

## A Clinical Safety Evaluation of Surgical Hair Clippers

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## Background

When presurgical hair removal is indicated, evidence demonstrates that clippers are associated with fewer surgical site infections (SSIs) than razors, likely due to razors' propensity to disrupt skin integrity. Though all clipping devices have potential to cause nicks or cuts, not all clippers are designed and perform the same. The discerning clinician should consider which clipper is safest for their surgical patients.

## Methodology

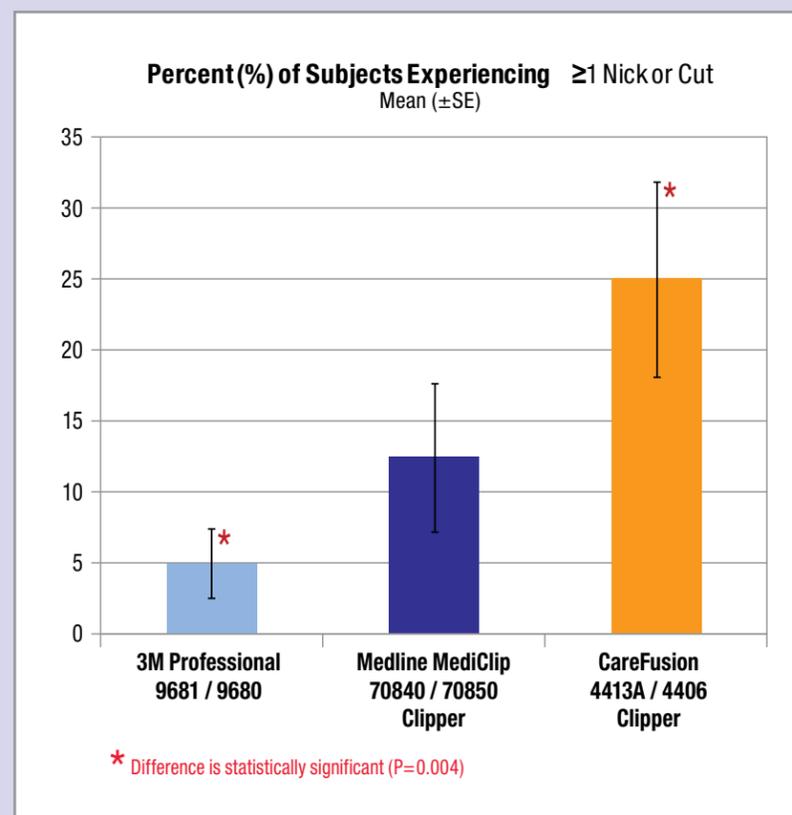
An IRB-approved, randomized, prospective clinical study was conducted by an independent testing facility to compare the safety and performance of three surgical clippers. Eighty (80) consenting adult males with medium to heavy body hair were enrolled. In a bilateral comparison, half of each subject's body was clipped with a newly-developed surgical clipper (3M™ Surgical Clipper Professional 9681 with 9680 blade) and the other half of the body was clipped with one of two other clippers (CareFusion® 4413A clipper with 4406 blade or Medline™ MediClip® DYND70840 clipper with DYND70850 blade). Clipping was performed in a manner consistent with preparation for a coronary artery bypass grafting (CABG) procedure. Differences in the proportion of subjects experiencing at least 1 nick, cut, scrape, or hair-pull per clipper were analyzed via McNemar's Test ( $\alpha=0.05$ ). Subject comfort/preference was analyzed via sign test.

## Safety and Performance Observations

	3M PROFESSIONAL (n=80)	MEDLINE (n=40)	CAREFUSION (n=40)
NICKS/CUTS	5% <sup>1</sup>	12.5%	25%
SCRAPES	16.3%	30%	47.5%
HAIR PULLS	5%	42.5%	27.5%
CLIP TIME <sup>2</sup>	6.6 min	7.8 min	6.9 min

<sup>1</sup> Blue text indicates a statistically significant difference between 3M and Medline/CareFusion

<sup>2</sup> Mean time to clip the torso (simulated cardiothoracic surgery preparation)



## Results

### 3M Clipper Professional vs. Medline MediClip Clipper (n=40)

- No significant difference observed in nicks/cuts (P=0.69).
- 3M clipper had significantly fewer scrapes (P=0.031).
- 3M clipper had significantly fewer hair pulls (P<0.001).
- No significant difference in subject comfort rating (P=0.20).

### 3M Clipper Professional vs. CareFusion Clipper (n=40)

- 3M clipper had significantly fewer nicks/cuts (P=0.004).
- 3M clipper had significantly fewer scrapes (P=0.004).
- 3M clipper had significantly fewer hair pulls (P=0.012).
- 3M clipper was rated significantly more comfortable (P<0.001).

## Study Limitations

Healthy individuals were enrolled as surrogates for actual surgical patients.

## Perioperative Nursing Implications

Maintaining skin integrity at the surgical site is an important intervention to help reduce the risk of SSI. It is widely accepted that clipping is less traumatic to skin than shaving with a razor. However, some clippers are designed in a manner that further protects skin integrity. This large study using a clinically-relevant clipping procedure demonstrates that the new 3M Surgical Clipper Professional 9681 with 9680 blade results in less trauma to the skin than the CareFusion 4413A clipper with 4406 blade and the Medline MediClip DYND70840 clipper with DYND70850 blade.