

INITIAL MANAGEMENT OF THE POLYTRAUMA PATIENT

Dolfi Herscovici, Jr
Tampa General Hospital
Tampa, Florida

I. INTRODUCTION

GOALS

- Understand the patient and the injuries
- Discuss factors in decision making
- Discuss rationale for a priority system in the polytrauma patient

A. Trauma Mortality

1. Early Death: Blood loss, brain injury
2. Late Death: Secondary brain injury, sepsis

B. Trauma Goals

1. Save a life
2. Save a limb
3. Save a joint
4. Restore function

C. Evaluating the Trauma Patient

1. Primary survey
2. ABC's
3. Secondary survey
4. Recognizing orthopedic injuries
5. Prioritizing orthopedic treatments

II. SURGICAL DECISION MAKING

A. Broad Categories of Decisions

1. Emergency surgery: performed on patients who are dying
2. Urgent surgery: performed on stable trauma patients
3. Elective surgery

B. Tenets of Damage Control

1. Recognize who needs damage control
2. Performed as a salvage operation
3. Need to keep patient alive
4. Accept morbidity of salvage procedures
5. Definitive repair later

C. Timing of Fracture Surgery

1. Acute (1-3 hours)
 - i. Decompression of organ cavities
 - ii. Control of thoracic, abdominal, pelvic, cerebral and external bleeding
2. Primary (1-72 hours)

- a. Stabilize pelvic ring
 - b. Open fracture debridement
 - c. Fasciotomies
 - d. Limb salvage vs. amputation
 - e. Long bone fracture treatment vs. stabilization
 - f. Certain articular fractures (e.g., femoral neck, talus)
3. Secondary (3-8 days)
 - a. Secondary wound closure
 - b. Soft tissue reconstruction
 - c. Upper extremity ORIF
 - d. Possible joint reconstructions
 4. Tertiary (>6-8 days)
 - a. Bone grafting
 - b. Complex soft tissue reconstruction
 - c. Definitive closures
 - d. Postponed procedures
- D. Parameters for Definitive Fracture Care
1. Systolic blood pressure >90 mm Hg
 2. Core temperature > 34 degrees C
 3. Urine output >150 ml/hr
 4. Cerebral perfusion pressure >70 mm Hg
 5. PaO₂:FiO₂ ratio >280
 6. Lactate <2.0 mmol/L
 7. Platelet count >100,000
 8. C-reactive protein <11 mg/dl
 9. Interleukin-6 <500 pg/dl

References

1. Vallier HA, Super DM, Moore TA, Wilber JH. Do patients with multiple system injuries benefit from early fixation of unstable axial fractures? The effects of timing of surgery on initial hospital course. *J Orthop Trauma* 2013;27:405-412.
2. Tschernen H, Regel G, Pape HC, Pohlemann T, Krettek C. Internal fixation of multiple fractures in patients with polytrauma. *Clin Orthop Rel Res* 1998;347:62-78.
3. Giannoudis PV. Aspects of current management. Surgical priorities in damage control polytrauma. *J Bone Joint Surg-Br* 2003;85:478-483.