



*Universitatea de Medicina si  
Farmacie “Victor Babes”  
Timisoara*



- Traumatology, medical speciality that deals with the prevention and treatment of injuries caused by mechanical agents, physical, chemical and biological agents in any area of the body

Osteoarticular traumatology, part of traumatology which deals with the study of bone and joint injuries at any level



- increase number of musculoskeletal injuries in the world
- various etiologies
  - traffic
  - work
  - sports
  - aggression



# FRACTURES

- Definition: solution of discontinuity in the bone, of various degrees, after a traumatic action that acted on that bone segment directly or indirectly



# MECANISM

- *Direct mecanism*
- *Mecanism indirect-* more frequent  
-flexion

=> oblic, third fragment or cominutive

ex: ski accident



# MECANISM

- torsion

spiroid, sometimes cominution

ex: soccer

- compresion

compression fractures or burst fractures

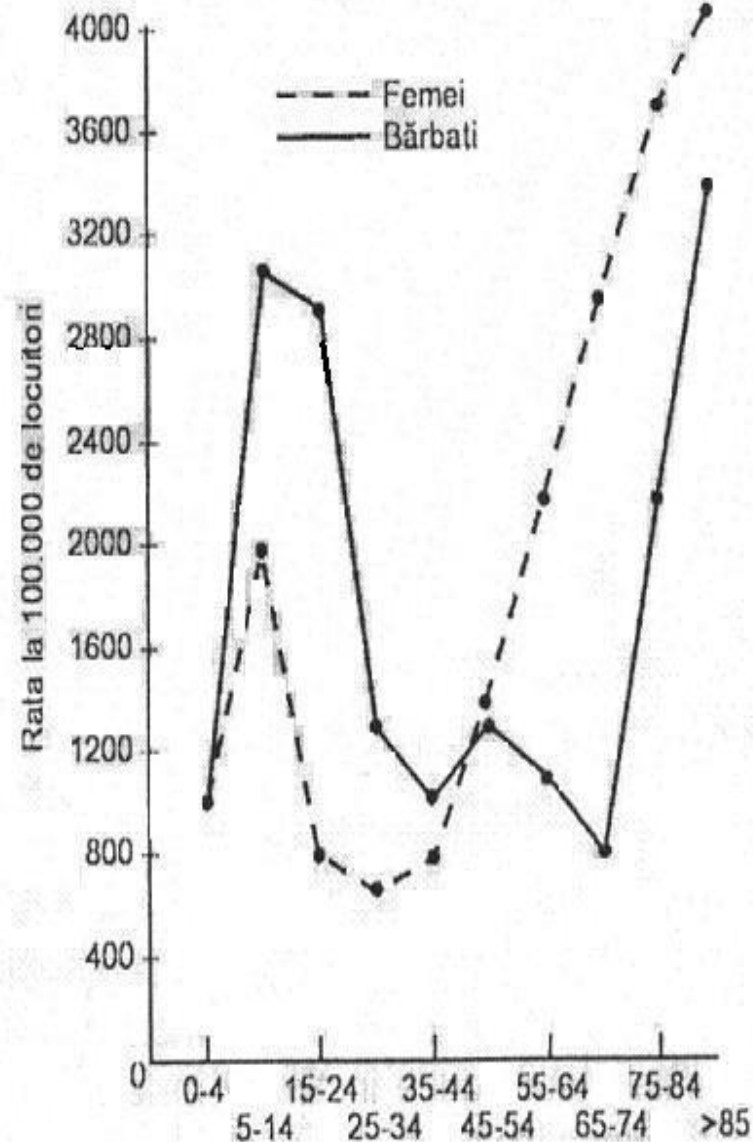
ex vertebra sau calcaneu

- pulling the insertion of a tendon with a bone fragment



# INCIDENCE

- Most frequent between 20-40 y.o.
- Second period of high incidence old people-osteoporosis
- rare -kids, high elasticity



Incidența fracturilor în funcție de vârstă și sex.



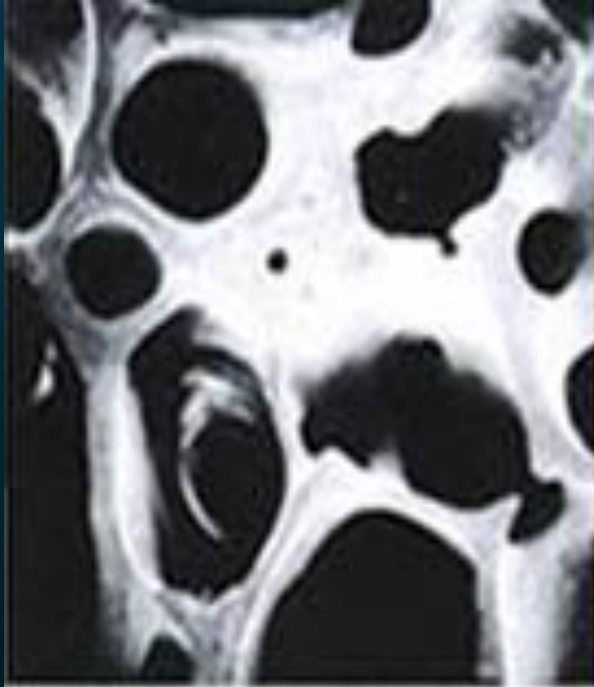
## Clasification

1. Fr. complete - displaced  
- no displ.
2. fr,. incomplete

{ fr open  
Fr closed

{ normal bone  
Pathologic bone





Os normal

Ostéoporose





# Clasification

Simpla



Transversala

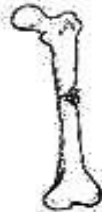


Oblica



Spiroida

Cominutiva



Multifocala



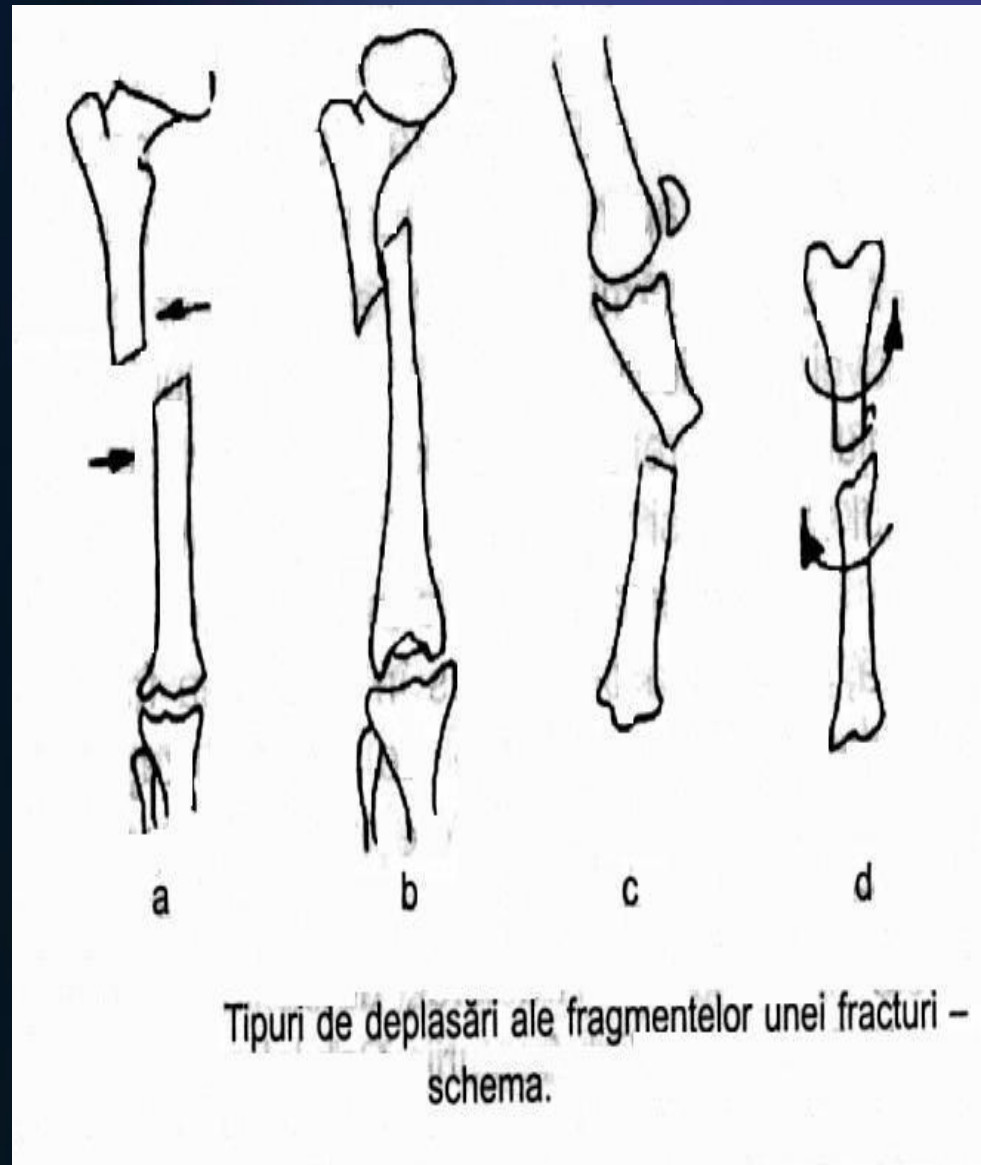
Cu pierdere de  
substanta osoasa





# *Displaced fr*

- a) translation
- b) shortening
- c) angulation
- d) rotation





# *Personal history*

- conditions that favor the production of fractures or dislocations  
osteoporosis  
osteomalacia  
haemophilia  
Lobstein disease, etc.
- Lack of calcium



