AMSER Case of the Month October 2025

55 y.o. F presenting with residual foreign body in the left hand after being stung by a sea urchin 3 weeks prior

Sonia Patel MS3, Cooper Medical School of Rowan University

Erica Poletto MD, Cooper University Hospital

Cooper University Hospital

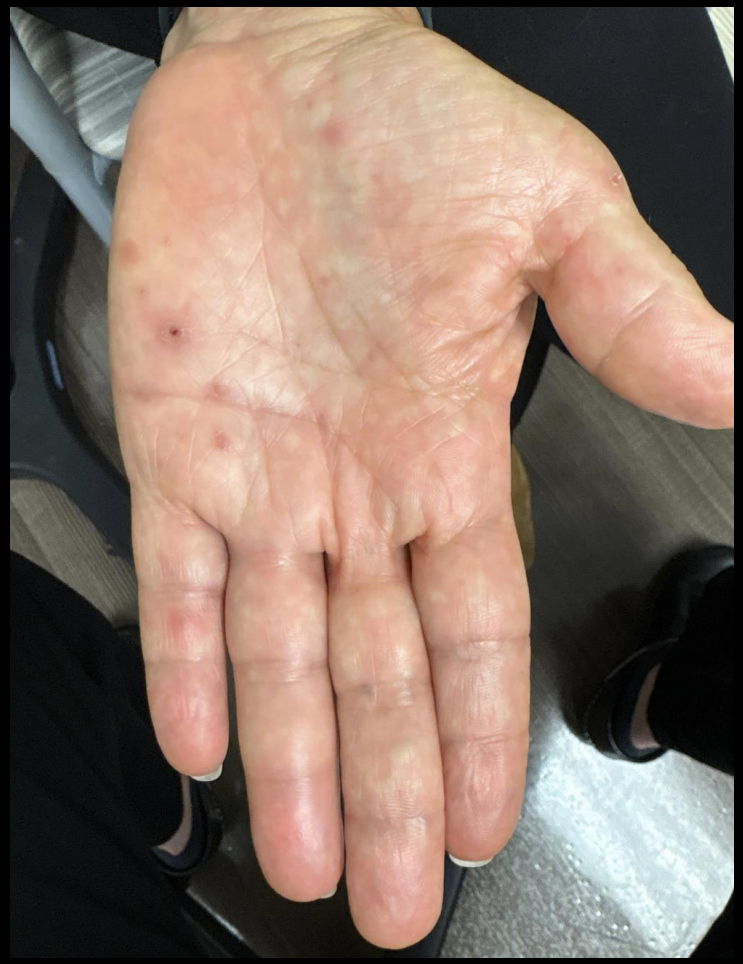
AMSER

Patient Presentation

- On May 1st, patient was stung multiple times by sea urchin on her left hand in Hawaii.
- She sought out medical care at her hotel which resulted in a vinegar soak and administration of an updated Tdap vaccination. She denies fever and did not receive any antibiotics or imaging at this time.
- Patient noted improvement in her hand the following week.
- Two weeks following the incident, she developed swelling and pain in the left hand after swimming in the ocean.
- On May 20th, the patient presented to Cooper Urgent for swelling and pain that progressed to compromised grip strength, development of joint pains, and appearance of small dots on the skin.
- She has no allergies, past medical or surgical history, does not smoke or use smokeless tobacco. She reports current alcohol use and marijuana use.
- Vitals: BP: 131/86, Pulse: 75, Temp 97 °F, RR: 18, SpO2: 98%, Pain level: 7

Patient Presentation

- Physical Exam: swelling to the fingers on the left hand, especially digits 3-5. No flexor tendon tenderness, no erythema, normal ROM, and positive NVI.



