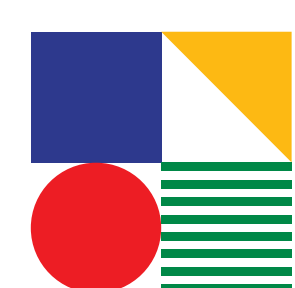


USABILITY STUDY OF A NOVEL CHEST TUBE FIXATION DEVICE: THE C-LANT PORT

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BACKGROUND

Chest trauma often requires tube thoracostomy as a definitive or temporary treatment. Standard insertion & fixation methods are **time-consuming and prone to dislodgement or misplacement**. The C-Lant Port is a disposable, sterile, self-fixating, FDA 510(k) Cleared device enabling **rapid chest tube insertion, secure fixation, and easy tube replacement**. This study assessed its usability and learning curve among physicians and paramedics in a simulation setting.



METHODS

 Participants: 35 users (19 physicians, 16 paramedics/PAs)	 Setting: Synthetic thoracic simulators	 Training: 15-20 min standardized training + manual review	 Tasks: Tube insertion, fixation, replacement (10 sub-tasks) & extraction	 Metrics: SUS score, task success, time, errors, user acceptance
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KEY RESULTS

100%
 Critical Task Success
 (n=35, 3 tasks)

83.9 ± 16.3
 SUS* Score
 Grade A (Excellent)

* System Usability Scale to measure user satisfaction and perceived ease of use of the product

1:20 ± 0:21 min
 Total Procedure Time
 (incl. tube replacement)

Task Performance (n=35)

- 1st Attempt Success: 95.4% (334/350 tasks)
- Tube Replacement: 100% success
- 1st Attempt Completion: 31/35 (89%) users
- Use Errors: 4.6% (16/350), all mitigated

User Acceptance

- Safety Rating: 4.60 ± 0.74 (1-5 scale)
- Speed Rating: 4.77 ± 0.73
- Ease of Use: 4.83 ± 0.71
- Would Use in their practice: 84% physicians, 75% paramedics

CONCLUSION

C-Lant Port demonstrates **Grade A usability (SUS 83.9) with 100% critical task success**, rapid procedure times (**1:20 min. avg.**), and exceptional user ratings. Its intuitive design supports rapid, reliable, and secure chest tube stability and management with minimal training. The C-Lant Port demonstrates potential to improve patient care in diverse clinical contexts, spanning emergency and elective procedures, as well as prehospital, military, and austere environments.

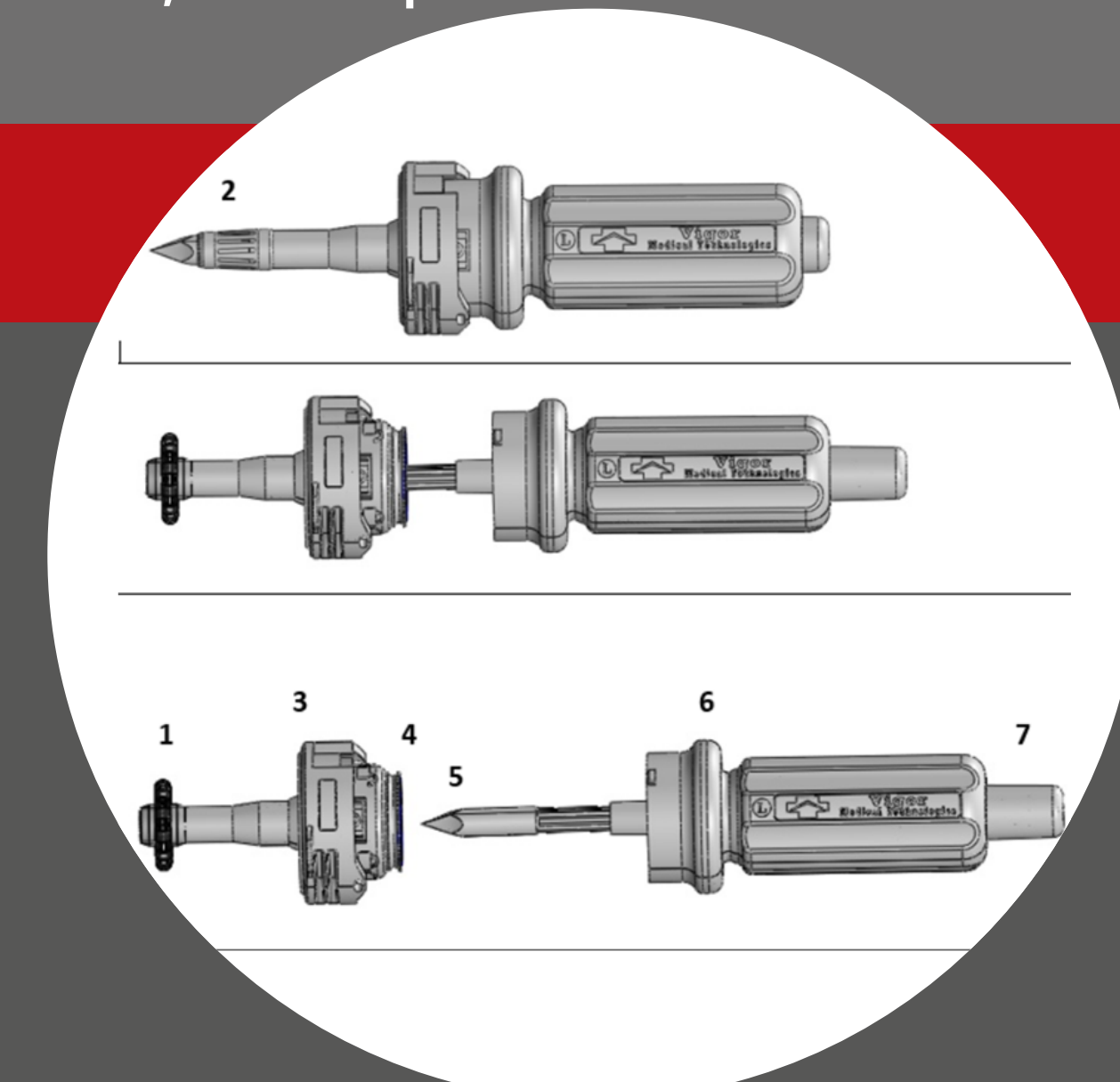


Figure 1: The C-Lant Port System Main Components: C-LANT Port (1-4) and CLANT Trocar and Delivery System (5-7)