# CLINICAL EXAM

- FIRST complete clinical examination,  
Anamnesis:  
date, time and place of accident  
type of accident  
the mechanism  
first aid at the accident scene and who did it





- Important role in the course of treatment
  - For detection of diseases associated
  - heart
  - Respiratory
  - renal
  - diabetes mellitus
  - posttrombotic syndrome
  - Liver
  - alcoholism
  - endocrine diseases
  - State of shock (traumatic, hemorrhagic)
  - Respiratory dysfunction, stating the cause
  - Head trauma



## *local exam (1)*

# *Important for the diagnosis*

## **1. Subjective clinical signs**

- Pain
  - place
  - Intensity
  - Irradiation
  - Variability



## 2. Objective clinical signs

- General attitude of the limbs

Upper limb- Desault position

Lower limb - shortening and external rotation

### Skin appearance

Extensive bruising

Henequin bruise in humeral neck fracture condilar humeral fractures, elbow dislocations, fractures of the malleolas

Edema - quickly installed, it can hide the bone

Blisters or wounds - important to distinguish between an wound away from a fracture and an open fracture

Bone deformation





## *Probability signs*

1. spontaneous or provoked pain  
bruising  
posttraumatic edema  
blisters  
deformation of region  
shortening of region  
total or partial functional impotence



## *Signs of certainty*

1. Abnormal mobility
2. bone crepitations
3. lack of transmission of movements in that bone segment
4. interrupting the continuity of bone



# *Limb measurements*

- Shortening of the limb
- ***Landmarks upper limb:***  
acromion, epicondil - epitrohlee, olecranon,  
radius stiloid, stiloid of cubitus
- ***Landmarks lower limb:***  
spina iliaca antero-superior, great  
trochanter, base of patella, internal maleolis



# IMAGISTIC FINDINGS

- X ray
  - AP and lateral
  - place, shape , displacement
- TC
  - in fr spine



# *Complications*

- **immediate general:**
  - cardiopulmonary arrest
  - internal bleeding
  - external bleeding
  - traumatic shock
  - fat embolism
- **immediate local**
  - open fracture
  - vascular and nerve injuries
  - soft tissue:



- **Vascular:** peripheral pulse, color, skin temperature
- **nerve complications** - the most common traumatic paralysis:
  - circonflex paralysis: the scapular-humeral dislocation
  - cubital paralysis: fractures of the elbow joint
  - median paralysis: carpal sprains
  - Sciatic paralysis: Posterior dislocation of the femor
- **Local complications:** hidarthrosis, haemarthrosis, septic arthritis



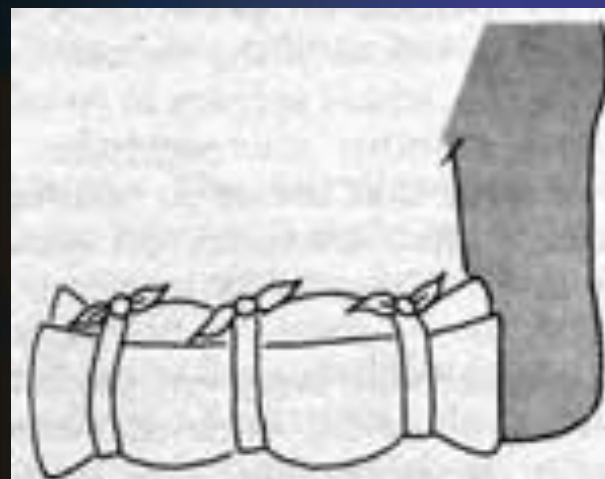
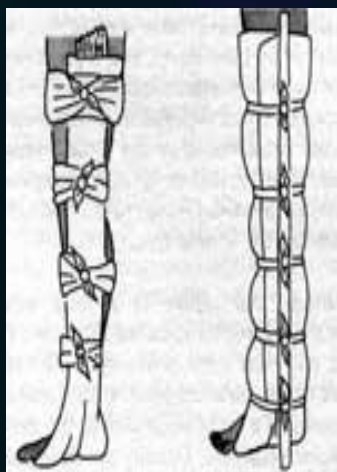
# EMERGENCY TREATMENT

- At the accident scene or in a medical facility:
  - pain relief
  - in open fractures, wash, antiseptic solutions, sterile dressing
  - fracture immobilization



