

## 'Empty Toe' Phenomenon: A Unique Trauma Case

Sir,

Closed traumatic degloving injuries of the lower extremity are usually seen in motor vehicle accidents (MVA). There is no skin disruption on the toe but part of the toe is empty of bony contents. 'Empty toe' is a rare type of closed degloving injury whose management is not well established.<sup>1,2</sup> Emergency physicians and orthopedic surgeons should be aware of this presentation for prompt diagnosis and early management to avoid a dismal prognosis.

Patients with closed degloving injuries of lower extremities are often polytrauma victims. These injuries result from a shearing force that causes soft tissue separation from deeper fascial planes in the absence of traumatic skin disruption. Underlying injury is easily overlooked due to preserved skin integrity. Gangrenous necrosis of soft tissues occurs due to the associated transection of perforating vessels leading to a grim prognosis.

A 39-year gentleman with no comorbid presented to the emergency department with twisting injury to the left foot due to MVA. There were no other associated injuries. There was no loss of consciousness or retrograde amnesia. On local examination of the left foot, there was discoloration of the third, fourth, and fifth toes and dorsum of the foot. The dorsalis pedis pulse was feeble and the posterior tibial pulse was absent. There was a loss of sensations in the plantar and lateral aspects of left foot.

On plain radiographs of the left foot, there were fractures of the distal phalanges of the fourth and fifth toes with dislocation of the distal interphalangeal joint of the left fourth digit. Closed degloving injury of the left fifth toe was noted.

The patient underwent initial wound debridement immediately. After three days of observation, the patient underwent debridement again. Intraoperative findings included dead necrotic skin on the left foot extending from the ankle to the lateral aspect of the foot. The dead necrotic skin was removed with saline washings and a vacuum dressing was applied. The patient was discharged with follow-up advice. After five weeks, he underwent a free flap placement procedure with the flap obtained from the anterolateral thigh. Granulation tissue was noted on the left foot extending from heel to dorsum of the foot covering the plantar surface with digital sparing. Necrosed digits of the left foot were spared. The patient underwent a relook of the free flap. Intraoperative findings included hematoma around anastomosis with venous congestion in the flap. The patient was then started on anticoagulants. Follow-up at 02 months revealed the development of flexion contracture of the left big toe. There was decreased range of movements in the left foot. This time, the

patient underwent release of the tight Achilles tendon and the release of contracture of the big toe along with thinning of the flap.

The purpose of reporting this case is to highlight its prompt diagnosis and management. It is associated with vascular injury of the lesser toes. Radiographic examination showed soft tissue shadow with no bones; hence, the empty toe phenomenon.<sup>3,5</sup> Necrosis occurs despite the open reduction of the toe bones to allow distal perfusion which warrants early recognition of this condition with careful physical examination coupled with radiographs and prompt reduction to help minimise the risk of digital loss.

### COMPETING INTEREST:

The authors declared no competing interest.

### AUTHORS' CONTRIBUTION:

SS, JK, RH: Contributed significantly while drafting the letter. All the authors have approved the final version of the manuscript to be published.

### REFERENCES

- Hudson DA, Knottenbelt JD, Krige JE. Closed degloving injuries: Results following conservative surgery. *Plas Reconstr Surg* 1992; **89(5)**:853-5. doi: 10.1097/00006534-199205000-00013.
- Bingham AL, Fallat LM. Empty toe phenomenon: A rare presentation of closed degloving injury of the foot. *J Foot Ankle Surg* 2016; **55(4)**:842-9. doi: 10.1053/j.jfas.2015.06.018.
- Tang CL, Lee SS, Lin TY, Lin YK, Yeh YS, Lin HL, et al. Empty toe: A unique type of closed degloving injury with dismal outcome. *Am J Emerg Med* 2013; **31(1)**:263. doi: 10.1016/j.ajem.2012.03.031.
- El-Adwar L, Arafa AG. A rare injury of the thumb similar to degloving. *J Bone Joint Surg Am* 1975; **57(7)**:998.
- Matelic TM, Manoli A II. Closed degloving injury of the fifth toe. *J Orthop Trauma* 1994; **8(3)**:265-6. doi: 10.1097/0005131-199406000-00017.

Sadaf Sheikh<sup>1</sup>, Junaid Khan<sup>2</sup> and Rizwan Haroon<sup>2</sup>

<sup>1</sup>Department of Emergency Medicine, Fujairah Hospital, Fujairah, United Arab Emirates

<sup>2</sup>Department of Orthopedics, The Aga Khan University Hospital, Karachi, Pakistan

Correspondence to: Dr. Sadaf Sheikh, Department of Emergency Medicine, Fujairah Hospital, Fujairah, United Arab Emirates

E-mail: sheikh.sadaf@gmail.com

Received: November 26, 2021; Revised: January 29, 2022;

Accepted: March 27, 2022

DOI: <https://doi.org/10.29271/jcpsp.2022.08.1102>