Cooper University Hospital

AMSER

Pertinent Labs

- No labs were obtained

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

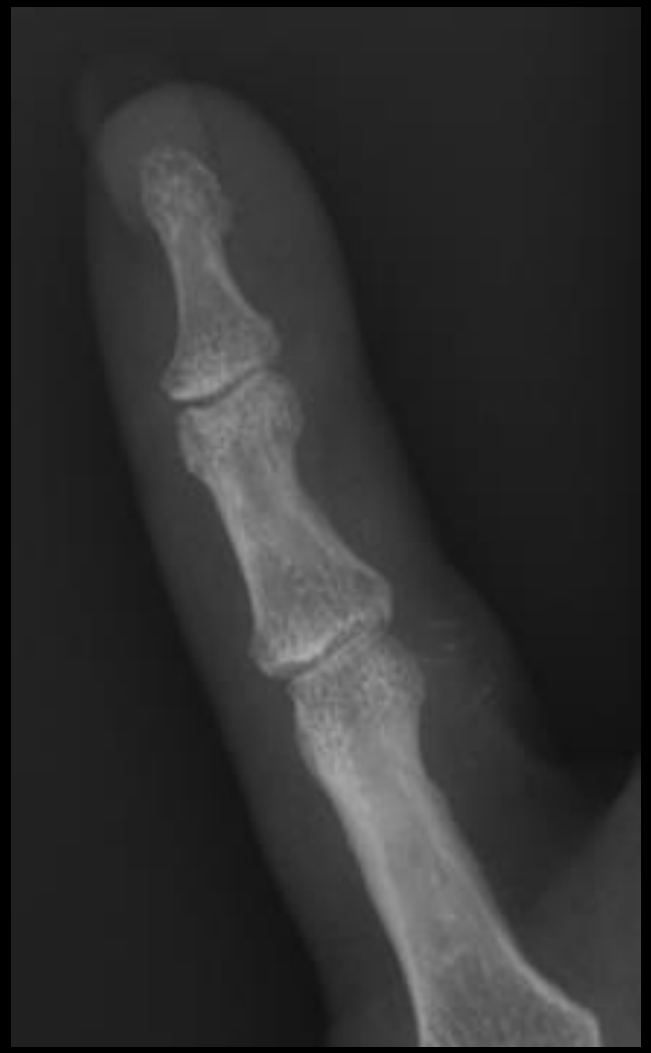
Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Hand trauma, initial exam	3148778	Radiography hand	<0.1 mSv ☢		Usually appropriate
		US hand	0 mSv O	0 mSv [ped] O	Usually not appropriate
		MRI hand without and with IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
		MRI hand without IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
		CT hand with IV contrast	<0.1 mSv ☢		Usually not appropriate
		CT hand without and with IV contrast	<0.1 mSv ☢		Usually not appropriate
		CT hand without IV contrast	<0.1 mSv ☢		Usually not appropriate
		Bone scan hand	1-10 mSv ☢☢☢		Usually not appropriate

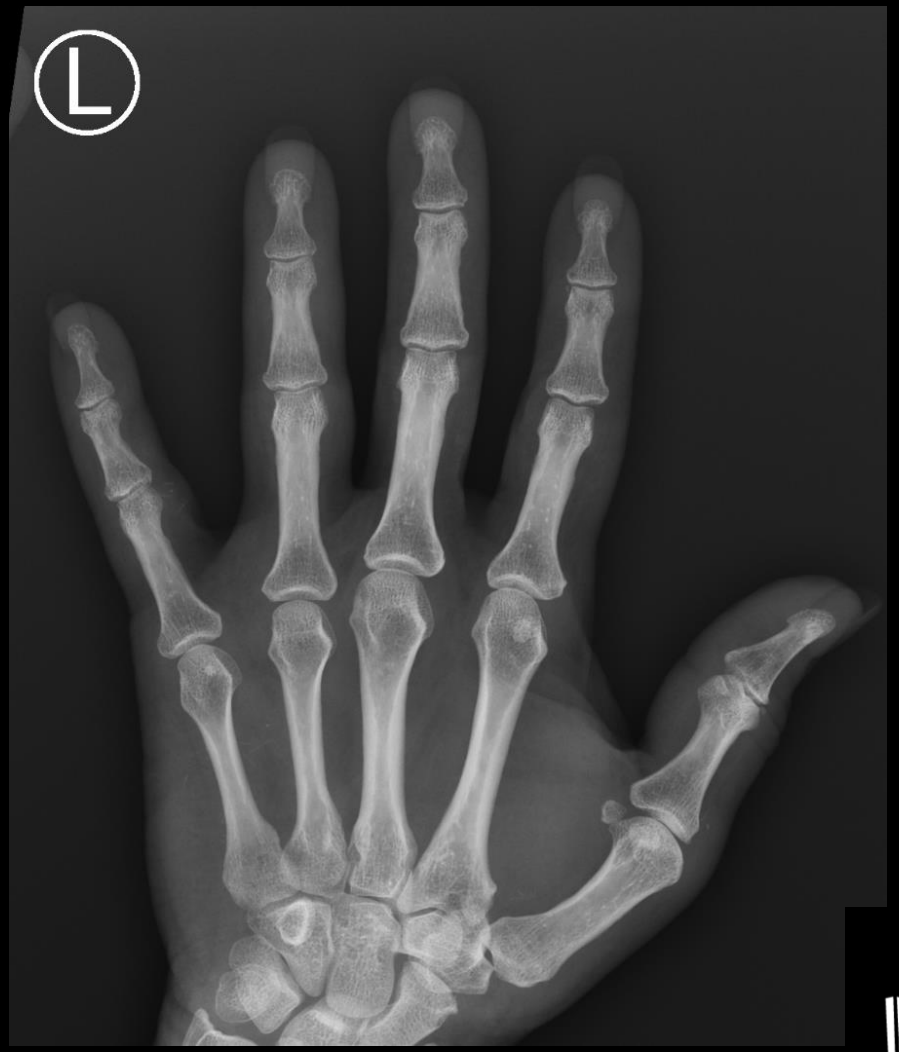
This imaging modality was ordered by the ER physician