# *Imobilizarea provizorie*

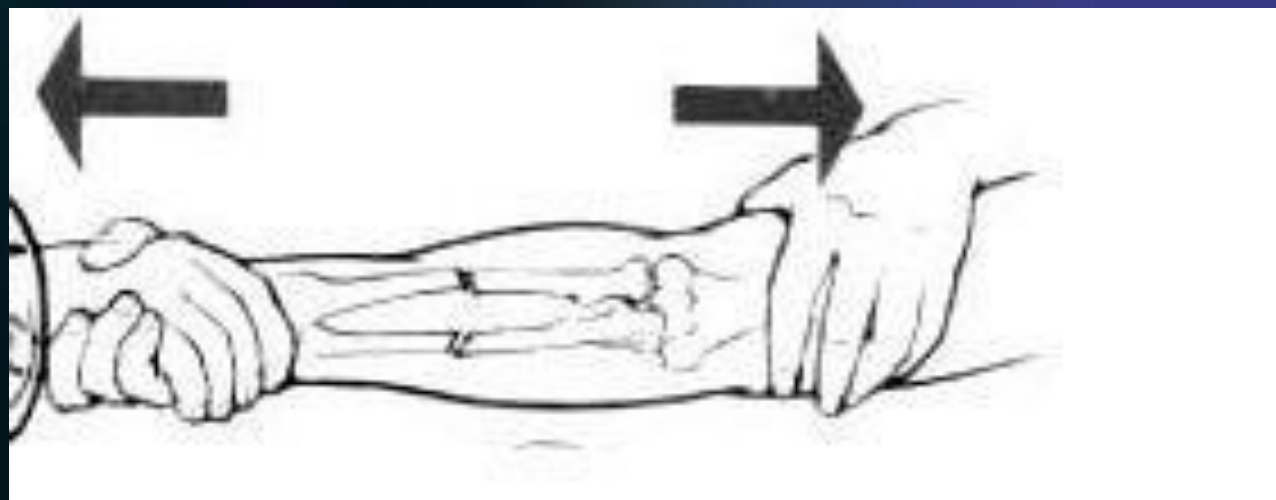
-at accident site







-hold the fracture fargments in axis

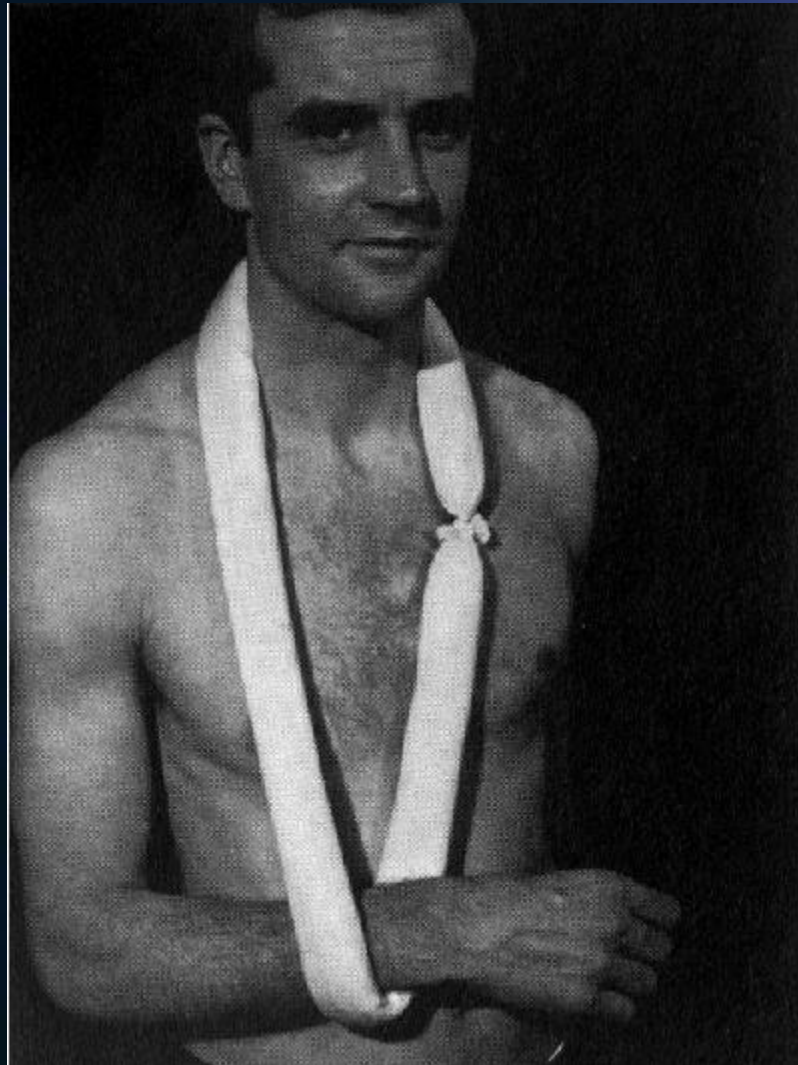




*examples*

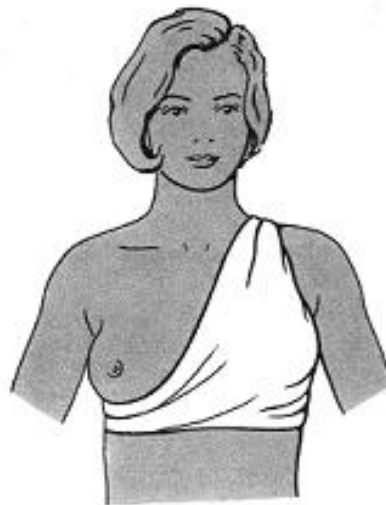


## *Imobilizare provizorie - exemple*

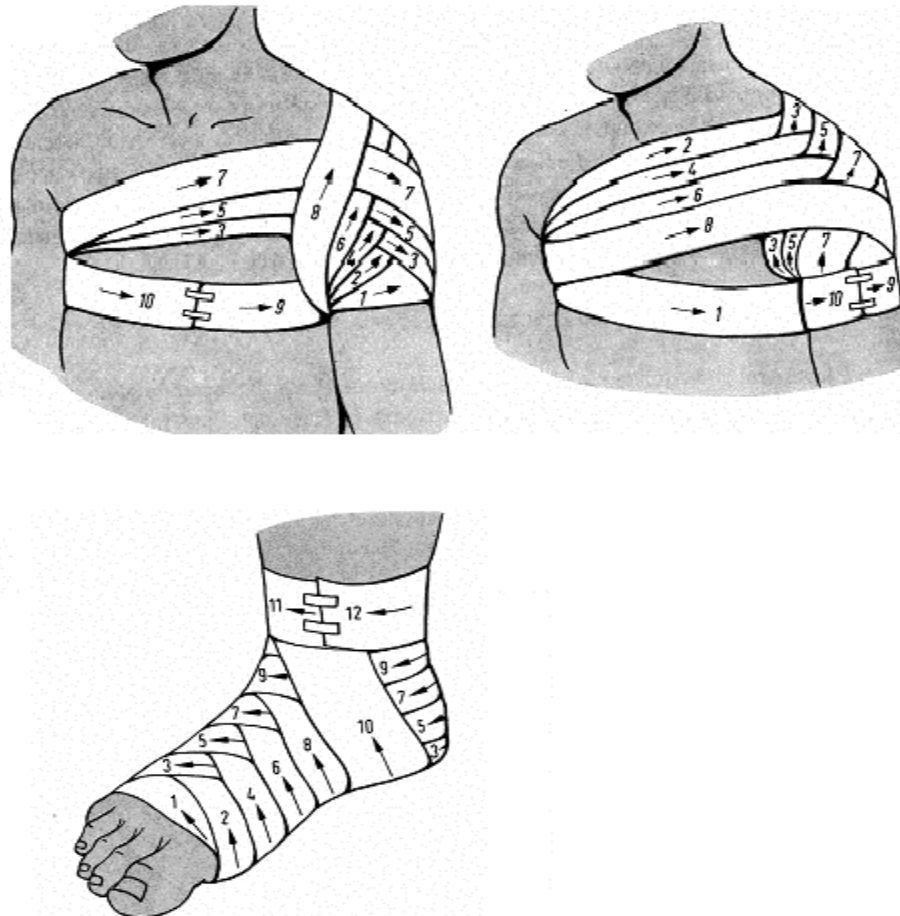




## *Imobilizare provizorie - exemple*

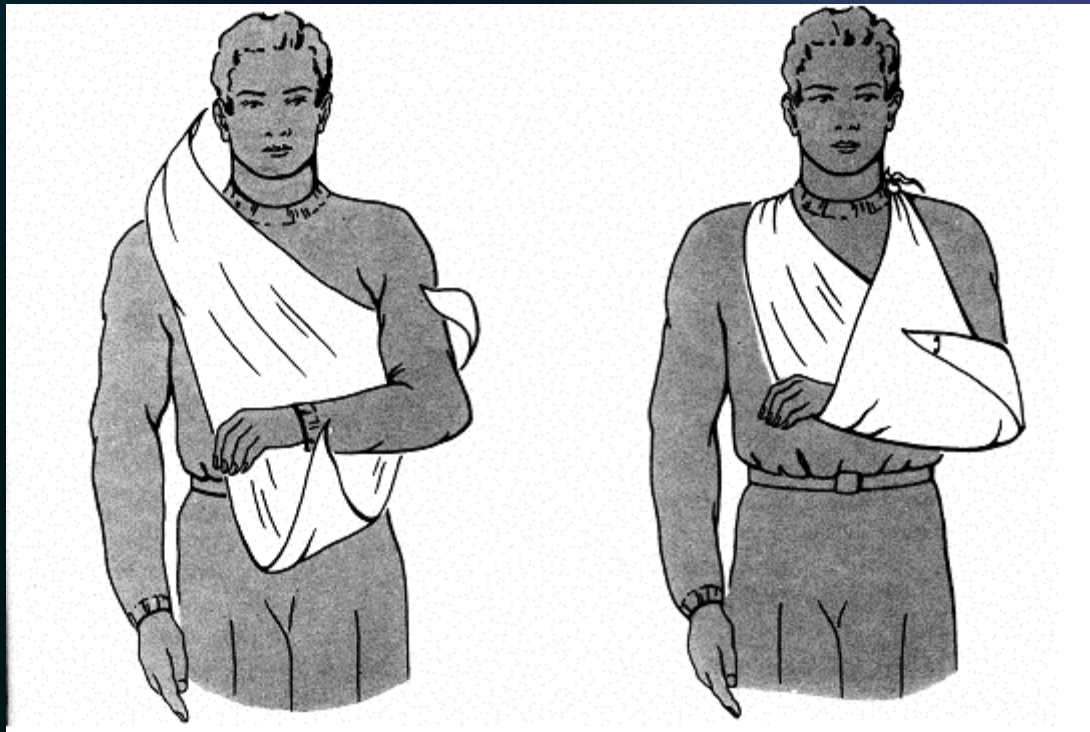


# *Imobilizare provizorie - exemple*





# *Imobilizare provizorie - exemple*





# Imobilizare provizorie - exemple

Abb. 2.33

