Case Presentation from Carlos Ajuria
MSF Surgeon

Clinical Resume:

PATIENT 1:

Name: NTT
Age: 19 years
Admission date 11/02/2024
Admission diagnosis: Multiple GSW injuries
Resume: Patient with multiple GSW injuries about 1 hour prior to admission; patient unconscious on arrival, presented with 1 GSW in right side of head, with exposure of brain mass in right side of frontal area, 2 GSW in left arm, one in anterior aspect proximal third about 3-4 cm and one in medial aspect, distal third, about 3-4 cm, with no clinical signs of humeral fracture; 2 GSW in distal third of forearm, one in lateral aspect and one in medial aspect, both about 3 cm diameter; 1 GSW in right side of chest about 2 cm on anterior axillary line and 4th intercostal space; 1 GSW in back at level of T4 on left side of spine, about 6 cm in length affecting only skin and subcutaneous tissues. 1 GSW in right thigh in proximal third anterior aspect and anteroinferior iliac spine, about 3-4 cm with dark active bleeding.

GCS upon admission of 9, also with clinical signs of hemopneumothorax of right chest, and chest tube inserted obtaining around 400 cc of blood. Wound in right thigh was cleaned and dressing done and bleeding stopped after compression for a few minutes. Decision to admit to CMU for initial treatment and stabilization. Surgical treatment done on 12/2/24 for debridement and primary closure of wound in the head, with removal of exposed brain mass and removal of bone fragments from skull fracture. Pericranium used to close the gap of Dura. Debridement of all the wounds in left upper limb as well as the ones in chest. Wound in right thigh was reviewed and incision done at the anterior aspect to gain access to vascular structures finding the arterial blood supply intact, only venous injuries of 4 tributaries to femoral vein, which were ligated. Extension of the GSW and debridement of skin done to gain access to muscle area, with some debridement done and to check if active bleeding continues. No bone fracture found during the procedure.
All wounds left open and dressed. On 13/2/24 we found the patient presented with acute ischemic changes for several hours in left hand and patient was taken back to theater for second review finding changes compatible with thrombosis of arterial supply to the hand; decision to make amputation was done. On 16/2/24 patient was taken back for second review of the wounds and DPC was done in wound of thigh, right chest and partial DPC done on wound in the back, leaving part of the wound open to heal by secondary intention. Wounds in left arm were left open to heal by secondary intention since it was not possible to do delayed primary closure without tension.

After 48 hours of admission the patient presented with improvement of the GCS to 13 and after another 72 hours the patient had GCS of 15/15. There was no signs of infection or other complications and chest tube removed after 5 days of insertion.
On 7/3/24 the patient presented with clinical signs of anemia and increase pain in right thigh as well as important swelling of scar. Patient was taken back to theater for review. Hb was 4.5 mg/dl and 2 blood pints were administered one before surgical procedure and one during intervention. During the procedure we found a ruptured pseudoaneurism of the deep femoral artery, which was ligated after several attempts of repair without success. And wound was cleaned and partially closed. Soft drain inserted because of dead space, and removed 48 hours later. Control Hb 24 hours after intervention was 7.8 mg/dl.
Until now the patient does not present infectious or any other type of complication.

PATIENT 2

Name: AA
Age: 29 years
Admission date: 4/02/2024
Admission diagnosis: GSW in right leg with severe tissue loss
Resume: Patient admitted with GSW in right leg between 1 and 2 hours after injury. Entry wound in middle third of leg, posterolateral aspect, about 1.5 to 2 cm in diameter. With exit wound encompassing anterior and medial aspects of leg, wound about 8 x 10 cm, with exposed bone and severe loss of soft tissues, with peroneal artery injury. Comminuted tibia fibula fracture as well.

Patient went for OT to perform extensive debridement of the wound, removing as much damaged soft tissues as needed, as well as removal of of several small bone fragments without attachments, leaving a gap of about 5 cm of tibial bone in middle shaft. Copious irrigation with saline of the wound to minimize the risk of infection. Metallic splint was applied for bone immobilization. Decision to for external fixation on second surgery if available was done.

Second surgical procedure done on 9/3/24 for wound review and if possible DPC, we found still some muscle damage in need for further debridement (minimal) and partial DPC done to cover exposed bone as much as possible. Review of muscles in the area to assess posibility for muscle flap to cover exposed bone, medial soleus was not feasible to use due to massive damage, and we needed to remove the medial third of the muscle. Medial gastrocnemius muscle was found to be mostly intact, with mild areas of contusion. Some trimming done at this level in hope to be able to be used for muscle flap. Ex-fix was not possible at this time because we didn't had the equipment ready and had to be rescheduled for next day.

On 10/2/24 external fixator was applied for fracture stabilization, and medial gastrocnemius flap done to cover the soft tissue defect, after confirming the viability of the muscle. There was the need for some limb shortening to reduce the bone gap.

On 14/2/24 new dressing change of the muscle flap done in OT to review the viability and to assess if possible to perform skin graft. There was the need to remove some fascial

tissue that became necrotic, and small seroma drained from deep tissues surrounding the bone fracture, but no signs of infection.

On 19/2/24 another review of the wound, and only dressing change was done, since we consider not ready for skin graft.

On 22/2/24 skin graft was done to cover the muscle flap and the wound defect.

The patient is having a good evolution afterwards, and the graft is taking well. Last dressing done was in 9/3/24 and we found some hypergranulation in one border of the grafted area, which need removal in order to continue the healing process. The procedure is scheduled for 13/3/24.

Initial management with triple antibiotic (cefalzolin, metronidazole and gentamicin for 3 days) pain management (tramadol, ibuprofen, paracetamol), Tetanic toxoid.
Upon admission, RBS 7.6 mmol, Hb: 11.3, pulse 90x', Oxigen saturation 100%, temp 36.2°C, BP not recorded in ER
Vital signs upon admission to surgical ward (after debridement in OT): RR 20x', BP 120/80, HR 56x', temp 36.2, oxygen saturation 100%