Cooper University Hospital

AMSER

Findings (unlabeled)





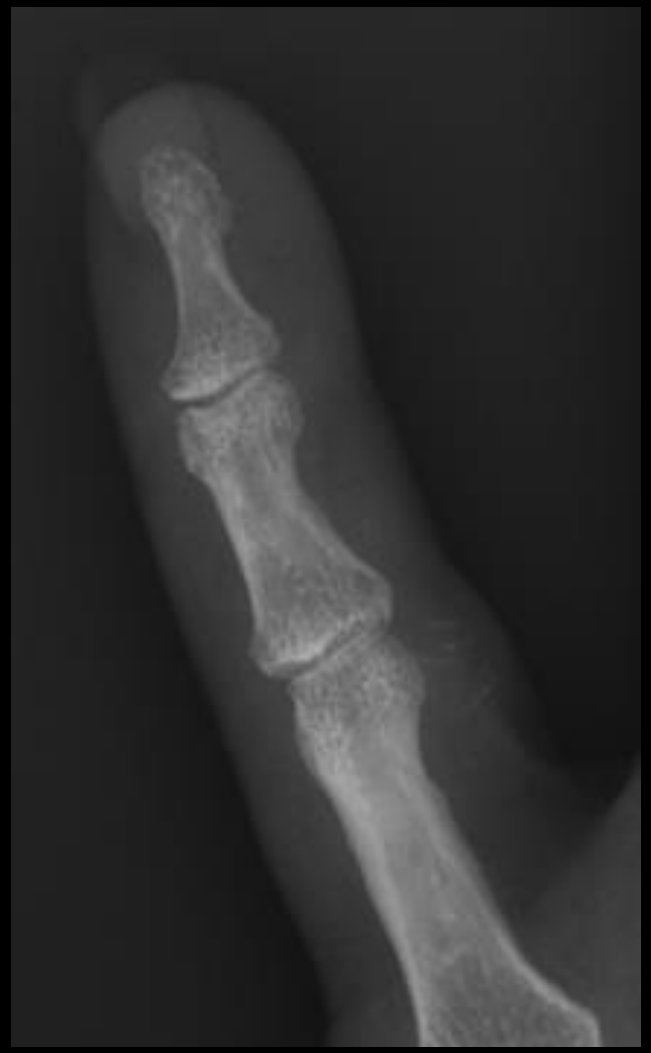
Cooper University Hospital

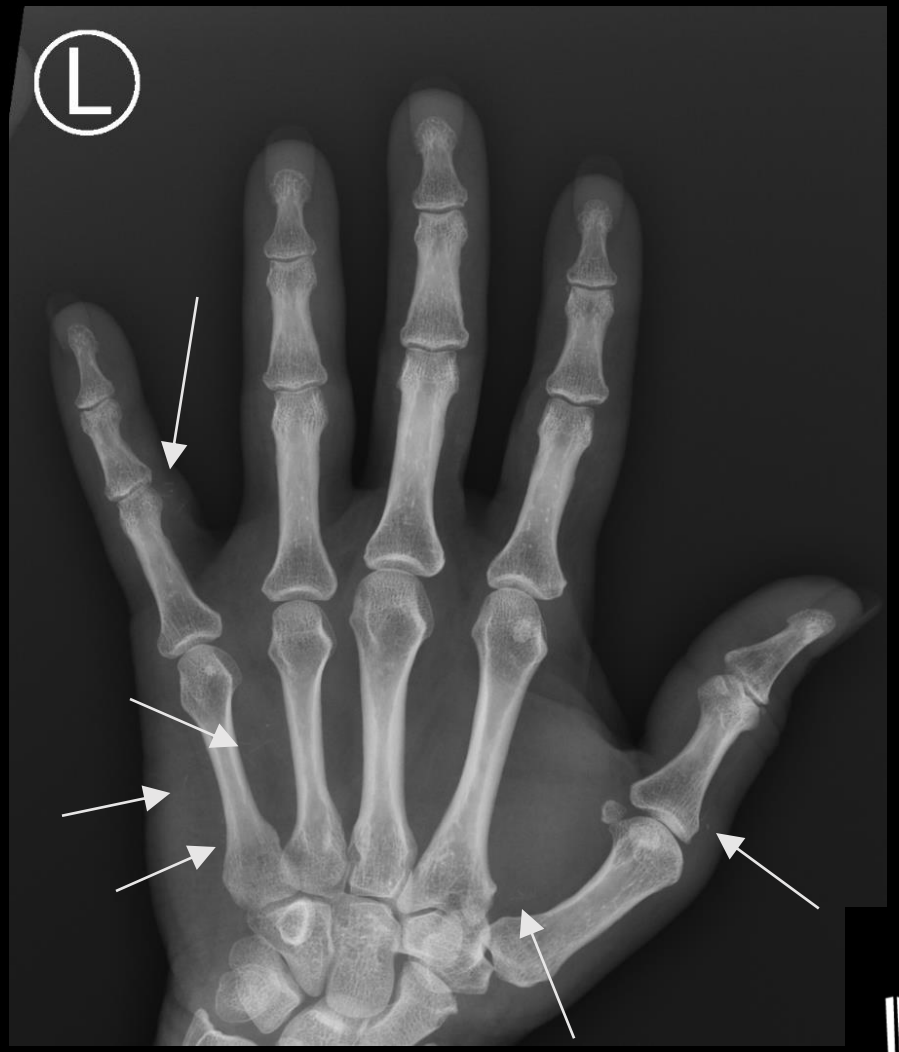
AMSER

Findings (labeled)

Numerous radiopaque foreign bodies in the fifth digit, base of the first digit, palm, and hypothenar eminence representing retained sea urchin barbs

Soft tissue swelling in the fourth and fifth digits





Cooper University Hospital

AMSER

Final Dx:

Retained foreign bodies due to puncture wound from sea urchin

Case Discussion

- Hawaii's waters contains roughly 51 sea urchins per square meter[1], with the most common species being the *Echinometra mathaei*.[2]
- Annually, there are roughly 1800 exposures to sea urchin spines throughout the U.S., with 500 of these exposures requiring treatment.[3]
- Sea urchin spines are composed of nonharmful calcium carbonate; however, toxins inside the spines such as histamine, serotonin, glycosides, steroids, proteases, hemolysins, cholinergic and bradykinin secretions can be present and cause inflammatory reactions in the skin or systemically.[4,5]
- Only 80 of 700 sea urchin species contain spines with these toxins.[5]
- Most spikes will remain in the epidermal and dermal layer of the skin.[6]