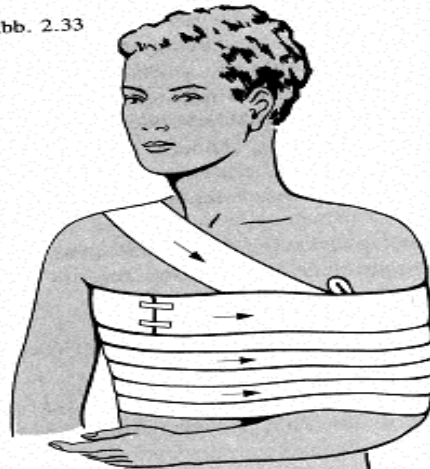


Abb. 2.32

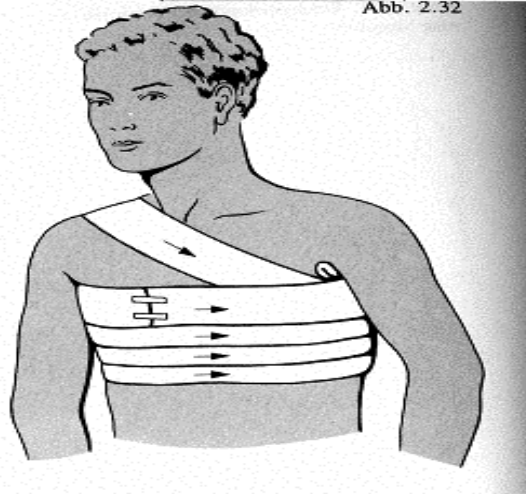
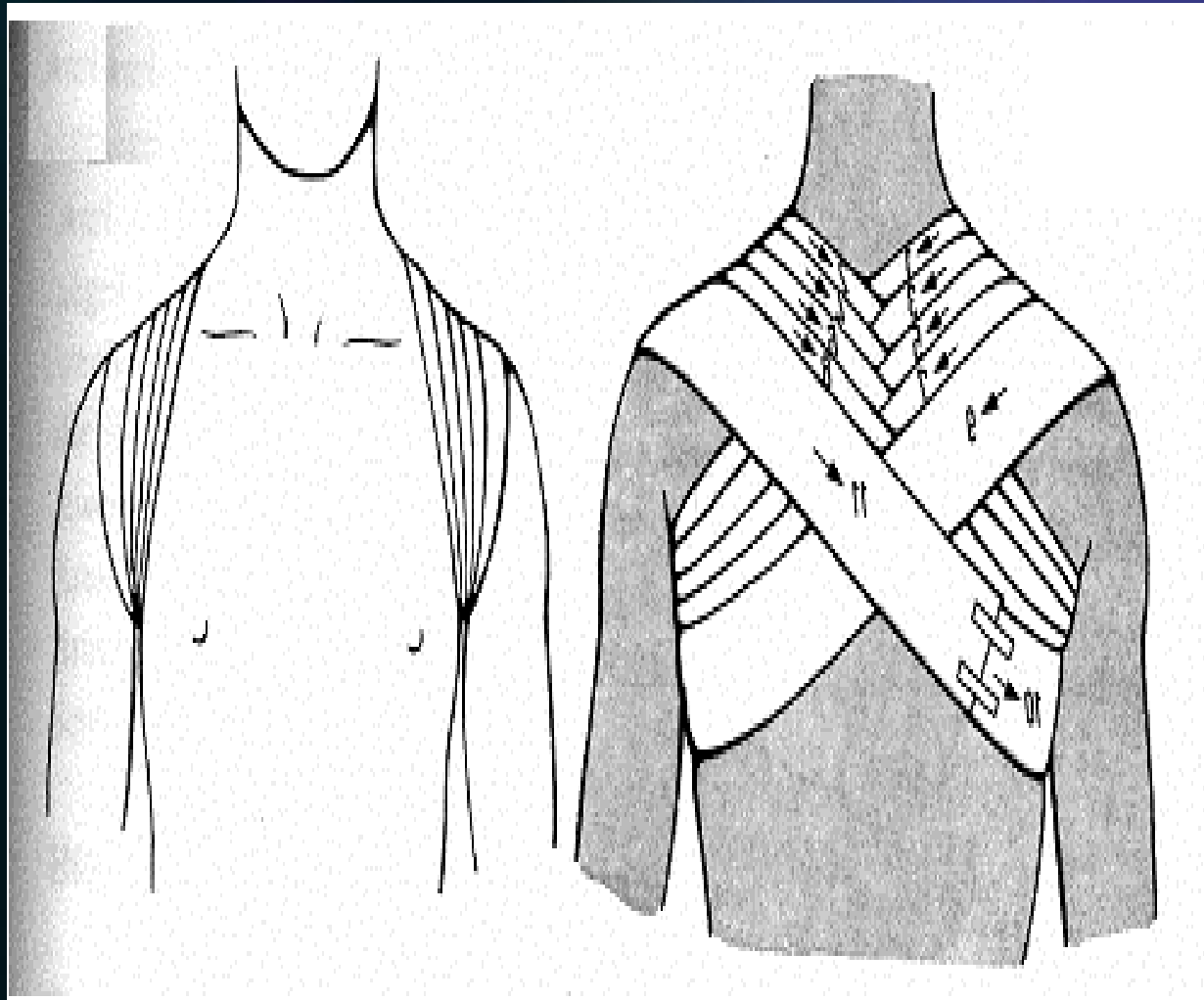


Abb. 2.34



## *Imobilizare provizorie - exemple*







# *Principles of fracture treatment*

- 1) Orthopedic treatment  
Subperiosteal fractures in children  
Fractures without displacement in adults  
Particular fractures, in which orthopedic treatment is better than surgical



## Orthopedic treatment targets:

Reduction of fracture:

- Extension

- Continuous extension

Keeping reduction until fracture callus and  
strengthening

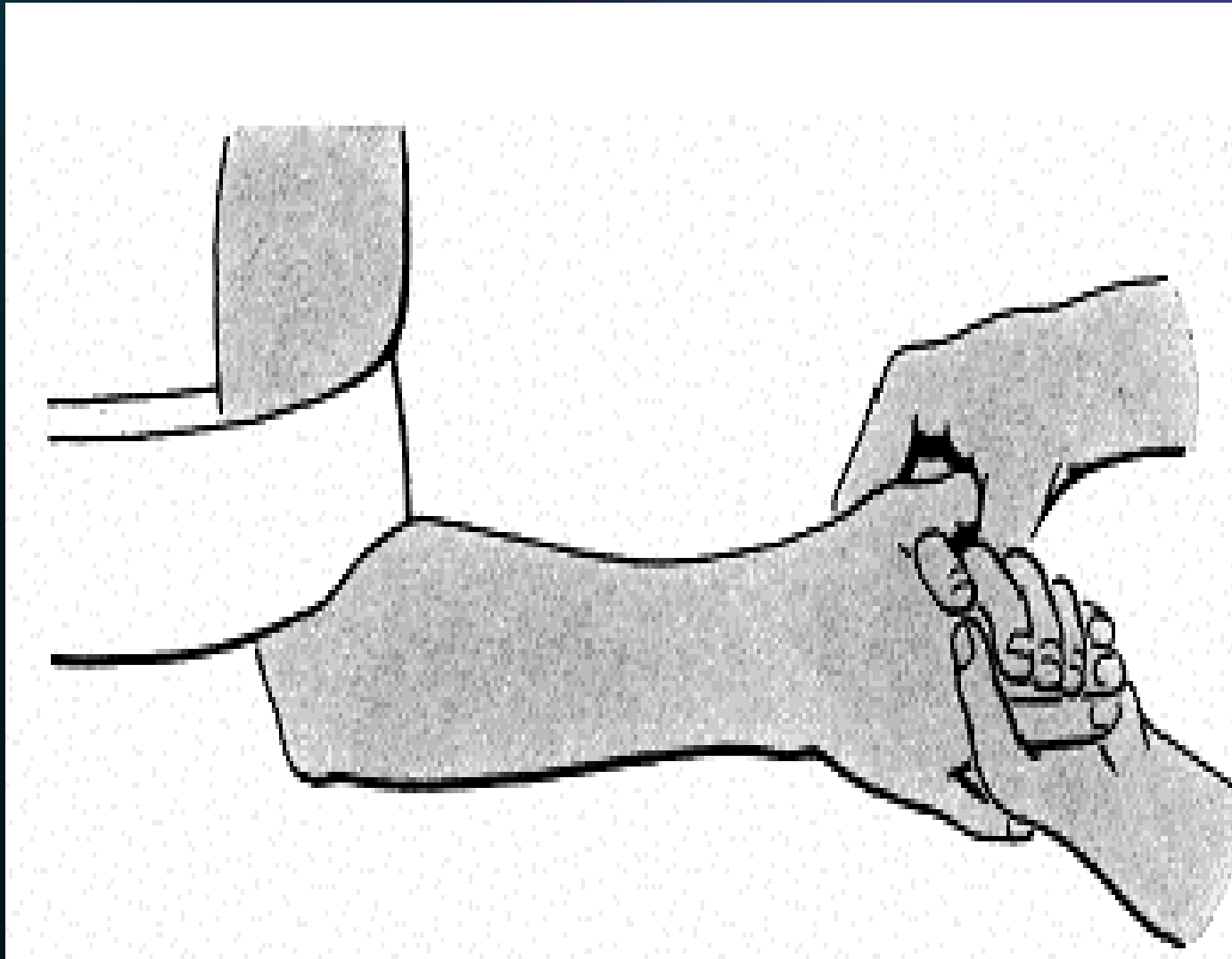
Functional recovery



# *Tratamentul ortopedic- exemple*

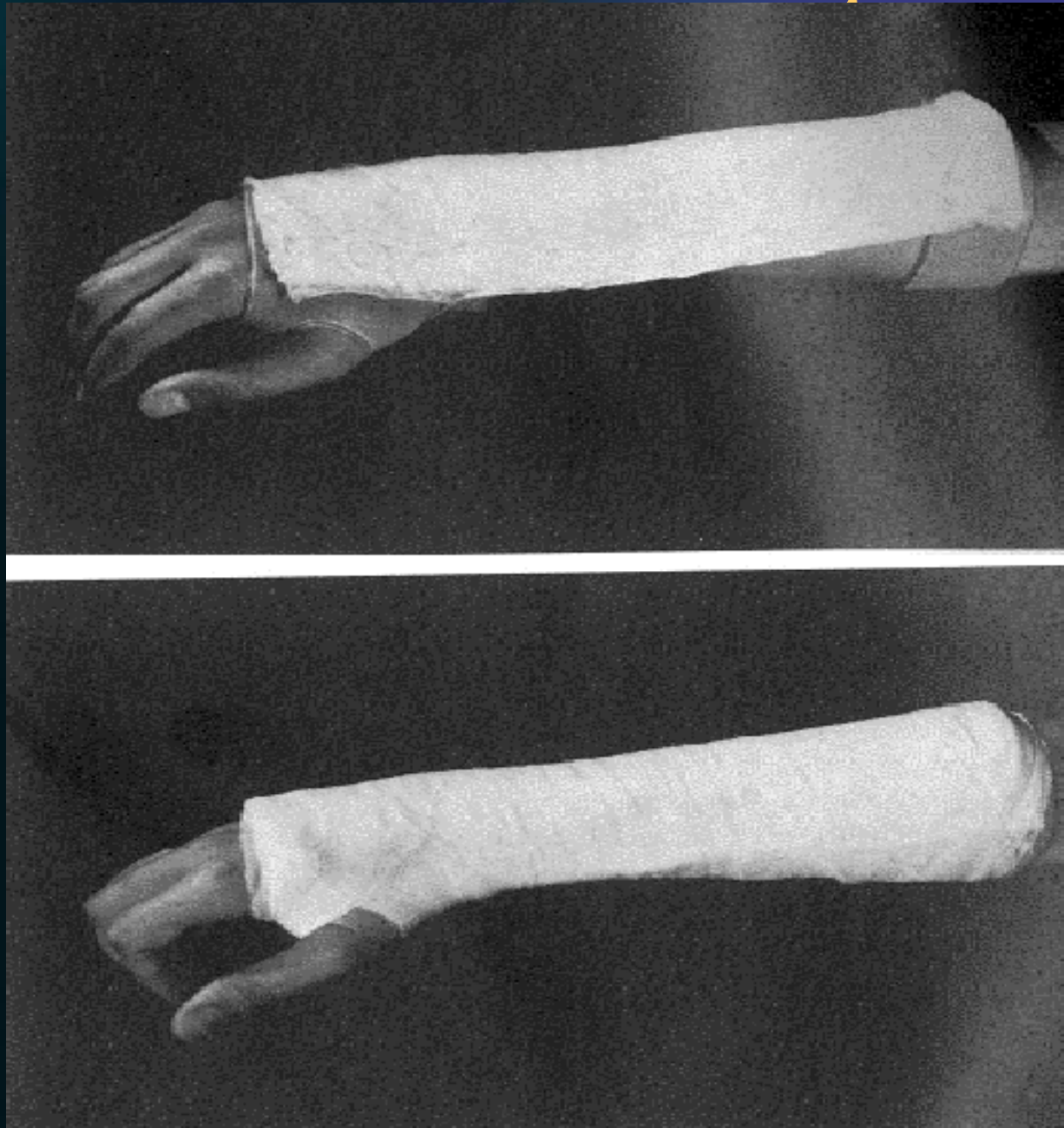


# *Tratamentul ortopedic*





# *Tratamentul ortopedic*





# *Tratamentul ortopedic*





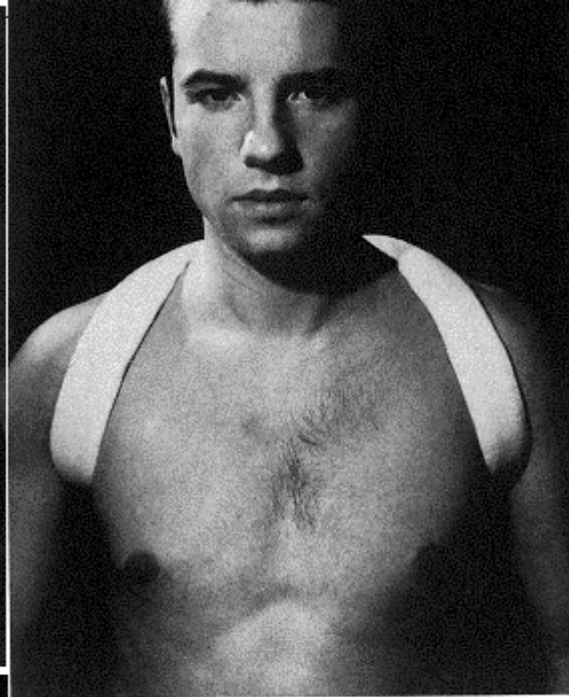
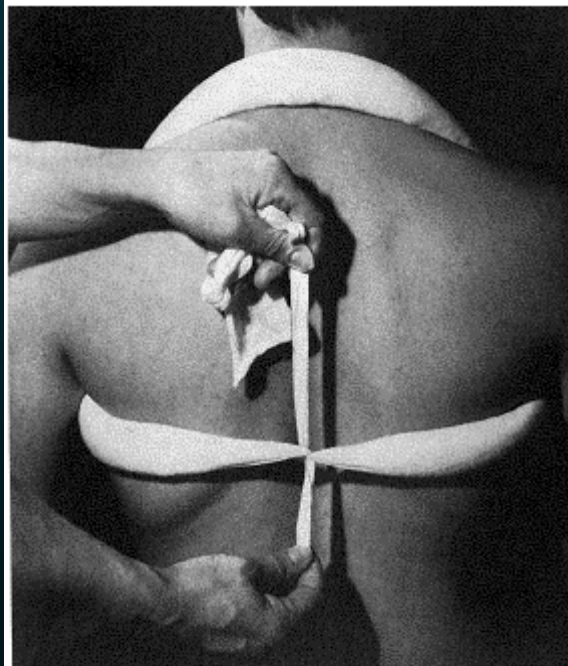
# *Tratamentul ortopedic*







# *Tratamentul ortopedic*





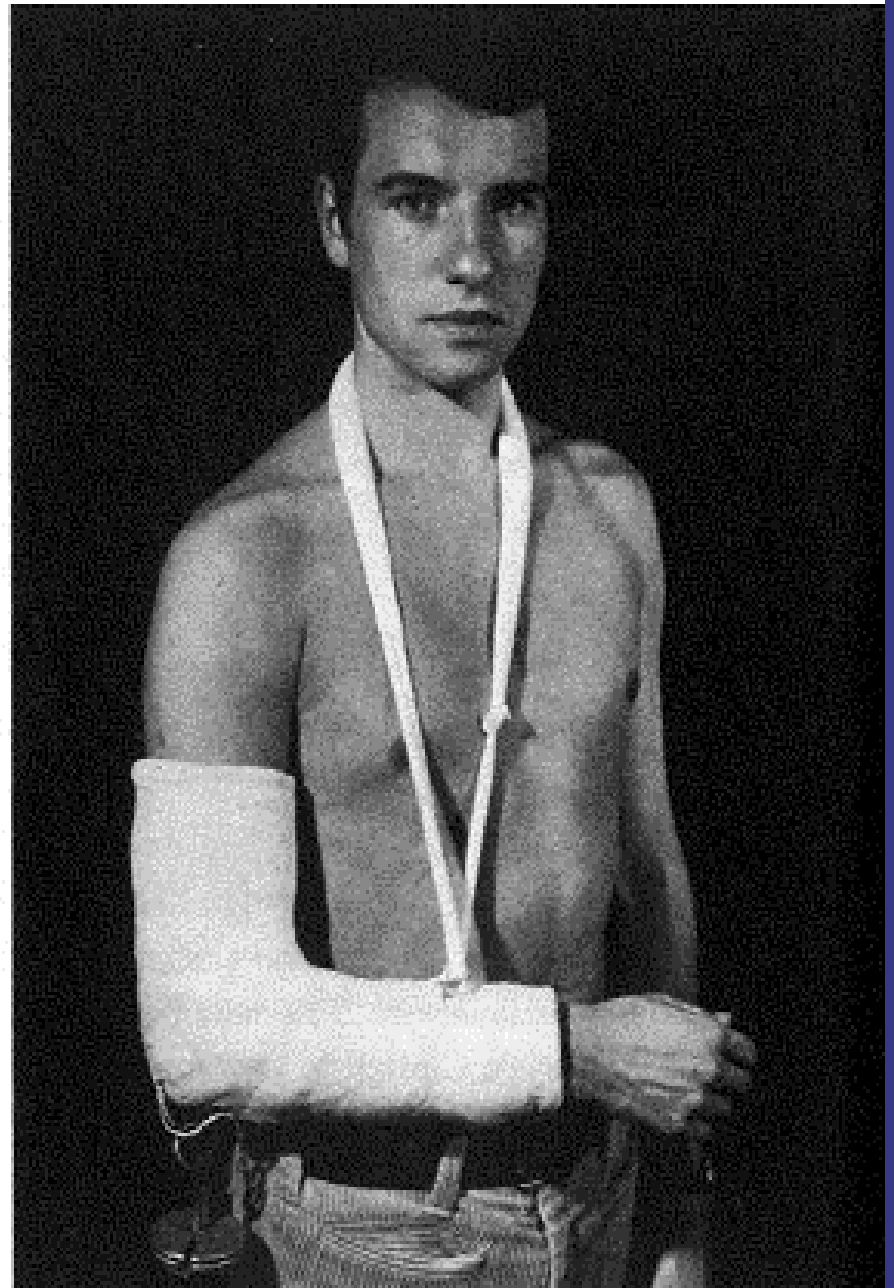
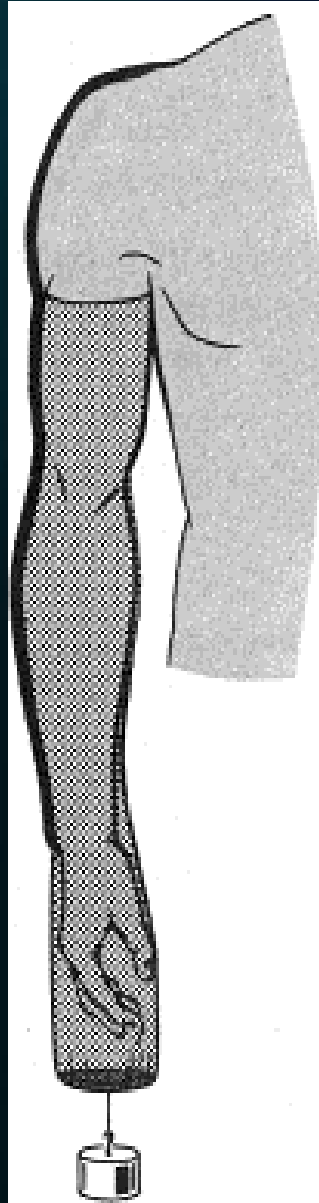


