Craniofacial Injury Patterns Following the Beirut Pager Explosion: A Retrospective Chart Review

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BACKGROUND

- September 2025: coordinated pager detonations across Beirut — thousands of casualties
- Novel blast mechanism: handheld devices detonating at face level
- Disproportionate injuries to the face, hands, and eyes
- Spectrum: lacerations to complex maxillofacial and cranial fractures
- Threatens airway, vision, neurologic integrity — triage is critical

OBJECTIVE

- Characterize epidemiology, injury patterns, and management of facial injuries
- Identify common patterns and operative needs
- Inform preparedness for future mass-casualty events

METHODS

- Retrospective chart review, tertiary care center (AUBMC), Beirut
- September 17–21, 2025 — five days post-incident
- Included: pager-explosion craniofacial trauma (ENT–H&N team)
- Excluded: isolated ophthalmologic injuries · incomplete records · transfer before imaging
- CT patterns: fractures, foreign bodies, lacerations, hemosinus, CSF leaks
- Management strategies and OR priority over five days
- Descriptive statistics only

STUDY NOTES

- IRB approval: AUBMC BIO-2024-0397
- Demographics limited — disaster-protocol IDs; mostly middle-aged men

RESULTS

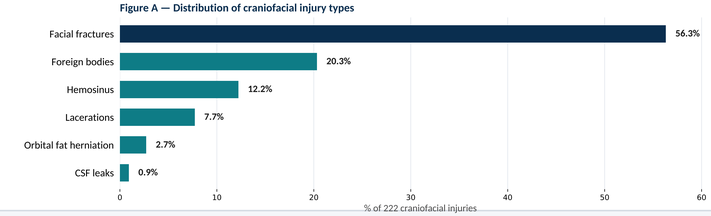
69

patients with craniofacial injuries

222

craniofacial injuries identified

Figure A — Distribution of craniofacial injury types



- Fracture sites: maxillary sinus (n=29) · frontal sinus (n=26) · orbital walls (n=23)
- 118/125 fractures (94%) managed conservatively · 77 procedures, mostly debridement + complex repair (57, 74%)
- Two patients required immediate life-saving surgery on day 1: urgent tracheostomy + neck exploration for laryngeal fracture; emergent neck exploration for open cervical wound

DISCUSSION

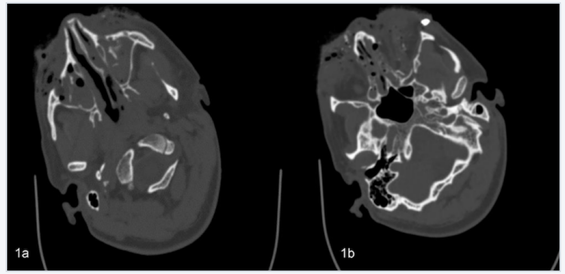
- Novel mechanism → distinctive pattern: face-level detonation produced combined penetrating, blunt, and burn injuries
- Contrasts with conventional explosions (e.g., Boston Marathon: lower-extremity trauma)
- Disaster protocols activated: ATLS · electives cancelled · ENT central to airway/triage
- Tiered strategy: immediate airway/hemorrhage control → staged urgent repair (days 2–5) · conservative care where possible
- Preparedness priorities: difficult-airway readiness · imaging prioritization · adaptable OR triage
- Limitations: retrospective · no long-term follow-up · limited demographics · ophthalmologic injuries excluded

CONCLUSION

- Unique craniofacial trauma pattern from handheld devices detonating near the face and neck
- Managed with rapid triage, conservative fracture care, selective urgent surgery, multidisciplinary collaboration
- Practical lessons for future mass-casualty preparedness

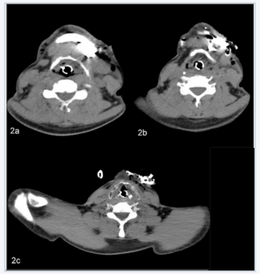
REPRESENTATIVE IMAGING

Figure 1



Comminuted frontal sinus fractures, anterior & posterior tables

Figure 2



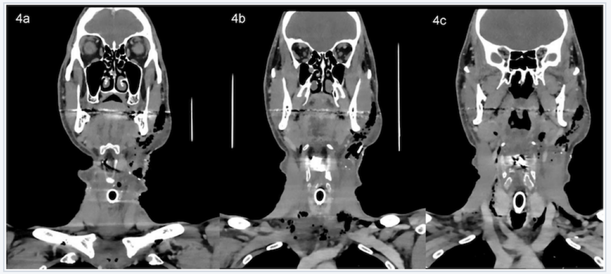
Neck: retained foreign bodies, subcutaneous emphysema

Figure 3



Frontal sinus fracture with pneumocephalus

Figure 4



Coronal: extensive craniofacial fractures, soft-tissue disruption

Figure 5



(a) Contaminated wound (b) retrieved fragments (c) after debridement

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Facial Plastic and Reconstructive Surgery