated the surgical sta-

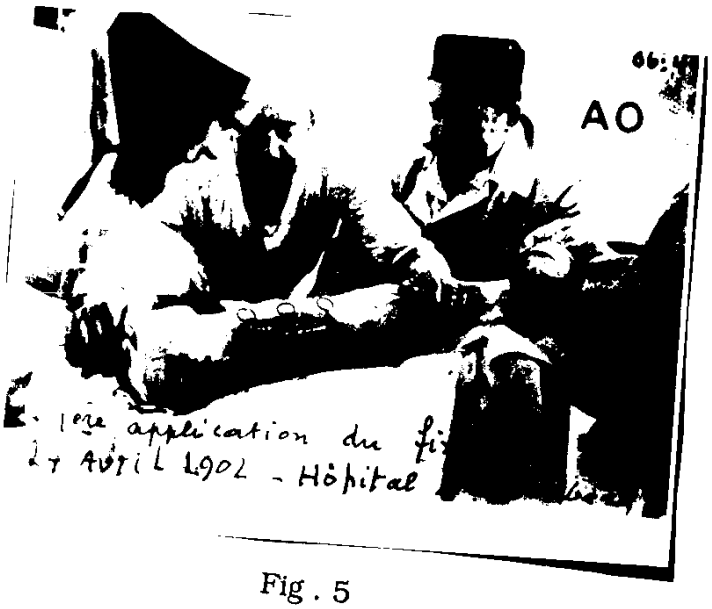

Fig . 5

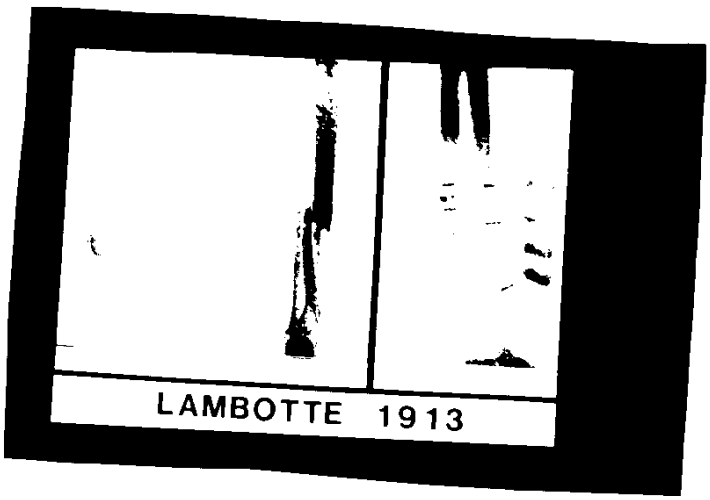

Fig . 6

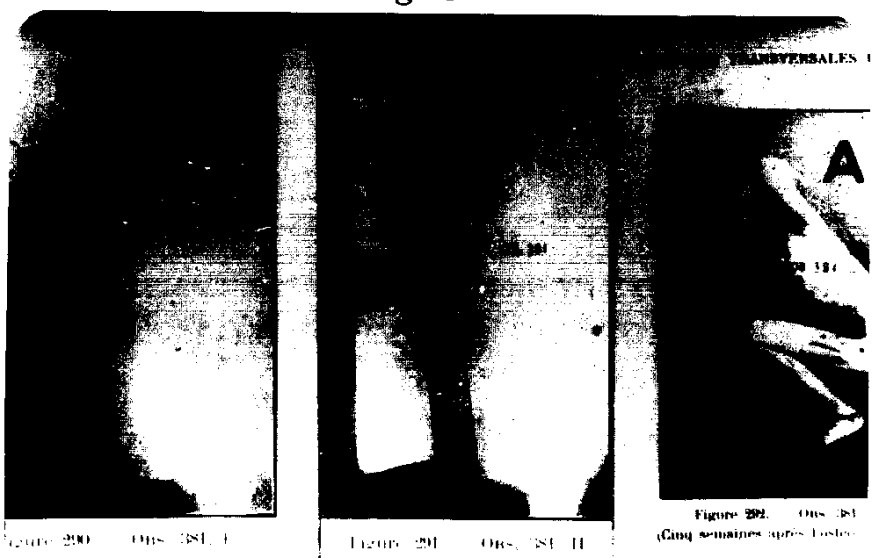

Fig . 7