INTRODUCTION / PURPOSE

Compartment syndrome (CS) is an unfortunate consequence of foot trauma (1). CS is a condition where increased pressure in closed fascial compartments reduces perfusion and threatens tissue survival leading to permanent atrophy and dysfunction. According to the literature, only 6% of pedal compartment syndromes are due to motor vehicle collision (MVC) (2). Commonly, once compartments are released, delayed closure is often performed followed by adjunctive split thickness skin grafting (STSG). In keeping with other analogous sites, we report an alternative technique for adjunctive procedure in a patient with CS associated with Lisfranc fracture dislocation (3).

CASE REPORT / PATIENT PRESENTATION

A 66-year-old male presented to the Emergency Department (ED) complaining of abdominal pain and right foot pain after involvement in a MVC with a forced axial load reported (Fig 1). Upon presentation, the right foot exhibited all clinical signs of CS to include edema, progression to paresthesia, and intractable pain (Fig 2a,b). Preparative radiographs showed a Lisfranc fracture dislocation with fractures of metatarsal necks of 2,3,4, and medial cuneiform (Fig 3a,b,c). Computed tomography (CT) was obtained to assess extent of osseous injury (Fig 4).

Compartments were measured within the 10 pedal compartments. Consulting with clinical findings, pressures were elevated and required urgent surgical intervention to include multiple fasciotomy fasciomy with closed reduction and perpendicular stabilization of fractures (Table 1).

PREOPERATIVE EVALUATION

COMPARTMENT PRESSURES

Table 1: Intra-compartmental pressures preoperatively

METHODS: OPERATIVE PROCEDURES

All compartments were released through two dorsal incisions along the 2nd and 4th metatarsals and another along the proximal plantar arch. Muscle was sent for surgical pathology and findings were consistent with myonecrosis. The Lisfranc fracture was stabilized at the time of the index surgery and fasciomy, whereas, the metatarsal fractures were stabilized subsequent to incision healing. Prolonged reduction and pinning was implemented (Fig 5a,b). The incisions were managed postoperatively with gradual closure and progressive weekly tensioning using vessel loops (Fig 5a,b,c).

RESULTS: 1 YEAR FOLLOW UP

At 12 month follow-up, the patient reports the ability to weight-bearing unassisted without pain. Healing of all incisions was established in under six weeks through local wound care consisting of xeroferm without the use autogenous STSG. Radiographs revealed healing of all fractures with restoration of anatomic alignment (Fig 6a,b).

CONCLUSION

Acute traumatic compartment syndrome of the foot after Lisfranc fracture dislocation, has been shown to occur in as high as 34% and may result in significant motor and sensory deficits, chronic pain, stiffness, and deformity (4,5). In the case presented, the patient presented to the abductory section of the ED for evaluation after the injury. Based on patient edema, common practice would dictate applying a compression dressing and splint as a means of terminating the swelling in preparation for surgical reconstruction. In this case, the patient was meticulously worked up for compartment syndrome given the presenting signs and symptoms. As a result, he was urgently taken to the operating room, reduced, stabilized, and decompressed. Traditionally, fasciotomy sites of wounds such as this have been treated through healing by secondary intention, or split-thickness skin grafting (3). In this case, fasciotomy wound management, consisted of gradual closure with progressive weekly tensioning using vessel loops. The patient went on complete soft tissue healing within 6 weeks.

REFERENCES