

IMAGES IN EMERGENCY MEDICINE

Trauma

A man with a traumatic knee injury

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1 | PATIENT PRESENTATION

Following a rear-end collision motor vehicle accident, a 22-year-old male presented to the emergency department with a right knee injury. He was the restrained front passenger of a truck traveling approximately 25 miles per hour that stopped suddenly to avoid the collision. Nonetheless, a low-speed collision without airbag deployment resulted. The patient's knee may have struck the dashboard during the crash. Physical examination revealed an irregularly shaped laceration to the anterolateral right knee inferior to the patella (Figure 1). X-ray showed free air in the joint space (Figure 2).

2 | DIAGNOSIS

2.1 | Traumatic arthrotomy

The case x-ray revealed free air in the joint space consistent with a disruption of the joint capsule known as a traumatic arthrotomy (TA). Initial evaluation for TA should include wound evaluation and plain films, and, if negative, further diagnostic options include non-contrast computed tomography (CT) and the saline load test (SLT).¹

Both CT and the SLT have favorable sensitivity for TA over plain films; however, one is not yet definitively recommended over the other.¹ A SLT of the knee may require a volume of approximately 200 mL to achieve adequate sensitivity, whereas studies assessing CT show high sensitivity for detecting small amounts of free air but are few in number.²⁻⁴ Clinicians should utilize shared patient decision-making and their institutional guidelines.⁵

The patient received broad spectrum antibiotics followed by irrigation and debridement and repair of the joint capsule and wound in



FIGURE 1 Apparent soft tissue injury of the right knee suffered during a rear-end motor vehicle collision

the operating room by the orthopedic service. The patient recovered uneventfully.

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FIGURE 2 Lateral knee x-ray. Free air (dark on x-ray) is seen in the joint spaces, indicating a traumatic arthrotomy has occurred

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How to cite this article: Somma MG, Ahern BJ. A man with a traumatic knee injury. *JACEP Open.* 2022;3:e12733. <https://doi.org/10.1002/emp2.12733>