

A novel use for disposable laryngoscope blades

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Introduction

Anaesthesia is the only branch of medicine that actively recycles its drugs. By using low flow, circle breathing systems, exhaled inhalational agents are recycled and readministered. Anaesthetists have extended this approach to the recycling of glass and plastics from the operating room.^{1,2}

Concerns about the potential for transmission of prions such as that for variant Creutzfeldt-Jakob disease by laryngoscope blades has prompted a move towards disposable, single use laryngoscope blades. The move away from resterilisation may make sense in terms of economics and health, but at the cost to the environment.

We noticed that the tip of a Timesco (London, UK) Callisto Mackintosh disposable laryngoscope blade fitted perfectly between the rim and lid of a tin of paint. This, coupled with the smooth contour, which fitted comfortably into the hand, led us to investigate which of the three commercially available blade sizes (2, 3, and 4) needed the least force to open tin lids. The null hypothesis for the study was that the forces needed would not differ.

Methods

We hand washed three Timesco Callisto Mackintosh blades, previously used on patients not known to have transmissible infections, and then put them through a 65°C wash in a domestic dishwasher. We selected for study 24 previously opened paint tins of varying sizes (0.25 l, 0.75 l, 1 l, and 2.5 l) containing varnish, high gloss paint, vinyl silk paint, or undercoat. We first carefully opened each tin with a screwdriver, to reduce the effect of paint crusting, before resealing them and then reopening them with each of the three blades in a pre-ordered sequence. To minimise the possible effect of bending the rim of the lid, we applied each successive blade 120° from the previous blade's position. The operator was not blinded.

We placed the laryngoscope blade horizontally with the tip of the blade under the lid of the paint tin, with the convex curve uppermost. We measured the force needed to open each tin by using a previously calibrated Newton balance hooked into the groove that would conventionally attach the blade to the handle (fig 1). We applied increasing downward force in 1N steps to the Newton balance while at the same time holding the base of the tin on the workbench. We recorded the force needed to open the lid for each of the blades in turn. Finally, we measured the force needed to bend the tip of the large laryngoscope blade, with the tip held in a bench mounted vice (fig 2). We used Student's *t* test to compare data, and results are expressed as mean (SD).

Results

Of the 24 tins opened, seven were 2.5 l, nine were 1.0 l, two were 0.75 l, and six were 0.25 l. The pre-ordered sequence allowed each of the six possible orders of the



Fig 1 The force needed to open each tin was applied in direction F

three blades to be used on each of four tins, and no blades bent. The mechanics of blade movement prevented four of the 2.5 l tins from being opened with simple leverage, and we excluded these from subsequent analysis. The forces needed to open the tins ranged from 0.5 N (size 4 blade) to 30 N (size 2 blade). Figure 3 shows the force needed to open the remaining 20 tins. The mean force needed to open the paint tins with the size 2 blade was 11.5 (SD 7.4) N, with the size 3 blade it was 7.9 (6.9) N, and with the size 4 blade it was 5.8 (4.0) N. A significantly smaller force was needed to open the tins with the size 4 blade than with the size 2 blade ($P=0.0065$). The tip of the size 4 blade bent when we applied a force of 80 N. Those tins that failed to open completely with the simple leverage movement opened with a simple twisting rotational movement of the blade once the lid had been partly loosened.

Discussion

Twenty of the 24 tins were opened under the test conditions with forces less than 31 N. The large blade was somewhat cumbersome, and more than once the hooked end came close to the side of larger paint pots. This necessitated a rotational twist of the blade in order to open the remaining four tins (2.5 l). As the handy

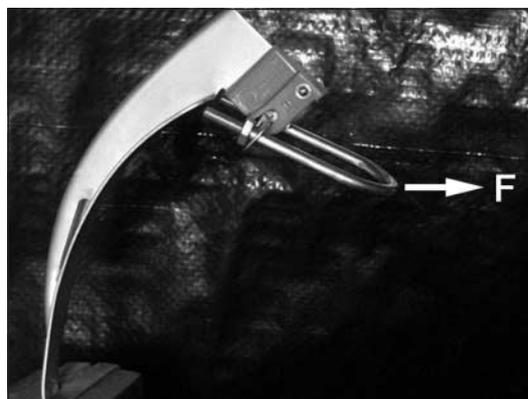


Fig 2 The force needed to bend the tip of the size 4 blade was applied in direction F

