Limb salvage in extremity vascular trauma: Our experience

Arunagiri Viruthagiri
Senior Consultant Vascular and Endovascular Surgeon, Kauvery Hospitals, Trichy.

Abstract

Aim

We analysed our limb salvage outcomes in patients who presented with extremity vascular trauma.

Material and Methods

Place of Study: Kauvery hospital, Trichy

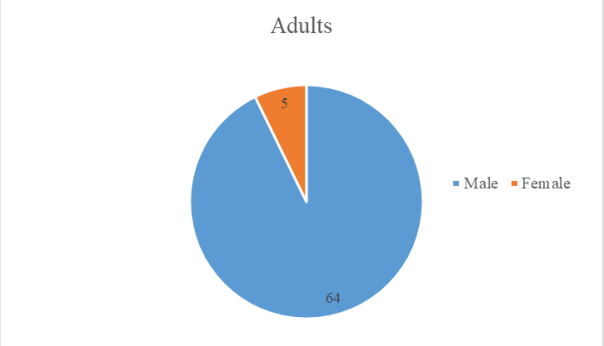
Duration: 4 years (March 2019–March 2023)

Type: Retrospective analysis

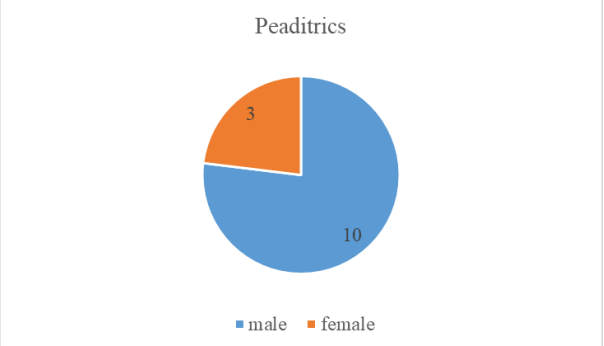
Total number of patients: 82.

Results

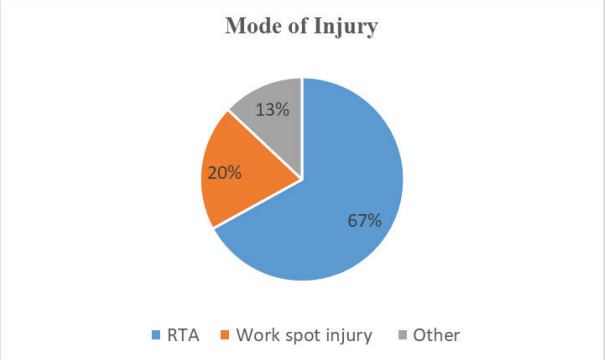
1. Demographics
Adults - 69
Total (M: F=64:5)



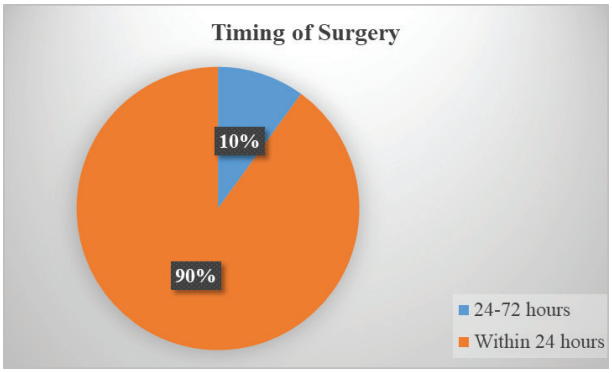
Paediatric - 13
Paediatric (M: F=10:3)



2. Mode of Injury / Investigation



3. Timing of Surgery from Presentation



4. Vascular injury/Vessel involved
Upper limb - 36
Lower limb - 46

5. Vascular procedure Performed
Interposition vein graft - 68 patients (82%)
Primary repair - 5 patients (6%)
Fasciotomy - 52 patients (63%)
Amputation - 8 (10%) Primary-5, Secondary-3
Ligation - 4 (5%)

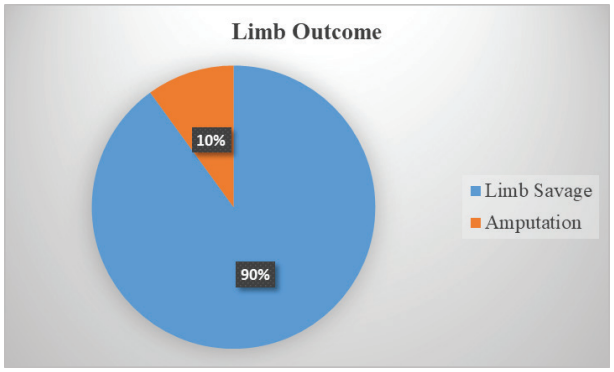
6. Associated injuries
Skeletal fractures – (66%)
a) Compound - 26 patients
b) Simple - 14 patients
c) Supracondylar - 14 patients

Other injury
a) Bladder - 2 patient
b) Nerve - 9 (median nerve most common)

7. Associated procedures

Primary Ortho Procedure - 54	
K Wire	5
ORIF	15
Closed Reduction	4
External Fixator	30
Plastic Surgery Procedure - 44	
SSG	24
Tendon and Nerve Repair	12
Flap Cover	6
Brachial Plexus Exploration	2

8. Limb Savage vs Amputation



9. Mortality - 3 patients (3.6%)

a) Patient 1 and 2 run over by bus- multiple long bone injury with pelvic and perineal injury - lost to sepsis.(one was doctor)

b) Patient 3- delayed presentation - crush injury - debridement with vascular repair and free flap- blow out on day 7 secondary to infection

Discussion

PROOVIT Registry

1) The American Association for the Surgery of Trauma Prospective Observational Vascular Injury Treatment (PROOVIT) registry:

2) Multicenter data on modern vascular injury diagnosis, management, and outcome

3) A total of 542 injuries from 14 centers (13 American College of)

4) Surgeons verified Level I and 1 American College of Surgeons verified

5) Level II) have been captured since February 2013.

6) Data for 1 year and 6 months.

Criteria	Kauvery Hospitals (%)	PROOVIT Registry (%)
Male	91	70.5
Blunt Injuries	82	47
Extremity Vascular Injury (n=82)	93	44
Skeletal Injury	66	NA
Hypotension	16	11.8
CT Angiogram	78	40
Injury Pattern Transection	42	24.3
Occlusion	48	17.3
Ligation (Vein and Pseudo Aneurysm)	5	5.7
IPVG (GSV)	82	23
Re-intervention	1	7.7
Amputation (n= 8)	10	7.7
Mortality	3.6	12.7

Our Strategies

1) Prefer Posterior approach for popliteal artery injury where P3 is reformed.

2) Always autologous conduit in Trauma.

3) Radical debridement.

4) Soft tissue Cover- Plastic Surgeons involved.

5)Skeletal stabilization- Upfront unless limb immediately threatened.

Conclusion

1) Our experience Limb Salvage 90%
2) Early intervention (Within 24 hr)
3) Using autologous conduits (100%)
4) Skeletal stabilization (Upfront) prior to repair.

Areas to introspect

1) Functional outcome at 6 months and 1 year.

2) PGs of Vascular, Orthopaedics and Plastic Surgery to jointly collect and contribute to data on Extremity Vascular Trauma prospectively.

3) Monitor timelines from presentation to imaging to OR.

Acknowledgements

Orthopaedic team - Dr. PRR Sir, Dr SMC Sir and Dr. Kalaivannan.

Plastic team - Dr. Skanda, Dr. Murali.

Audit team - Dr. Ramu
Dr. Rajesh - Medical Admin.