

Traumatic Arthrotomy

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PEARLS

- A **traumatic arthrotomy** is a laceration that extends into the joint capsule exposing the intra-articular surface to the environment. It is important to identify, as **operative washout**, debridement and proper closure of the joint capsule is required.
- Physical Exam
 - Examine the joint through full range of motion looking for:
 - Air bubbles
 - Extravasation of joint fluid (straw colored, viscous, oily appearance)
 - The exam may be limited due to pain.
 - Arthrotomy can be ruled in but not ruled out.
- Saline Load Test
 - Instill saline into the joint and see if it leaks out through the laceration. **Leakage of saline means you have an arthrotomy.**
 - Amount of saline required
 - For the knee, a load of 194 mL achieves 95% sensitivity.
 - Keese GR, Boody AR, Wongworawat MD, Jobe CM. **The Accuracy of the Saline Load Test in the Diagnosis of Traumatic Knee Arthrotomies.** *Journal of Orthopaedic Trauma*. 2007;21(7):442-443. doi: [10.1097/BOT.0b013e31812e5186](https://doi.org/10.1097/BOT.0b013e31812e5186).
- Imaging
 - X-ray: Air in the joint is diagnostic but its sensitivity is low.

PITFALLS

- CT has been shown to perform better than x-ray but it has not been compared to the saline load test and may fall short of being able to rule out arthrotomy.

- Diagnostic workflow in suspected traumatic arthrotomy <https://epmonthly.com/article/confidently-rule-traumatic-arthrotomy-knee/>
- Management
 - Consult orthopedics or transfer for consultation.
 - If there is a concomitant fracture, it should be reduced.
 - Irrigate grossly contaminated wounds in the ED.
 - Immobilize the joint to prevent further injury.
 - Update tetanus immunity if necessary.
 - Administer broad spectrum antibiotics
 - For coverage of **staphylococcus and streptococcus** species use a first-generation cephalosporin (eg, cefazolin).
 - If risk factors for methicillin-resistant *S. aureus* (**MRSA**) are present, use an agent with activity against MRSA (eg, vancomycin).
 - If there is significant soft tissue injury, add **gram negative** coverage (eg, third generation cephalosporin, extended-spectrum penicillin, or aminoglycoside)
 - If there is contamination with organic matter, such as feces, add high dose penicillin (i.e. piperacillin/tazobactam).
 - If there is contamination with seawater, add doxycycline to cover **Vibrio vulnificus**.