

Evaluation of Commercially Available Suture Removal Kits

Joel DeJonge, Fleeger T, Bageris M, Bivins K, Hudock S, Haus J, Mills D, Pigg N, Vu A, Zamarripa A, Emmerich B

Michigan State University College of Human Medicine; Corewell Health Hospitals, Department of Emergency Medicine, Grand Rapids, MI

BACKGROUND

- Prior to the current study, we learned that almost half of our pediatric and adult ED patients (47%) were removing their sutures at home despite lack of a SR kit or instructions.
- Household tools used to remove sutures included a kitchen knife, nail clippers, letter opener, wire cutters, ice pick, and a razor blade.
- In this climate of cost containment, ED clinicians should consider discharging patients with uncomplicated lacerations with appropriate suture removal kits and suitable instructions.
- The purpose of this study was to evaluate the SR kits currently available on the market by using non-medical adult volunteers.

METHODS

- Prospective randomized cohort study to compare four commercially available SR kits (labelled A-D).
- Sixty adult non-medical volunteers were given suture pads with interrupted nylon sutures and asked to remove four sutures using each of the SR kits.
- Each kit evaluated was sterile and included disposable scissors, forceps and gauze sponge.
- The order of the SR kits used was randomized for each participant.
- Subjects were timed by evaluators using a digital stopwatch from the time they were told to start until successful release removal of 4 interrupted sutures.
- Failure to successfully remove the sutures within 2 minutes or causing any trauma to the skin model were logged as failures.
- Satisfaction with each SR kit was measured using 5-point Likert scales.
- At the end of the simulation, participants were asked to rank the SR kits on the basis of user-friendliness and quality of the instruments.

RESULTS

- Sixty volunteers completed the simulation without difficulty.
- Average age 35.4 ± 15.2 years.
- 70.2% had never removed sutures; 8.9% removed sutures once; 20.9% had removed sutures 2 or more times at home.
- The average time to remove the four sutures was $35.2 + 22.2$ seconds.

Table 1. Costs of Available Suture Removal Kits

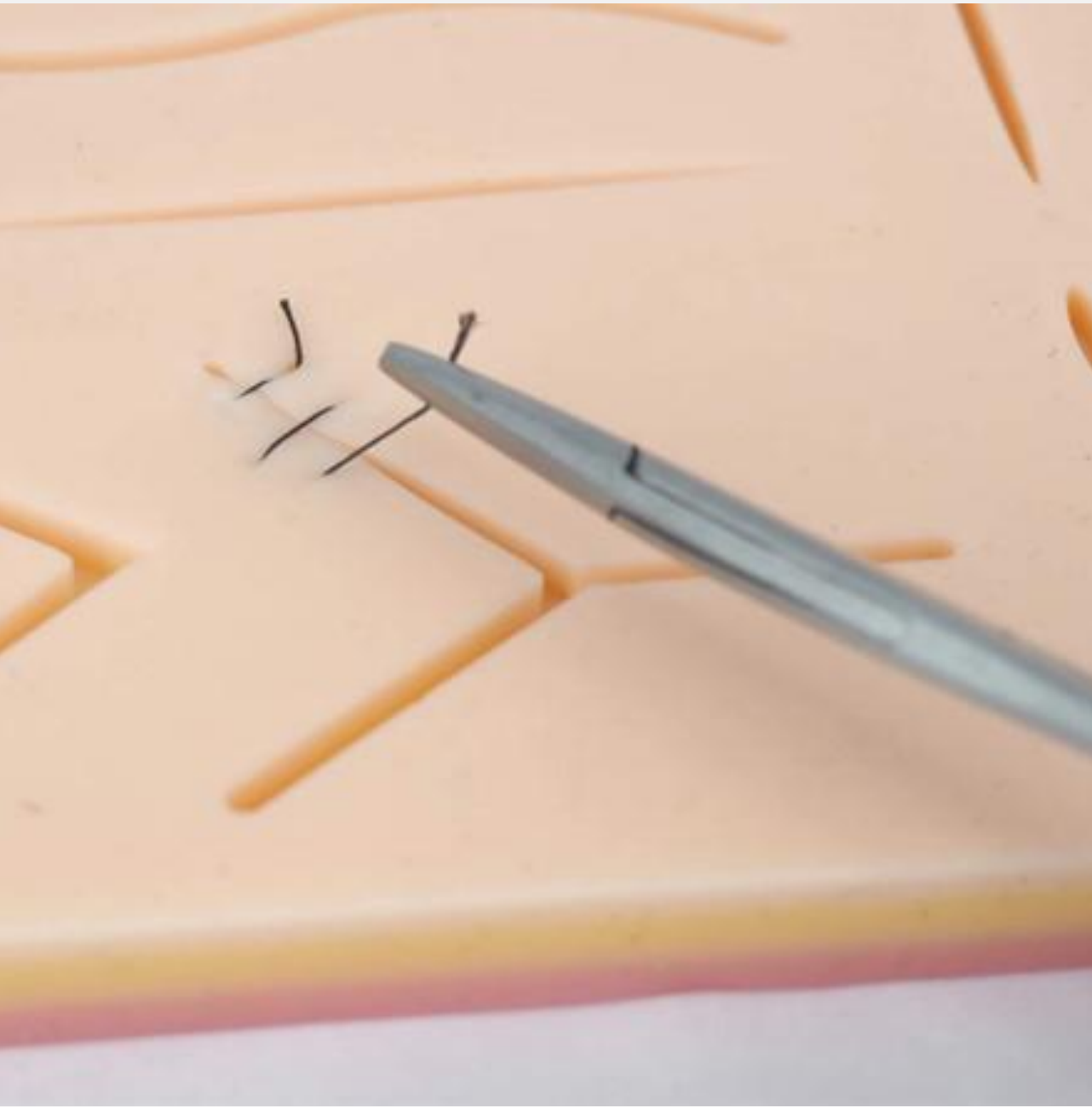
Kit	Contents	Retail Cost
A	Littauer metal scissors Smooth Metal forceps	\$5.89 - \$8.99
B	Littauer plastic scissors Cross-hatched plastic forceps	\$0.94 - \$7.69
C	Littauer metal scissors Smooth Metal forceps	\$0.83 - \$7.59
D	Iris metal scissors Cross-hatched plastic forceps	\$0.90 - \$2.61

Table 2. Evaluation of Suture Removal Kits

Kit	Mean Suture Removal Time	Failures	Mean Ease of Use	Satisfaction with Tools
A	32.5 ± 19.3	28	3.6	3.3
B	31.0 ± 18.8	28	3.4	3.0
C	35.0 ± 20.9	25	4.0	4.0
D	42.3 ± 28.4	38	3.7	3.1

RESULTS CONT'D.

- Participants preferred SR kits containing stainless steel instruments, Littauer scissors, sharp rather than blunted tools, and a cross-hatched forceps.
- At the conclusion of the study most volunteers (83%) felt comfortable removing sutures at home using a commercial SR kit.



CONCLUSIONS

- 12 suture removal kits now available on the market.
- While most commercially available SR kits are inexpensive and acceptable to the public, people have clear preferences on the type and quality of the instruments used.
- Clinicians should consider this information before discharging patients with a disposable SR kit or recommending that patients obtain an SR kit at the drugstore.
- Suture removal instructions should be given to all patients.