

Access to crevices critical for surgical instrument safety

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Presented: SEORNA, Swedish Operating Nurse Association
Conference meeting, 29-30 November 2012.

ABSTRACT

Cleanliness of surgical instruments is critical for the safety of the patient and the practitioners. The ability to easily reach all areas of the instrument is important for cleanability. In this study, three different brands of scissors that had been in use for the same period of time were compared for corrosion as well as the ability to remove the central screw and the common practice to do so during service. Corrosion is important to examine because if corrosion exists it means that there are crevices in the surface of the scissor where dirt and blood can stick - making the scissors harder to clean. Corrosion ages the scissors and decreases the lifetime.

Cleanliness and susceptibility to corrosion are traits which should be considered when ordering and advising on surgical instrument choice for reasons of safety, lifetime costs and the environment.

INTRODUCTION

The advantages of scissors in dissection are well accepted. Scissors:

- Are safe to use in trained hands
- Allow operator determined precise action
- Can with closed blades work for blunt dissection and electrocautery and
- Can pierce tissue with closed blades and then by opening help in obtaining a good plane of dissection¹.



Photo 1: Surgical scissors (courtesy of Stille AB)

PURPOSE

The purpose of this study was to examine cleanability at the scissors joint as well as any corrosion at the scissors joint, as ultimately these factors can affect the safety and lifetime of the instrument.

METHODS

At a Scandinavian surgical center the sterilization staff picked 3 different brands of scissors that were known to be 2 years old. The joint area of various brands of surgical scissors (new and 2 years old) were then examined by the staff. These same scissors were professionally photographed.

Comparison was made for

1. Ability to remove joint screw for cleaning
2. Availability of service
3. Roughness of the area surrounding the central screw (smooth - easy to clean; rough-harder to clean)

RESULTS

Three re-usable European brand scissors were chosen (2 German, 1 Swedish). Only one brand (brand A) as part of normal service removed the central screw and so exposed the entire area under the joint for service. On further examination, the brand A scissor was also the only one that in fact did have a completely smooth area with no signs of corrosion under the joint.

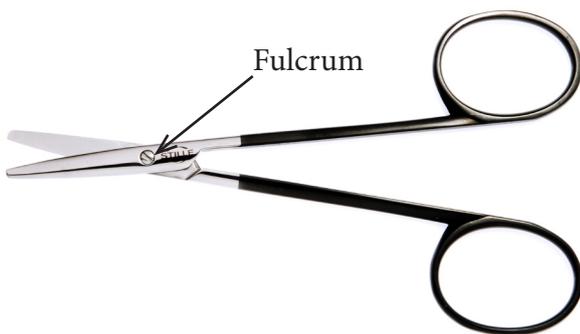


Photo 2 : Cleanability at joint (fulcrum)

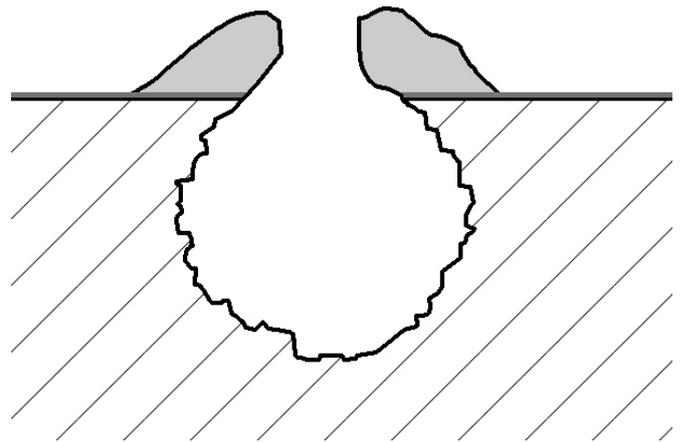


Photo 3 : Corrosion²



Photo 4: New brand A scissors courtesy of Stille AB

CLEANABILITY TRAIT	BRAND A	BRAND B	BRAND C
Able to remove central screw	Yes	No	No
Service available (to mantain smooth cleanable surfaces)	Yes	No	No
Rough area or signs of corrosion	No	Yes	Yes

Results table: Cleanability of 3 common scissor brands (all European)



Photo 5: Brand A scissors with joint screw normally at service

DISCUSSION

Safety

Cleanliness and sterility of instruments in the paramount concern of all who support the operating theatre.

Theoretically one would expect then that all critical instruments with movable parts would have the possibility to be dismantled both for cleaning and for inspection of the surfaces to ensure that they remain smooth (and easily cleanable).

Examination of commonly used operating room scissors reveals that one brand has a removable screw to facilitate service to these hard to reach areas between the blades. Removing the central screw during service is important because it allows for full cleaning and service of the area of the scissor joint and allows for accurate alignment after sharpening. This allows:

1. Blades to be sharpened many times and then realigned which increases scissors lifetime as the scissors can be sharpened more times. One can imagine that with other scissors after several sharpenings the blades will be far apart, and will not meet close enough for a good cut. If one cannot unscrew the central screw and re-adjust the blades (or can but do not do so as part of normal service) then the operating room staff will reject these scissors as they will cut poorly.
2. Blades surface to be fully resurfaced which removes crevices where pockets of dirt might hide.



Photo 6: Other brand (2 years old)

Lifetime costs

Dirt plus the elements leads to corrosion. Corrosion is important to examine because if it exists it means that there are crevices in the surface of the scissor where additional dirt and blood can stick - making the scissors harder to clean. Corrosion ages the scissors and decreases the lifetime.

Environment

Lifetime is important not just for economic reasons but also for the environment. A study comparing primarily German brand reusable scissors to both German and Pakistani disposable scissors showed that reusable scissors are best for the environment because although they may take more energy to come to market they more than make up for it because they are used thousands more times³.

CONCLUSION

Cleanliness of surgical instruments is critical for the safety of the patient and the practitioners. The ability to access hard to reach areas to ensure they are cleanable is optimal. Design features which make a product less susceptible to corrosion are also an advantage. O.R. nurses should consider these traits when ordering and advising on surgical instrument choice for reasons of safety, lifetime costs and the environment (recycling, life cycle management).



Photo 6: Surgical scissors from 1954, high polished surface (courtesy of Stille AB)

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