# *Tratamentul ortopedic*



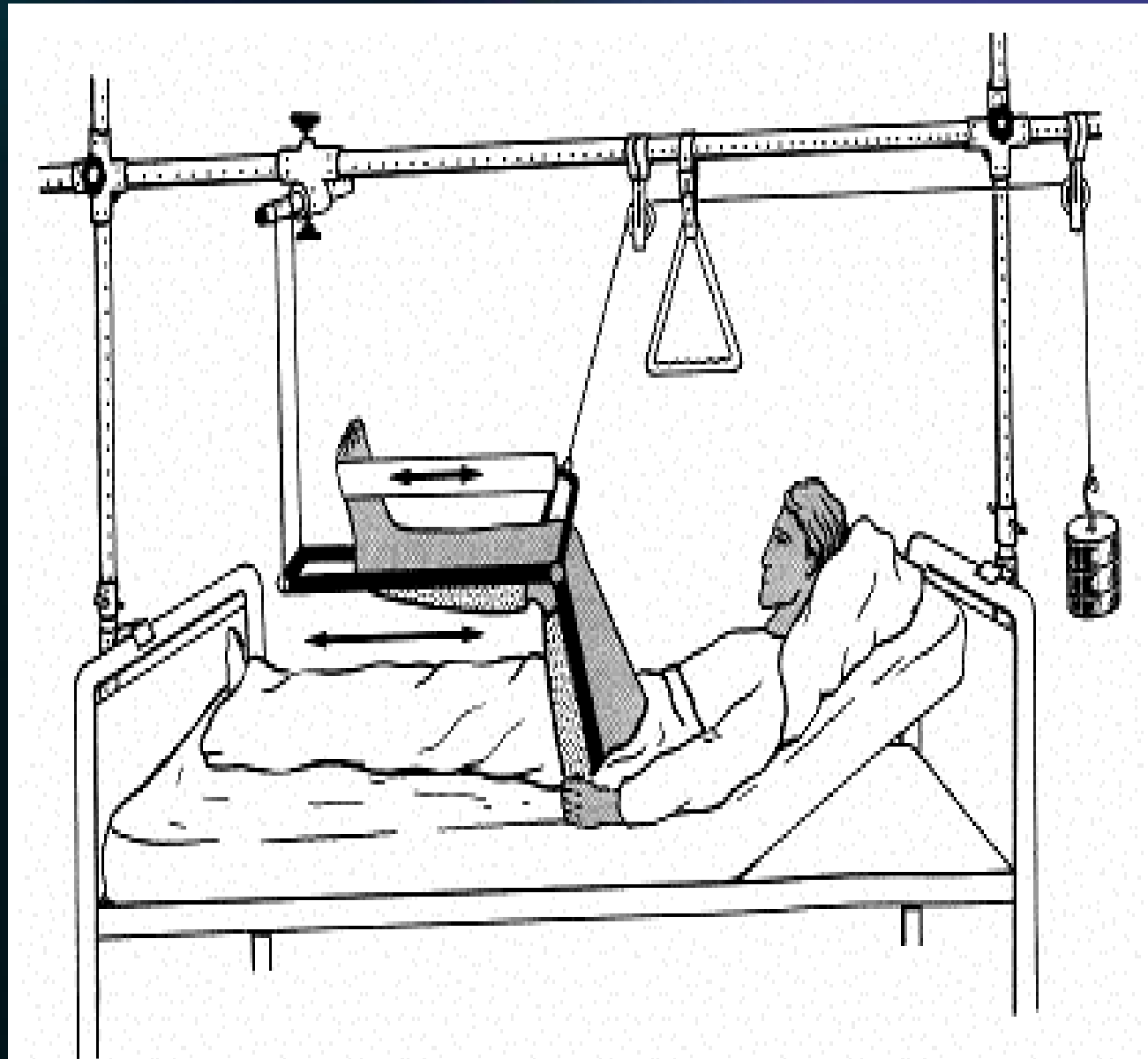


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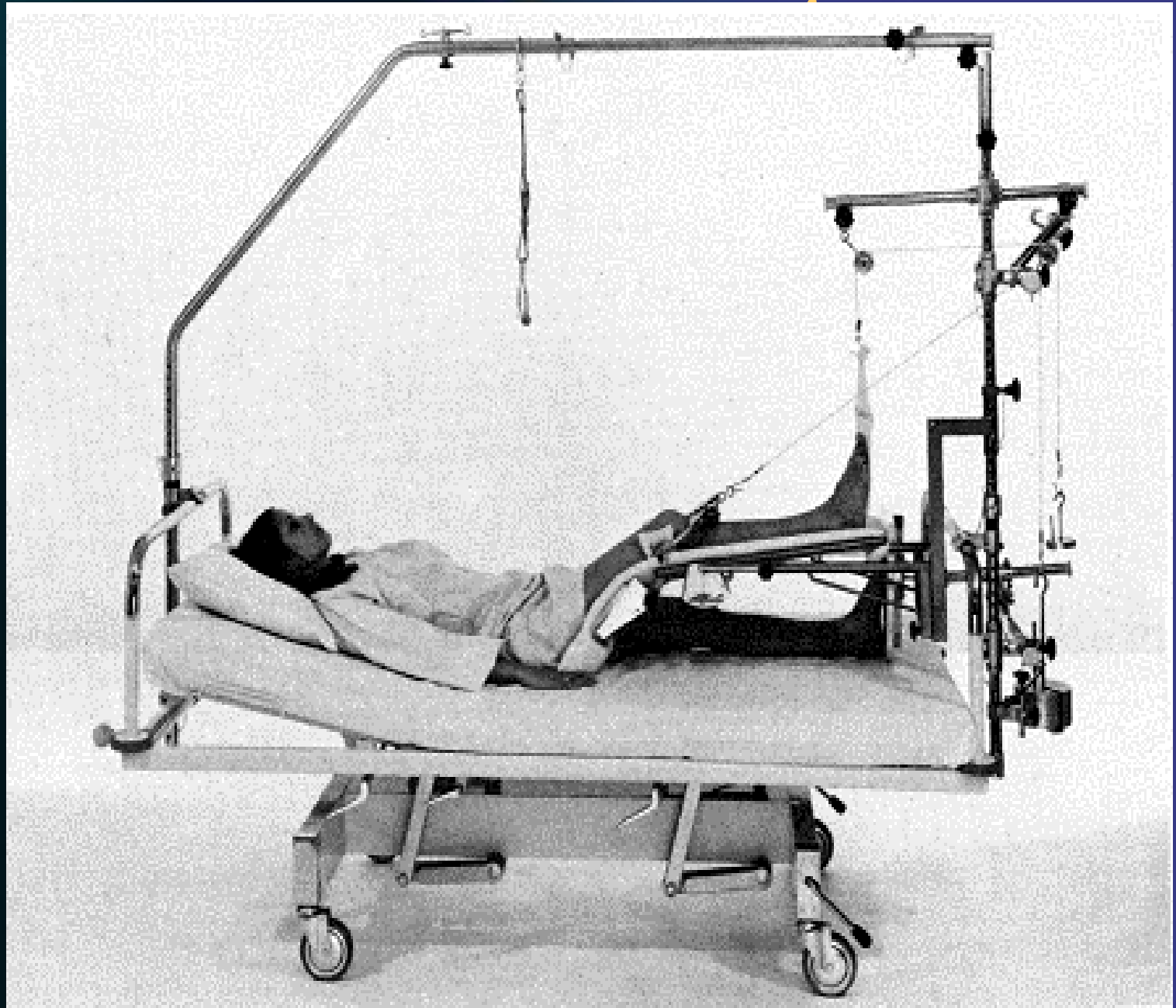


# *Tratamentul ortopedic*





# *Tratamentul ortopedic*



# Tratamentul ortopedic

Gipsverbande und Kunststoffverbände im Sportverletzung

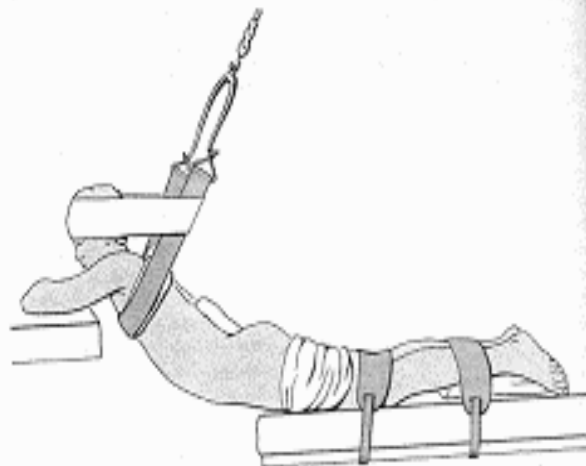


Abb. 6.76. Ventraler Durchzug zur Reposition eines Wirbelbruchs und Anlage eines Gipskorsetts.

