



The use of a novel device improves real-time ultrasound guided IV access¹

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Background

Real-time ultrasound guided intravenous (USGIV) access improves the success and decreases complications of central intravenous access. However, the ability to perform this procedure requires skill and practice.

Objective

The purpose of this study was to determine if a novel ultrasound device improved emergency medicine residents' (EMR) first-pass success rate compared with the traditional technique in a phantom model.

Methods

Prospective, randomized, crossover design

PGY1-3 emergency medicine residents:

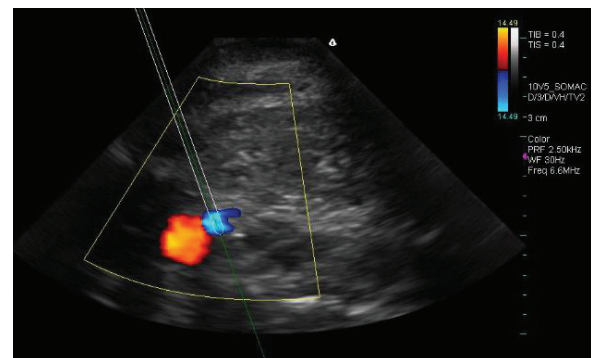
- Training and experience with traditional USGIV access
- 15 minute introduction to novel device and two proctored attempts at least one week before enrollment

Comparison of two devices/techniques:

- SonoSite M-turbo, 10-5 MHz linear probe
- Novel ultrasound device, Soma Development

Primary outcome = first pass success rate

Secondary outcome = number of attempts, time, needle visualization at entry



Results

24 Emergency medicine residents participated

- 7 PGY-1
- 7 PGY-2
- 10 PGY-3
- Mean number of USGIV attempts before study with traditional technique was 24 (range 6-57)

288 USGIV attempts analyzed

- 4 failures all with traditional approach

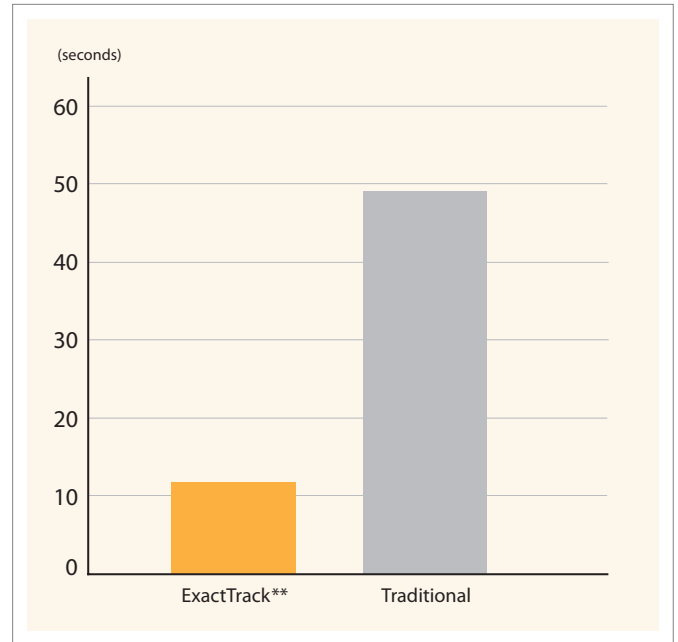


FIGURE 1. Time to vessel puncture

TABLE 1.
First Pass
Success Rate

USGIV	Overall*	Subclavian*	Internal Jugular*	Peripheral*
ExactTrack**	99%	98%	100%	100%
Traditional	37%	22%	53%	36%

* p<0.001

Study Definitions

One Pass: The forward movement of a needle followed by any backward movement.

One Attempt: Any forward or backward needle movement from a single skin puncture of the needle.

Limitations

- Simulation model
- Only evaluated emergency medicine residents
- Non-sterile conditions

Conclusion

USGIV access performed by emergency medicine residents with a novel ultrasound device (Soma Development, LLC) **improved first-pass success rate for peripheral and central IV access** with a phantom model.

** Now known as AxoTrack™



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