

# Adult ankle fracture-dislocation reduction guideline

## A quality improvement project-East Surrey Hospital

E. Shammeseldin, P. Raut, S.A. Jahangri, A.P. Kantak

### Impact

- Third most common fracture that needs hospitalization.
- Occupies 10% of fractures' bed stay.
- Urgent reduction and splinting if clinically deformed as per **BOAST**.

### Problem

- No clear local guidance for reduction technique for juniors in ED or T&O.
- Avoidable re-manipulation, sedation/GA, and radiation.
- More time and usage for trust resources.

### Methods

- Define agreed X-ray parameters from references by authors.
- ED data base from December 2020 to April 2021 for initial assessment.
- Define closed adult ankle fracture that needs reduction (either clinically or by X-ray parameters).
- Apply intervention (Sep. 2021) and reassess in 3 months time.

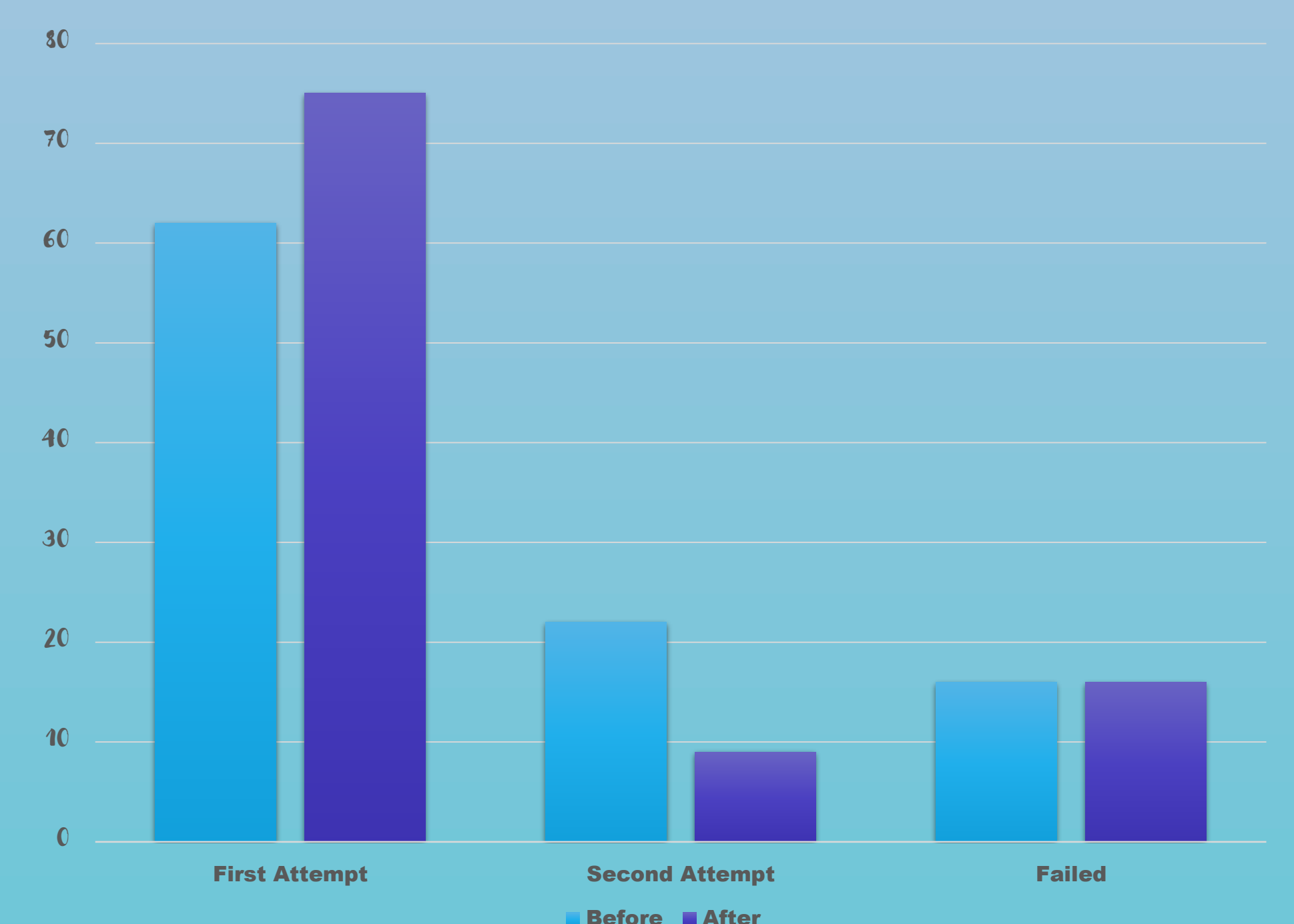
### Initial assessment

- From 53 patients, 13 cases included in assessment.
- Range of 32-81 years.
- Variety of fracture patterns, analgesia/ anesthesia methods.
- 38% were manipulated by T&O (SHO/Reg) and 62% by ED (different grades).

### Intervention

- A poster distributed in ED and added to intranet.
- Youtube® Video demonstrating the technique.
