



CASE REPORT: A CASE OF EARLY TOTAL CARE APPROACH IN A POLYTRAUMATIZED BORDERLINE PATIENT WITH MUSCULOSKELETAL INJURIES

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ABSTRACT

In case of polytrauma involving musculoskeletal injuries, it is often unclear whether ETC (early total care) or DCO (damage control orthopaedics) would bring about the best possible outcome. This case report is regarding an ETC approach to a borderline polytraumatized patient with several musculoskeletal injuries and multisystem involvement. The patients were objectively evaluated pre operatively, post operatively and at 2weeks, 2 months, 4 months and 7months after discharge. In this case study the functional and radiological outcome was excellent at the end of complete follow up. ETC provides the best outcome for stable polytrauma patients with musculoskeletal injuries and in the borderline or unstable patients who respond well to resuscitation.

KEYWORDS : Polytrauma, Early Total Care, Damage Control Orthopaedics, Musculoskeletal injuries, Borderline category.

INTRODUCTION

Polytrauma patients represent the ultimate challenge to trauma care and the optimization of their care is a major focus of clinical and basic science research. Polytrauma cases are approximately 16-18% of all traumatic pathology worldwide and still have a high mortality rate (15-50%)¹. Keel and Trentz defined polytrauma as a syndrome of combined injuries with an injury severity score (ISS > 17) and consequent SIRS for at least one day, leading to dysfunction or failure of remote organs and vital systems, which had not been directly injured themselves².

Musculoskeletal injuries involve an extremity and/or pelvic girdle. Musculoskeletal injuries are seen in 70-80% of polytrauma patients¹. As opposed to those in isolated cases, musculoskeletal injuries in polytrauma patients can be complicated to treat. The optimal timing of surgical stabilization of fractures in the polytrauma patient is controversial³. There are advantages to early definitive surgery for most patients. Early temporary fixation using external fixators, followed by definitive fixation (i.e. the damage control approach), may increase the chance for survival in a subset of patients with severe multisystem injuries.

Polytrauma patients are triaged into four classes: stable, borderline, unstable and in extremis⁴. They are classified depending on manifestation of shock, coagulopathy, derangement of body temperature and soft tissue injuries. The stable patient can undergo fracture surgery as necessary. An unstable patient should be resuscitated and adequately stabilized before receiving definitive orthopaedic care. The decision whether to perform initial temporary or definitive fixation in the borderline patient is individualized, based on the clinical condition. In patients presenting in extremis, life saving measures are pivotal, followed by a damage control approach to their injuries.

CASE REPORT

37 years male got admitted into MIOT hospital on 23.01.15 at 1:54 pm with alleged history of road traffic accident at 7:15 am on 23.01.15 victim sustained injuries to his both lower limb and upper limb.

Condition of the patient on admission

- Consciousness level--GCS : 14/15
- Pulse : 137/min
- BP : 90/60 mm Hg
- Temperature : 33 degree Celsius
- Respiratory rate : 36/minute
- ABG shows features of hypoxemia and severe metabolic acidosis with a base deficit of -9.6mmol/L
- Features of SIRS present.

Examination Findings

- Contaminated degloving injury over the lower third of right leg with skin loss exposing crushed muscles and bony fragments. Contaminated open wound over the anterolateral aspect of mid

third thigh exposing the underlying muscles. Complete crush injury of right lower leg with absent pulses. Lacerated wound over the right elbow. Swelling tenderness present in right groin, right middle thigh, right proximal part of leg. Distal pulses were absent on left lower limb with cold clammy and insensate feet.

Patient has sustained following injuries

- Intertrochanteric fracture femur right side
- Compound IIIA fracture of right shaft of femur
- Comminuted fracture of right lateral condyle of proximal tibia with tibial spine avulsion
- Compound comminuted fracture of right both bones distal 3rd leg
- Compound comminuted fracture of left both bones leg distal 3rd with degloving injury with no peripheral pulses.
- Comminuted fracture of left distal radius.
- B/L basal atelectasis with 2,3 and 4th rib fracture on left side and head injury with minimal EDH.

