Ear Drainage After Trauma

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A restrained 20 year old male driver presents after a rollover motor vehicle collision. He is repetitive after sustaining a loss of consciousness, but is a Glasgow Coma Scale of 15 on arrival. He is complaining of left ear and shoulder pain. He has no focal findings other than a ruptured left tympanic membrane (Figure).

A “halo” or “ring” sign, occurs when cerebrospinal fluid (CSF) mixes with blood on an absorbent surface. The blood forms a spot in the center and a lightly stained ring forms a halo around it. The halo sign is reliable for detecting CSF but not exclusive. Saline and water, can also form a halo sign when mixed with blood. In the setting of trauma, the halo sign may represent a basilar skull fracture. An aspirate of the fluid can be analyzed for CSF confirmation. Glucose is the usual screening test for CSF detection; however, false positives are common in diabetic patients. Beta-2-transferrin, a protein found only in CSF, perilymph and aqueous humor, is a more reliable biomarker for CSF leakage. It is detectable outside the body for up to 7 days regardless of storage at room temperature or exposure to nasal mucosa.

Our patient’s computerized tomography scan head and c-spine were negative for injury. The persistent fluid from his ear was positive for B-2-transferrin - confirming a CSF leak. He was admitted and observed without any further intervention.

REFERENCES