- Online teaching to teams for the new guidelines.

### Outcome



AP view	Lateral view	Mortise view (15-20° foot internal rotation)
Distal tib/fib overlap >1cm	Centre of tibia is located on talus body dome	Distal tib/fib clear space is <6mm
Dime Sign=C-shape line between lateral malleolus and lateral aspect of the talus	Fibula shadow located on posterior third of the tibia	
Superior and medial joint line space are equal (4-5mm)		

**Ankle Fracture/Dislocation Manipulation Guidelines 2021<sup>2,3</sup>**

**DEFINE<sup>1</sup>:**

1. Clinical deformity, skin status, NV status.
2. Fracture = uni/bi/trimalleolar, other fractures.
3. Talar shift = medial/lateral/anterior/posterior

**SETUP<sup>2</sup>:**

1. Patient supine with hip and knee flexed at 90°.
2. Assistant to give counter-traction on distal posterior thigh.
- ❖ Analgesia/sedation decided by ED as appropriate.
- ❖ Cast applicator to measure and prepare backslab.

**STEP 1 (if only dislocated):**

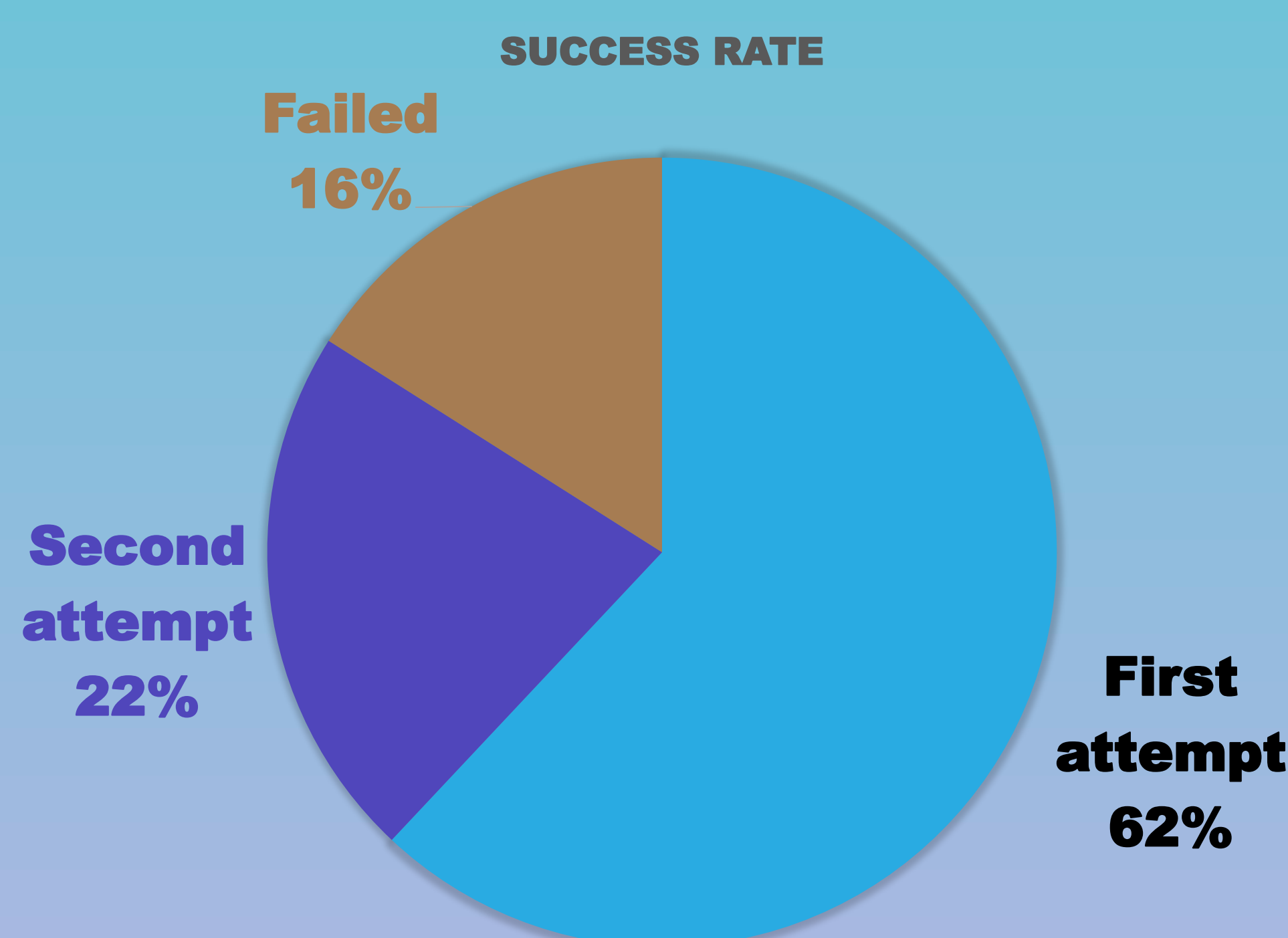
1. One hand on heel, another hand on foot.
2. Distal Traction (with assistant providing counter-traction) to reduce ankle back into joint.
3. Maintain neutral ankle position (90°).
- ❖ Avoid excessive ankle dorsiflexion (risk of posterior talus dislocation).

