

# Does point-of-care ultrasonography (POCUS) reduce clinical failure rates in patients undergoing incision and drainage for an uncomplicated abscess?

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**Abstract link:** <https://doi.org/10.1016/j.annemergmed.2018.05.014>

**Full citation:** Gaspari RJ, Sanseverino A, Gleeson T. Abscess incision and drainage with or without ultrasonography: a randomized controlled trial. *Ann Emerg Med* 2019;73:1–7.

**Article type:** Therapy

**Ratings:** Methods – 2.5/5    Usefulness – 3.5/5

## INTRODUCTION

### Background

There is limited evidence to suggest that point-of-care ultrasonography (POCUS) improves outcomes in the emergency department (ED) management of patients with a suspected abscess.

### Objective

The aim of this study was to compare clinical failure rates of abscess drainage in patients who underwent ED incision and drainage with and without POCUS.

## METHODS

### Design

Randomized controlled trial

### Setting

Large academic ED

### Subjects

Subjects included adult patients with a suspected uncomplicated abscess. Exclusion criteria included “ill appearing patients” and patients with abscesses related to animal bites or foreign bodies, paronychia, dental, genital, or peritonsillar abscesses.

### Intervention

Incision and drainage were guided by physical exam (PE) and POCUS versus PE alone. All assessments were performed by residents or attending physicians with experience in soft tissue POCUS.

### Outcomes

The primary outcome was failure of therapy defined by repeated incision and drainage, which produced purulent drainage. Secondary outcomes included the need for additional antibiotics, as well as continued pain and purulent discharge at follow-up.

## RESULTS

Patients totalling 452 presented to the study ED during the study period. Of these, 125 patients were enrolled: 63 to the PE and POCUS group, and 62 to the PE-alone group. After misallocation and loss to follow-up, 54 patients remained in the PE and POCUS group and 53 in the PE-alone group. There was no difference in baseline characteristics between groups with respect to abscess size, duration of symptoms, percentage with

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cellulitis, and treatment with antibiotics. The overall failure rate was 10.3% (95% confidence interval [CI] 5.7–17.6). PE and POCUS patients were less likely to fail therapy (3.7% v. 17.0%) with a between-groups difference of 13.3% (95% CI 0.0–19.4%). Multivariate logistic modelling identified the largest predictor of failure to be lack of ultrasonography.

## APPRAISAL

### Strengths

- Common ED complaint
- First study to evaluate effectiveness for POCUS in treating abscesses
- Strong randomized design
- Well-described methods
- Good efforts to blind outcome assessments, although this may not always have succeeded
- Detailed data analyses

### Limitations

- A major weakness is failure to make the intention to treat the primary analysis. This was given as a secondary analysis and found no differences between groups. The per protocol analysis is of much less importance because it excluded patients who crossed over or were lost to follow-up.
- A second concern is that the primary outcome measure “requiring a second I&D” was at the discretion of the physician, and the decision for doing so was not explicitly described. More patient-oriented outcomes such as relief of pain at Day 10 could have been considered primary and would have allowed more complete follow-up. As it was, the secondary outcomes were not different between groups.
- Most patients in the PE group did not have a diagnosis based upon POCUS, and this may have led to selection bias.
- The sample size was not based upon an a priori estimate of the minimal clinically importance difference; given this, the failure rate was very low in the POCUS group.

- Single site study that should be repeated at other EDs.
- Small differences between the study groups, although adjusted for by multivariate analysis.

## CONTEXT

Multiple studies suggest that POCUS helps differentiate abscess from cellulitis in patients presenting to the ED with skin and soft tissue infections.<sup>1</sup> POCUS has further been shown to be more sensitive but less specific than CT in identifying superficial abscesses.<sup>2</sup> This is the first prospective randomized clinical trial to examine the impact of ultrasonography on rates of clinical failure in abscess drainage. A larger trial confirming the results of this study would be helpful and could also involve an examination of other outcomes such as rates of accidental incision and drainage of non-abscesses when using POCUS versus PE alone.

## BOTTOM LINE

Skin and soft tissue infections are a common presenting complaint in the ED, and treatment failure is common. This was the first trial to evaluate the effectiveness of POCUS for treating cutaneous abscesses. POCUS may reduce the failure rate of incision and drainage of abscesses in the ED but further studies would be helpful.

**Keywords:** Journal Club, POCUS, skin and soft tissue ultrasound

**Competing interests:** None declared.

## REFERENCES

1. Barbic D, Chenkin J, Cho DD, et al. In patients presenting to the emergency department with skin and soft tissue infections what is the diagnostic accuracy of point-of-care ultrasonography for the diagnosis of abscess compared to the current standard of care? A systematic review and meta-analysis. *BMJ Open* 2017;7:e013688.
2. Gaspari R, Dayno M, Briones J, Blehar D. Comparison of computerized tomography and ultrasound for diagnosing soft tissue abscesses. *Crit Ultrasound J* 2012;4(1):5.