Course in the hospital

- On admission, he was in shock, tachycardia, hypotension and he was pale and not maintaining oxygen saturation. He was immediately intubated and given ventilator support and resuscitated with IV fluids, colloids and blood transfusions. Meanwhile central venous catheter was inserted. CT of Peripheral Angiography shows complete occlusion of the distal third of the anterior tibial artery bilaterally with reformation of dorsalis pedis artery.
- On 24.01.15 he underwent Extensive wound debridement and vaccuseal dressing open reduction and internal fixation with L plate proximal tibia. Bilateral tibia nailing. Retrograde nailing femur, Open reduction and internal fixation with 120 angled blade plate for trochanteric fracture and he also underwent left below knee amputation (Guillotine) + tracheostomy.
- On 27.01.15 he underwent wound debridement, Fasciocutaneous flap right side, wound debridement left side.
- On 03.02.15 he underwent ligament taxis with wrist spanning external fixator left side
- On 03.02.15 he underwent Wound debridement, SSG, Stump re look
- On 05.02.15 he underwent secondary skin suturing right arm
- He got discharged on 27-02-2015 on a stable condition.

Clinical photos

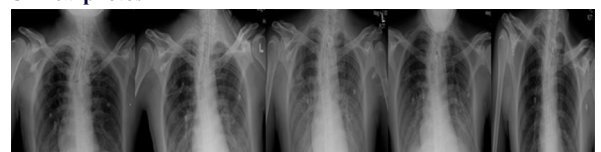


Figure shows gradual progression of effusion with collapse on both side and regression after intervention (BRONCHOSCOPY).

Figure 1

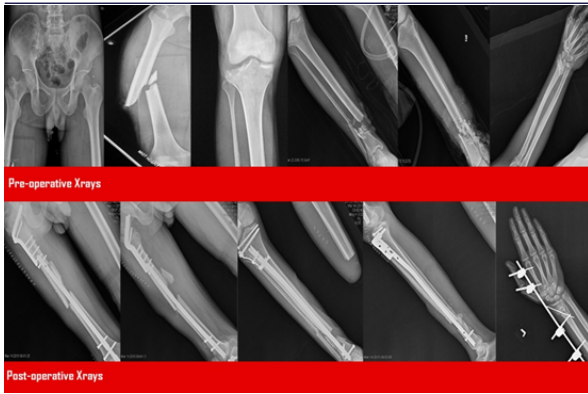
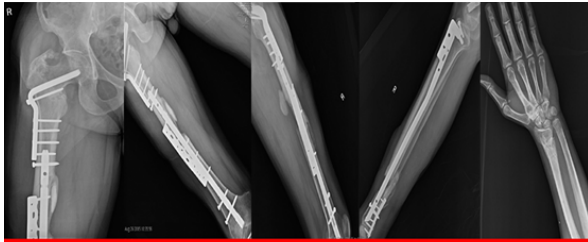


Figure 2



4 Months of follow up. Fracture indolence noticed in the femur and distal third tibia. So the patient underwent bone grafting and anti rotational plating at femur fracture site and Tibio-fibular bone grafting with fibular plating on tibia.

Figure 3



7 months of follow up. Radiological union achieved.

Figure 4



Figures shows compound grade III both bone fracture, soft tissue defect covered with fasciocutaneous flap and free tissue transfer. Which was taken up completely after few months.

Figure 5

Comments

Here is a patient who came with chest, traumatic brain injury and multiple long bone fractures and he got admitted in unstable condition and resuscitated accordingly. Patient put on ventilator after emergency debridement and temporary stabilization of fractures.

On the basis of arterial blood gas analysis, requirement IV fluids (Crystalloids & Colloids) and blood transfusion for emergency resuscitation and up on calculation of AIS (2 Brain, 3- Chest, 5 for Crush injury left lower limb with vascular injury) & ISS (38), the patient is categorized as *Borderline*. Patient was treated in ETC category.

He was operated on the 2nd day as early total care basis. On the third

POD he developed breathing difficulty and he was put on ventilator. X-ray shows bilateral pleural effusion, which was treated with fiberoptic bronchoscopic method and higher antibiotics. He had urinary infection and wound dehiscence on 8th POD over the amputated stump which was treated conservatively and secondary wound closure was done on a later stage.

The fracture femur on the right side was showing indolence at the fracture site after 2 ½ months of following the surgery, which was treated with augmentation plating and cancellous bone grafting. After 7 months of follow up, patient had a complete fracture union and he was mobilized with the help of calipers.

DISCUSSION

Early definitive fracture fixation is recommended for the stable polytrauma patient and in the borderline or unstable patient who responds well to resuscitation. However, in the patient who presents with severe hemorrhagic shock or any other life-threatening condition, prolonged surgical procedures should be avoided, and staged fracture fixation should be done.

CONFLICT OF INTEREST

There is no conflict of interest.

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