1. Case courtesy of Dr Henry Knipe, Radiopaedia.org, rID: 30190  
2. Copyright for T&O Department, SASH  
3. Special Thanks to Plaster Room Team

Page 1

### Conclusion:

- QIP improved outcome by 13%.
- Static failure rate could be due to practitioner, patient and fracture factors.
- Could be more effective by including in induction/teaching programs of departments with senior support for practice.



### References

1. Ann R Coll Surg Engl. 2019 Mar; 101(3): 208–214.
2. British Orthopaedics Association Standards for Trauma (BOAST) guidelines of ankle fractures, Aug.2016.
3. Scott, L. J. , Jones, T., Whitehouse, M. R., Robinson, P. W., & Hollingworth, W. (2020). Exploring trends in admissions and treatment for ankle fractures: A longitudinal cohort study of routinely collected hospital data in England. BMC Health Services Research, 20, [811 (2020)].
4. K.A.Egol, K.J,Koval,J.D.Zukerman ,Handbook of Fractures,5th Ed.2015,
5. Case courtesy of Andrew Murphy, Radiopaedia.org, rID: 68544

**Ankle Fracture/Dislocation Manipulation Guidelines 2021<sup>2,3</sup>**

**STEP 2:**

A. (lateral talar shift, most common)

1. One hand on the heel to push medially while other hand apply counter pressure on mid leg (use palms, not fingers).
2. Maintain neutral ankle position (90°) by hand or torso.
- ❖ Donot pull the heel

B. (Medial talar shift)

1. One hand on the heel to push laterally while other hand apply counter pressure on mid leg (use palms, not fingers).
2. Maintain neutral ankle position (90°) by hand or torso.
- ❖ Donot pull the heel

**CASTING & FINAL CHECK:**

1. One hand to hold big toe making ankle in neutral position + inversion.
2. Apply well moulded, padded below knee backslab with U-shape support (MTPJ free)
3. Apply medial or lateral pressure as per STEP 2 while cast hardening to maintain reduction
4. Check NV status + repeat XR>>>Documentation+ strict high elevation.
- ❖ Demonstrative video by T&O SASH: <https://youtu.be/TnXozbQqNvk>  
Or search for :ankle manipulation Surrey

1. Case courtesy of Dr Henry Knipe, Radiopaedia.org, rID: 30190  
2. Copyright for T&O Department, SASH  
3. Special Thanks to Plaster Room Team

Page 2