Case Discussion

- Acute Presentation: Upon first being stung, patients may report localized symptoms of erythema, pain, bleeding, myalgias, and edema.[5,8] If enough toxin is released from the spine, patients may experience systemic symptoms of hypotension, paresthesia, weakness, or numbness.[4]
- Treatment Options for Acute Presentations:
  - Soak the wound in hot water to remove spines or vinegar to dissolve spines[5,9]
  - Remove spines with forceps and needle[5]
  - Freeze skin with liquid nitrogen and remove spines once blisters have formed[5]
  - Perform punch biopsy of the lesions[5]
  - Destroy spines with laser ablation[5,7,8]
  - Administer Tdap if it has been more than 5 years since last dose or if unimmunized[5]

Case Discussion

- Delayed Presentation: Weeks to months later, violet papules may form at the site of spike injection.[6] Under the skin, granulomatous nodules with umbilication and hyperkeratosis may form. Most commonly, the granulomas are sarcoid, but can be tuberculoid, suppurative, necrotic, or abscess-forming. Within 1-12 months, the spines can also cause infectious or inflammatory tenosynovitis.[5,10]
- Treatments for Delayed Presentations:
  - Antibiotics and debridement for infectious synovitis
  - Surgical removal of the spines[5]
- Takeaways: It is important to advise patients for continuous monitoring of the lesions as they can progress to serious consequences. Radiography or ultrasound should be used for evaluation of acute presentations. Ultrasound or MRI should be used to examine the lesions if patients are continuously symptomatic.[11]

References:

1. van Woesik KJ, Li J, Asner GP. Scaling-up coral reef carbonate production: Sea-urchin bioerosion suppresses reef growth in Hawai'i. *PLOS One*. 2025;20(5):e0324197. doi:10.1371/journal.pone.0324197

2. Rodney I. An explosion of sea urchins threatens to push coral reefs in Hawaii 'past the point of recovery'. *CNN*. June 21, 2025. Published online. Accessed [date you accessed]. Available at: https://www.cnn.com/2025/06/21/climate/coral-reef-hawaii-urchins m.facebook.com+4ground.news+4krdo.com+4

3. Gelman Y, Kong EL, Murphy-Lavoie HM. Sea Urchin Toxicity. [Updated 2023 Aug 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK536934/

4. Dahl WJ, Jebson P, Louis DS. Sea urchin injuries to the hand: a case report and review of the literature. *Iowa Orthop J*. 2010;30:153-156.

5. Brailsford CJ, Elston DM. Aquatic Antagonists: Dermatologic Injuries From Sea Urchins (Echinoidea). *Cutis*. 2024;113(6):255-257. doi:10.12788/cutis.1034

6. Short JH, Sulit DJ. Sea urchin spines in the stratum corneum: an early finding related to trauma. *Journal of Cutaneous Pathology*. 2014;41(3):322-325. doi:10.1111/cup.12257 ResearchGate+3PubMed+3Wiley Online Library+3

7. Gungor, Sule MD[1]; Tarikçi, Nagehan MD[1]; Gokdemir, Gonca MD[1]. Removal of Sea Urchin Spines Using Erbıum-Doped Yttrium Aluminum Garnet Ablatıon. Dermatologic Surgery 38(3):p 508-510, March 2012. | DOI: 10.1111/j.1524-4725.2011.02259.x

8. Yuki Muroyama, Masato Nagumo, Fumiyoshi Fujishima, Takashi Suzuki, Sea urchin granuloma: a chronic complication of sea urchin spine injuries, *QJM: An International Journal of Medicine*, Volume 117, Issue 1, January 2024, Pages 77–78, https://doi.org/10.1093/qjmed/hcad238

9. Barish, R. A., & Arnold, T. (2024, 2024/12). Sea Urchin Stings. Merck Manual. https://www.merckmanuals.com/professional/injuries-poisoning/bites-and-stings/sea-urchin-stings

10. ROCHA G, FRAGA S. Sea Urchin Granuloma of the Skin. *Arch Dermatol.* 1962;85(3):406–408. doi:10.1001/archderm.1962.01590030104017

11. Schwartz Z, Cohen M, Lipner SR. Sea urchin injuries: a review and clinical approach algorithm. *J Dermatolog Treat*. 2021;32(2):150-156. doi:10.1080/09546634.2019.1638884

Cooper University Hospital

AMSER