Abb. 6.78. Gipskorsett von hinten. Schema der Gipsanlagen.

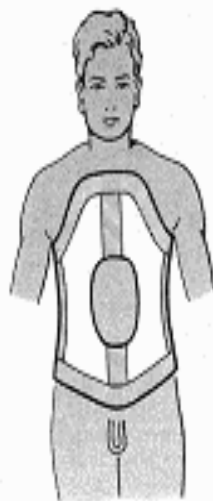


Abb. 6.77. Gipskorsett von vorn. Schema der Gipsanlagen.

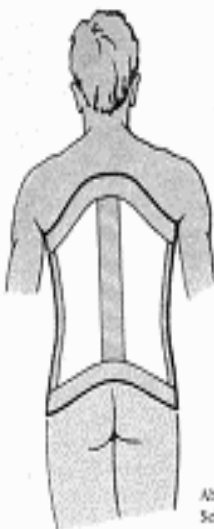


Abb. 6.79. Gipskorsett von der Seite. Hauptanlegepunkte.

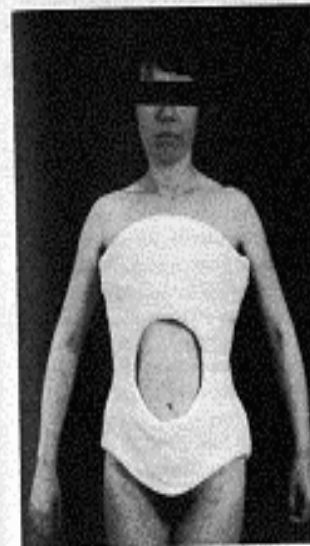


Abb. 6.80. Angelegtes Gipskorsett von vorn.



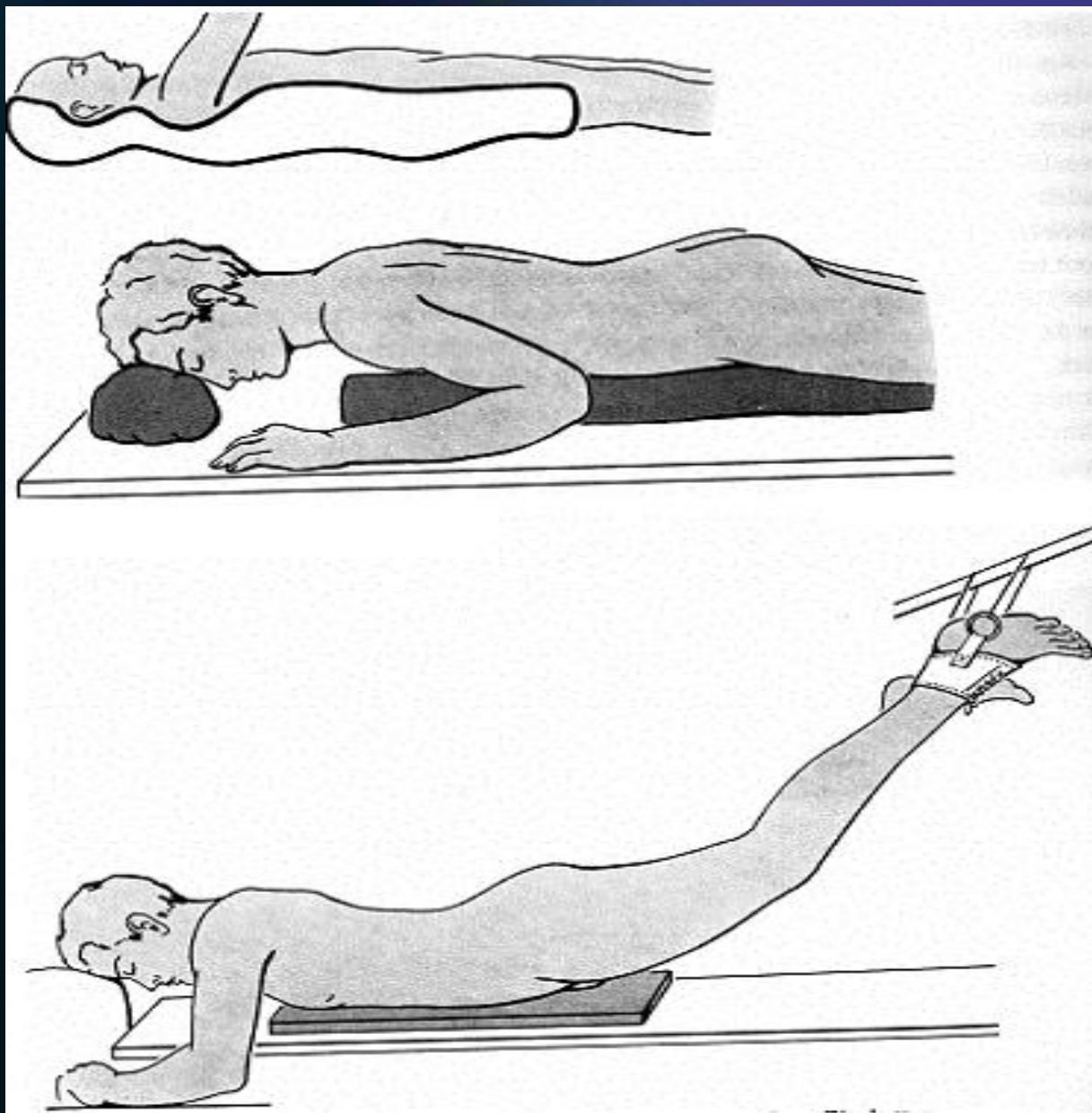
Abb. 6.81. Angelegtes Gipskorsett von hinten.



Abb. 6.82. Angelegtes Gipskorsett von der Seite.

