

Chapter 9

Fixation Methods

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1) INTERNAL FIXATION:

In trauma, depending upon the fracture pattern or soft tissue condition a bone can be fixed either with external or internal fixation. The fractured bone fragments can be fixed with screws, metal plate with screws and an intramedullary rod (Nail) or circumferential bands or combination of these methods. Properly applied internal fixation securely holds the fracture fragments, so that movements can begin at once and fracture disease can be prevented. The patient can be discharged as early as when his wound has healed. The grave risk of infection has to be kept in mind while doing these procedures. The risk of infection depends upon the devitalized tissues, dirty wound and patient associated with co morbidities.

Indications:

- 1) Fractures that cannot be reduced except by operations
- 2) Fractures that are unstable and prone to re-displaced
- 3) Fractures that unite poorly and slowly like fractures neck of femur
- 4) Pathological fractures
- 5) Multiple fractures
- 6) Fractures in patients having nursing difficulties

Types of internal fixation

- 1) Interfragmentary screws: These produce a compression or lag effect between two fragments.

2) Wires: These wires hold major fractures fragments together. Trans fixation, circlage and tension band are types of fixation with wires.

3) Plates and screws: These are used for metaphyseal and diaphyseal fractures of bones. Neutralization, compression, buttresses, tension band and antilide plates are functionally classified.

4) Intramedullary nails: These are mainly used in long diaphyseal bones. Nails can be used with prior reaming of medullary canal. Interlocking screws used in these prevent the rotational forces in bones.

2) FUNCTIONAL BRACING:

This is a kind of fractures treatment which prevents joint stiffness while permitting fracture splintage and loading. These are not rigid enough, so usually applied when fractures are beginning to unite i.e. after 3-6 weeks of traction or conventional plaster. Functional bracing may be of either POP or lighter thermoplastic material. In this, POP cast is applied over the shaft of the bone, leaving the joints free. The cast segments are connected by metal or plastic hinges which allow movements in one plane only. These splints are functional because they provide joint movement. These are commonly used for fractures of shaft of femur and tibia.

Functional bracing holds the fractures through compression of the soft tissues, and small amount of movement which occurs at fracture site through using limb encourages vascular proliferation and callus formation.