Introduction

External fixation refers to a technique for the immobilization of osseous fragments by their impalement with metallic transfixing pins that are stabilized in a rigid external frame of metallic or other elements.

The first attempt to employ the concept of external fixation for the stabilization of an osseous segment was made in the middle of the 19th century. The need for the technique arose from staunch limitations of the then available technique of nonoperative immobilization of fractures and by the anticipated poor results of the techniques of internal fixation and allied operative procedures (***Vidal, 1983***).

Since World War II, external fixators have developed in two directions. In the west most surgeons favour simple, sturdy, unilateral constructs with low profiles and easy limb access, whereas in Eastern Europe ring fixators that are highly adjustable but that often encase the whole extremity prevail.

Improved components designs, new techniques of pin care, the discovery of three basic concepts that govern the safe and effective application of pin and ring fixators, and the recognition that preoperative and long-term planning are crucial to the success of the method have made external fixation the most adaptable, versatile, and gentle method (***Behrens, 1989***).

Modern external fixation device may possess a degree of stability that, in some instances, approximates that degree provided a corresponding technique of internal fixation. The external fixation device possess the obvious advantage over a comparable technique of internal fixation in that the alignment of the fracture, or the degree of rigidity of the frame, can be modified after the application of the former. When the initial compression or distraction applied to major fracture fragments is subsequently lost, it may be restored by adjustment of an external fixation device (***Vidal, 1983***).

External fixators have a number of unique capabilities that distinguish them from other methods of bony fixation:

1. Skeletal stabilization at a distance from the site of injury, disease, or deformity.
2. Free access to an injury site for primary or secondary procedures.
3. Great versatility in accomodating a wide variety of bone and soft-tissue lesions, including the ability to stabilize injuries extending across two or more adjacent limb segments.

4. Adjustability of alignment,lenght,and mechanical propertie after the device has been applied.
5. Ability to use simultaneously and /or sequentially internal fixation and other methods of skeletal stabilization.
6. Minimal interference with adjacent joints.
7. Mobilization of limb and patient,including full weight bearing **(*Behrens, 1989*).**

The Orthofix system and the Ilizarov system differ in form and fixation technique but both introduce new application possibilities. These devices allow three-dimensional fixation of fractures and osteotomies. They also can provide compression, distraction, angular correction, exercise stability , and full weight bearing.

De Bastiani et al. and Ilizarov and Soybelman were the first to use these fixators to treat complex deformities in growing children.

Reports of the management of non traumatic deformities by external fixation are still rare. However, with the Orthofix or the Ilizarov system, this technique in children need no longer be limited to bone lengthening and severe bone injuries. The present material demonstrates that even very severe deformities can be treated successfully with dynamic external fixation.

The use of dynamic external fixation in non traumatic applications and especially in the correction of severe deformities is successful and can be recommended. The rate of complications and the length of treatment are acceptable. Most important, the patients are able to walk ,attend school, and take part in many normal activities while the fixator is in place (***Grill,1989***).