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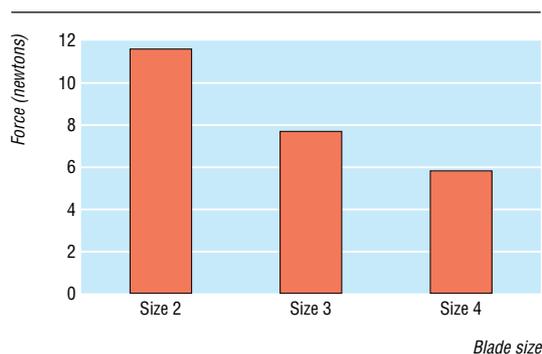


Fig 3 Force needed to open tins of paint under investigation. The longer the blade, the greater the leverage, and the lower the force needed

small size 2 blade needed greater force to open the tins, we now use size 3 blades to open paint tins. One drawback compared with the traditional “screwdriver technique” is the less than ideal shape and size of the smaller blades for stirring the contents of the tin once opened.

Ideally, we would have tested each blade on a fresh tin of paint. However, no local retailer was prepared to let us open 72 tins of identical paint.

Apparently cleaned and sterilised laryngoscope blades remain contaminated with proteinaceous material.³ This has fuelled concerns about the possible transmission of variant Creutzfeldt-Jakob disease. The Medical Devices Agency’s publication *Single-use Medical Devices: Implication and Consequence of Reuse* states that the re-preparation of single use equipment, without due precautions, transfers legal responsibility away from the manufacturer to the practitioner or the employer.⁴ No regulations limit the use of such an item as a tool.

Timesco reminds callers that two thirds of all laryngoscope blades used in the United Kingdom are now disposable. The three sizes of Callisto Mackintosh blades weigh 48 g, 64 g and 80 g. Our trust bought (and we presume disposed of) 8800 Callisto Mackintosh blades last year, weighing approximately 560 kg (excluding packaging). Disposal is via contaminated waste, costing £137 a tonne. The environmental and carbon cost of manufacture and distribution is almost impossible to calculate. Reallocation, to the toolbox, will help to reduce the environmental and carbon costs of disposal. The Timesco website (www.timesco.com/optima2.htm), sensing environmental concerns, informs visitors that Callisto Mackintosh is “so good you won’t want to throw it away.”

If stuck for that stocking filler this Christmas, be imaginative and green and follow Timesco’s advice by including a washed decontaminated size 3 Callisto Mackintosh blade as the ideal present for the decorator who has everything.

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A day in the life of a doctor

Grand Rounds

The main purpose of Grand Rounds is self aggrandisement. Grand Rounds are held weekly, or weakly, depending on the presenter. To medical students who ask sceptically why they are called Grand Rounds, the answer is because Grand Rounds sounds better than Petit Rounds.

Grand Rounds used to be called ye Grande Olde Rounds. They were immortalised in the nursery rhyme:

Ye Grande Olde Rounds of Yore
They had ten thousand slides
They took them up to the carousel
And they dropped them on their sides.
Now when they were down they were up
And when they were not it was Hell,
And with Grande Rounds almost halfway through
They jammed the carousel.

The modern presenter thinks a carousel is a merry-go-round, and is only worried that his or her carefully prepared and saved PowerPoint presentation has disappeared into the electronic ether.

The chair of Grand Rounds is in a position of great power. The chair can influence the whole tenor of the weekly meeting. The chair is traditionally the oldest, most esteemed, most senior member of staff, and the person most likely to fall asleep throughout the meeting.

A clinical case or two is presented at each Grand Rounds. The presenter is the most junior member of the medical team.

Tradition dictates that the junior member has never met the patient but has been told to present the case by the consultant. It is considered character building to stand up in front of several hundred senior colleagues and expose yourself to ridicule. It is considered irrelevant that the character thus built will be a nervous wreck for the remainder of his or her medical career.

The presented case is then masticated, ruminated on, digested, and regurgitated by senior doctors. It is considered bad form for them to prepare for their pontifications, which tradition dictates are lengthy, liberally strewn with anecdotes, and evidence-free. The end result is a hallowed form of verbal swordplay with your colleagues, in which you score palpable hits as you exhibit your own knowledge and clinical acumen while denigrating those of your colleagues. This should be done subtly and with finesse, so that the character assassination is not immediately apparent—the thrust and parry of epee rather than the coup de sabre.

At the end of the Grand Rounds, the chair wakes up and asks for a grand round of applause to wake up the rest of the audience.

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