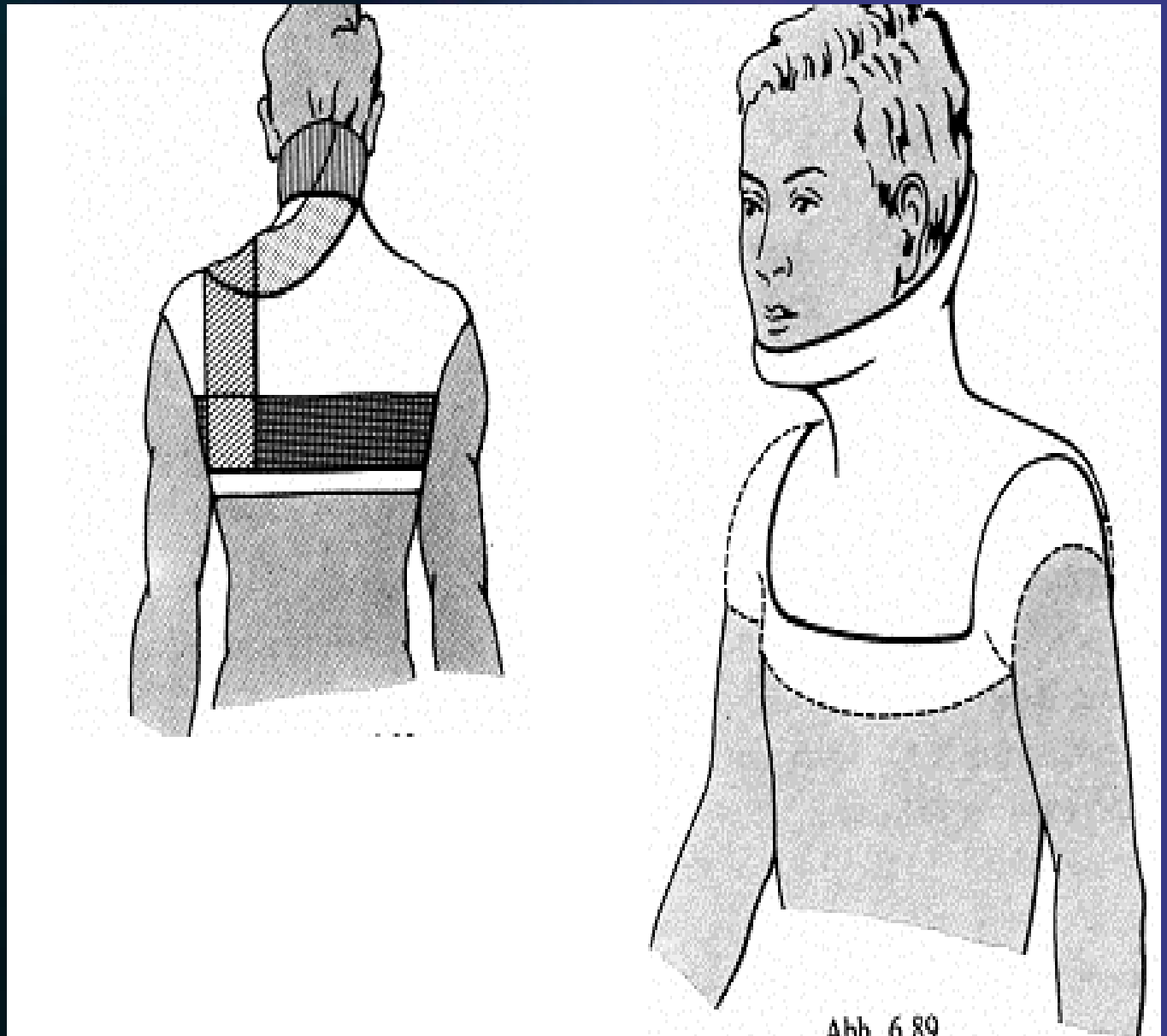


# *Tratamentul ortopedic*





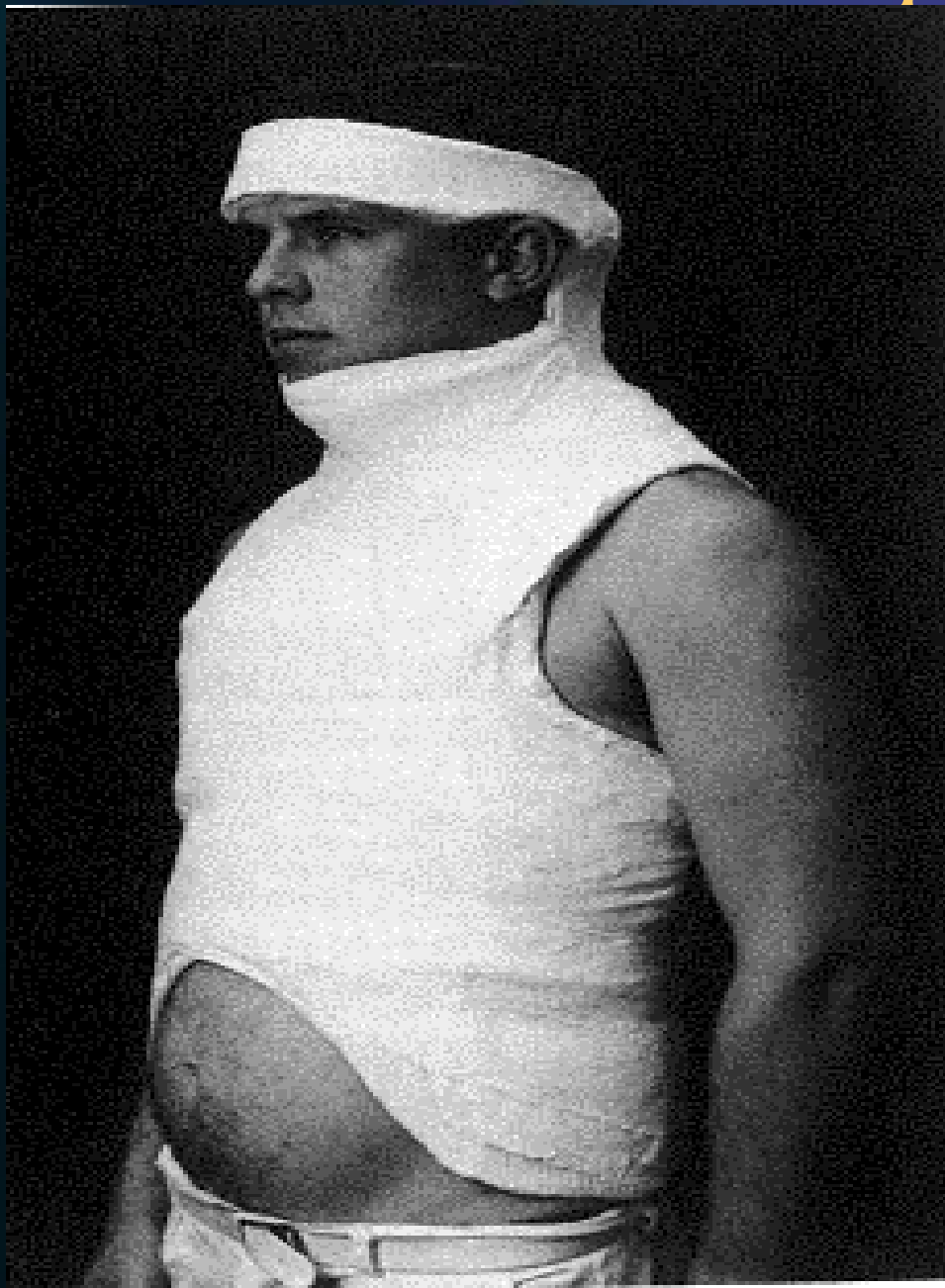
# *Tratamentul ortopedic*







# *Tratamentul ortopedic*





# *Surgical treatment*

## 2) METALIC FIXATION

### Goals:

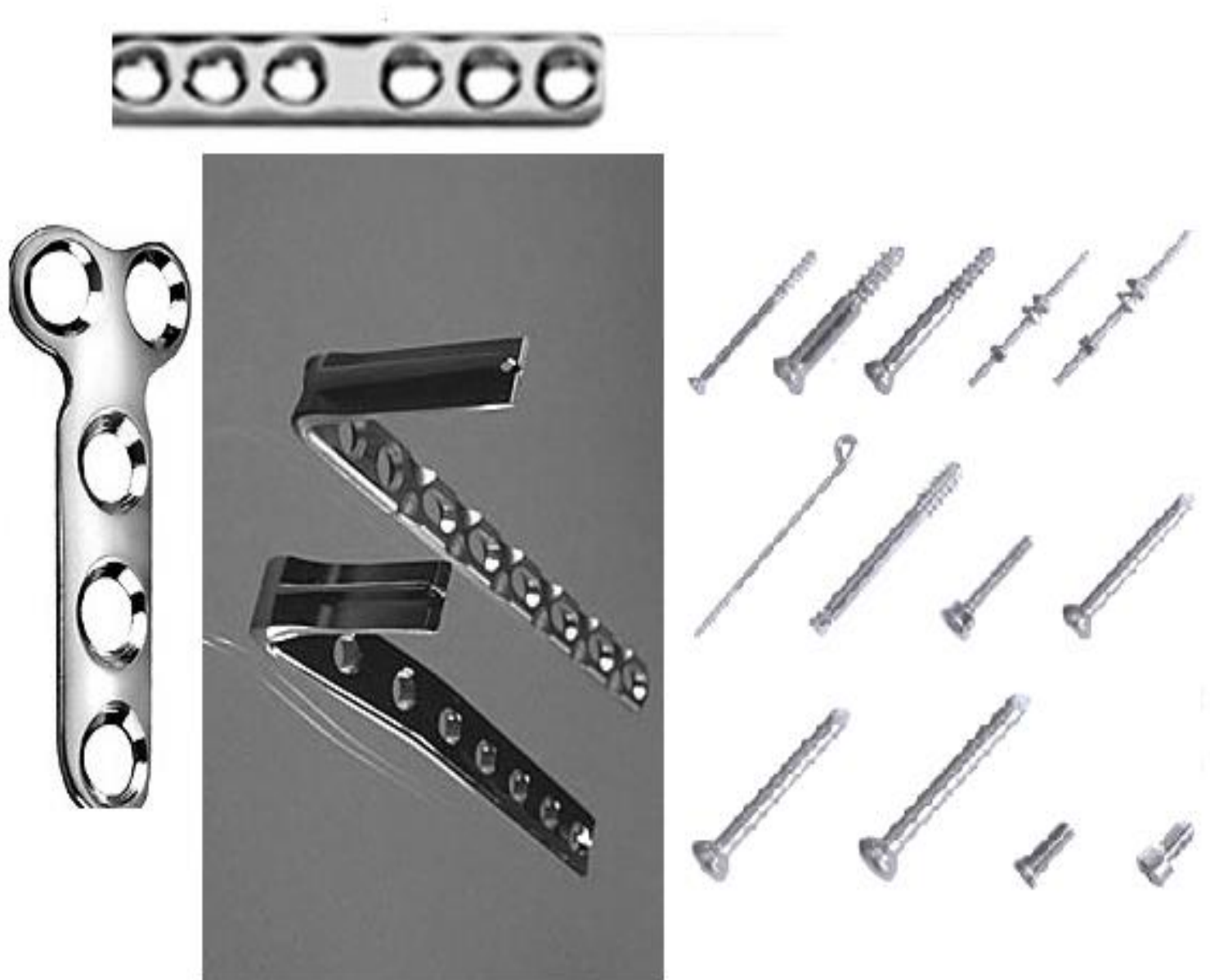
- Perfect anatomical reduction  
Firm fixation, rigid,  
initiating early joint movements and  
functional recovery



- Open or closed reduction and stable fixation
- Minimal soft tissue aggression



# *Plates and screws*







## *-nailing intramedullary*





## *Principii de tratament in fracturi*

- 4) TREATMENT OF  
FUNCTIONAL RECOVERY  
medical gym

Eswl, ultrasound