

**IMAGES IN EMERGENCY MEDICINE**

Trauma

# Elderly woman with proptosis after head injury

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**FIGURE 1** Photograph of the patient's face, with peri-orbital ecchymoses, proptosis, and bulbar subconjunctival emphysema (black lines)

## 1 | CASE PRESENTATION

An 82-year-old woman with no medical problems presented after a mechanical fall. She had no loss of consciousness, eye pain, or visual changes. There was marked ecchymoses, proptosis, bulbar subconjunctival emphysema (Figure 1) with medial, and lateral peri-orbital tenderness and crepitus. Extra-ocular muscles were intact with pupils equal and reactive, no afferent pupillary defect, 20/20 vision, and intra-ocular pressure of 22 mmHg. A computed tomography (CT) scan of the face showed orbital emphysema with air tracking anterior and posterior to the globe (Figure 2) with infra-orbital foramen fracture and a



**FIGURE 2** Computed tomography scan of the face with anterior and posterior orbital emphysema (white lines)

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non-displaced inferolateral orbital wall fracture extending through the posterior maxillary sinus. The patient was discharged home after ophthalmology consultation without any subsequent visual impairment.

## 2 | DISCUSSION

Orbital emphysema is the accumulation of air in the orbital soft tissues most commonly after traumatic orbital fractures,<sup>1</sup> although diverse mechanisms such as sneezing, pulmonary barotrauma, and infections have been reported.<sup>2</sup> Optimal initial radiographic evaluation is with CT,<sup>3</sup> which effectively identifies both air and orbital fractures. Ultrasound or magnetic resonance imaging have a limited diagnostic role but may identify globe pathology, soft tissue, or vascular injuries. Air forced into the peri-orbital spaces are trapped by the soft tissues, which act as a 1-way ball valve. Air usually accumulates superior and laterally,<sup>4</sup> and increased intra-ocular pressures can result in vascular compromise and orbital compartment syndrome. If there is evidence of increased intra-ocular pressures, decreased vision, or afferent pupillary defect—rapid orbital decompression should be pursued. Needle decompression can be obtained by insertion of a 19-gauge needle (attached to a

10 milliliter syringe filled with 2 milliliter of 1% lidocaine) just inferior to the superior orbital rim.<sup>4</sup> Retract the plunger until air stops returning (can visualize bubbles through the fluid) and resistance is noted.

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