

## **IOTA Poster #IOTA 11**

### **Epidemiology, Diagnosis, and Treatment of Vascular Injuries in Upper Extremity Trauma in a Tertiary Center**

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**Purpose:** Although relatively uncommon, vascular injuries of the upper extremity are serious injuries with significant implications for viability and functional adequacy. The purpose of the study was to document the epidemiology, diagnosis, and surgical management of these injuries in a tertiary hand and upper extremity trauma center.

**Methods:** From June 2010 to December 2017, patients who suffered upper extremity vascular injury either independently or in the context of a major orthopaedic trauma were retrospectively recorded. Patients were categorized into 3 groups according to the location of the lesion: (1) axillary artery injury, (2) brachial artery injury, and (3) radial-ulnar artery injury. Age, sex, coexistence or not of a fracture, diagnostic access and method of surgical repair of the injuries were recorded.

**Results:** A total of 80 patients were recorded of, whom 80% were men, 14% women, and 6% children with a mean age of 34.6 years (range, 5-71 years). Of these, 6 (7.5%) had injured axillary artery, 15 (18.75%) brachial artery, and the remaining 59 (73.7%) radial, ulnar, or both arteries. In 35 patients (43.8%) the vascular lesions presented as "spaghetti wrist" injuries, in 30 (37.5%) there were coexisting fractures that required osteosynthesis, and in 53 (66.3%) there were coexisting nerve transections. Among patients with pure soft-tissue injuries, the predominant mechanism of injury was glass trauma. Preoperative "hard signs" were observed in 75% of patients, while CT arteriography was performed in 44 patients (55%) to confirm the diagnosis. 3 patients underwent amputation due to prolonged ischemia (>6 hours), high trauma scores (ISS >15, MESS>7), oxidation, coagulation disorders, and hypothermia (lethal triad). In 49 of 80 patients an end-to-end anastomosis of the arteries was performed, while in the remaining 31 vein graft (intervention or bypass) was used.

**Conclusion:** Vascular injuries of the upper extremity are rare and occur either independently or in the context of major combined extremity injuries. Strong diagnostic suspicion, imaging, and timely transfer of the patient to organized trauma centers primarily ensure patient survival and secondarily limb functionality.