

DETECTION OF TRAUMATIC ARTHROTOMY OF THE WRIST USING THE SALINE LOAD TEST

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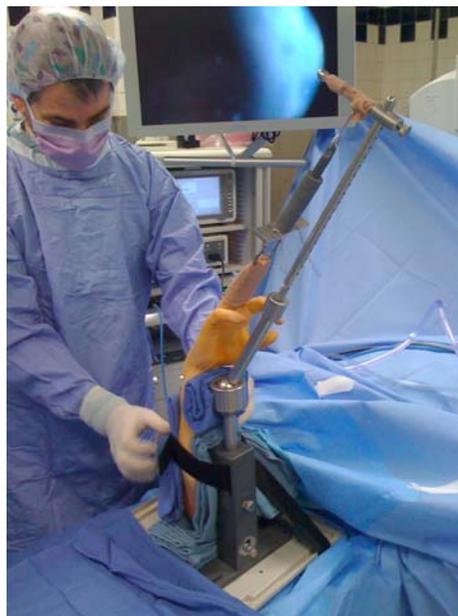
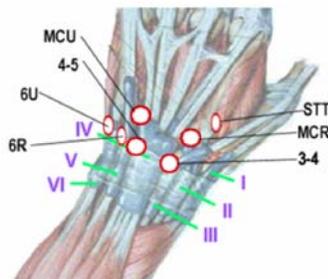
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Objectives

- Joint penetration of periarticular wrist injuries can be difficult to ascertain in the emergent setting.
- Diagnosing traumatic violation of the wrist capsule can be critical to management and prevention of septic arthritis.
- The saline load test is a minimally invasive procedure that can be easily performed in the triage setting.
- Therefore, the purposes of this study are to identify the minimum fluid volume necessary to obtain 95% sensitivity for joint penetration in vivo, and to correlate the fluid volume needed for positive diagnosis with demographic factors.

Methods

- 30 consecutive patients scheduled for elective outpatient wrist arthroscopy were prospectively enrolled
- Patients with previous ipsilateral wrist surgery were excluded
- Technique:
 - 1) Standard 3-4 portal of 5mm was established under traction, but without joint insufflation.
 - 2) The arthroscope was then inserted and under direct visualization, an 18-gauge needle was inserted in the 6R portal.
 - 3) The arthroscope and trocar were then removed, traction released
 - 4) Sterile saline was steadily injected until there was effusion from the 3/4 arthrotomy site.
- Statistics: Logarithmic regression was used to analyze the saline load test volumes and to determine the sensitivity for a positive result



Results

- In 30 consecutive patients that underwent the saline load test, it took an average volume of 0.74ml to achieve a positive result and induce effusion through the 3/4 arthrotomy site.
- The amount of fluid needed to obtain a positive result ranged from 0.2ml-3.5ml, with a standard deviation of 0.69.
- No correlation was observed between the gender, height, weight, or body mass index (BMI) of the patients and the amount of saline injected.

Volume Injected	Sensitivity of Saline Load Test
0.5ml	70%
1ml	80%
3ml	95%

Conclusion

This study demonstrates that only 1ml of saline needs to be injected for the saline load test to identify a majority of traumatic wrist arthrotomies. However, 3ml will need to be injected into the wrist to detect 95% of wrist arthrotomies. These values are applicable to a wide array of patients of both genders and with different height, weights, and BMIs, as there was no correlation between patient demographics and the amount injected to obtain a positive result.

Disclosures

The authors have no conflict of interest related to the content of this study