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Use of a dissected intravenous giving set to assist large metal oesophageal foreign body removal in rigid oesophagoscopy

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Short Communication

Mr M Robinson takes responsibility for the integrity of the content of the paper

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Abstract

Background. Oesophageal foreign body removal may be challenging. If a foreign body is sufficiently high risk and cannot be retrieved via oesophagoscopy, laparotomy may be required as the foreign body migrates distally.
Objective. This paper presents the use of the plastic tubing from an intravenous giving set, combined with rigid oesophagoscopy grasping forceps, in order to improve purchase and obtain sufficient traction on a large, smooth, metallic distal oesophageal foreign body (knife).
Results and conclusion. This method offers an option for removal of oesophageal foreign bodies that may be rendered challenging with traditional metal grasping forceps given the lack of purchase and traction afforded by a 'metal on metal' grip, potentially avoiding the need for open surgery.

Introduction

An impacted oesophageal foreign body can pose a significant threat to life. Failure to remove it can lead to necrosis and perforation.[1] Oesophageal foreign body removal may be challenging. Despite the increasing use of flexible oesophago-gastro-duodenoscopy for foreign body removal, proximal oesophageal foreign bodies, and foreign bodies in cases where oesophago-gastro-duodenoscopy has been unsuccessful, may often be removed in the operating theatre by an ENT surgeon via rigid oesophagoscopy. If a foreign body is sufficiently high risk and cannot be retrieved via oesophagoscopy, open surgery may be required as the foreign body migrates distally.

Rigid oesophagoscopy stainless steel operating theatre sets routinely contain a variety of instruments to enable successful removal. Firm metallic foreign bodies can be problematic to remove owing to difficulty generating purchase and traction between two solid metal surfaces. Large, smooth or heavy foreign bodies, such as ingested cutlery, amplify this problem, with increased traction required for successful removal.

The tubing from an intravenous giving set is a cylindrical plastic compound that is compressible and offers higher pliability than stainless steel, but has sufficient rigidity to prevent easy breakage. This paper describes a method in which such tubing was successfully used to extract a large metallic foreign body from the distal oesophagus after failed attempted removal with standard instruments, preventing the need for open surgery (mini-laparotomy).

Technical description

The plastic tubing, downstream from the drip chamber, in an intravenous giving set (model RMC0334W; Baxter, Deerfield, Illinois, USA), is identified. The length of the grip or grasping section of rigid oesophagoscopy grasping forceps is measured (model 10367U; Karl Storz, Tuttlingen, Germany). Two equal cylindrical lengths of the giving set tubing are cut to the described length. The tubing is placed over the upper and lower elements of the graspers, so that both elements of the graspers are entirely covered in tubing (Figure 1).

The modified grasping forceps are used in the normal manner to extract the foreign body, with the grasping surfaces having increased pliability, thereby enhancing the grip that may be achieved on a smooth metallic surface (Figure 2). The technique may also be advantageous in the removal of sharp or fragile foreign bodies.

Discussion

Benefits

The described method can be successful over standard stainless steel instrument removal given the increased pliability of the giving set tubing, leading to an increased overall contact surface between the instrument and the foreign body. This increases purchase and facilitates increased grip traction.

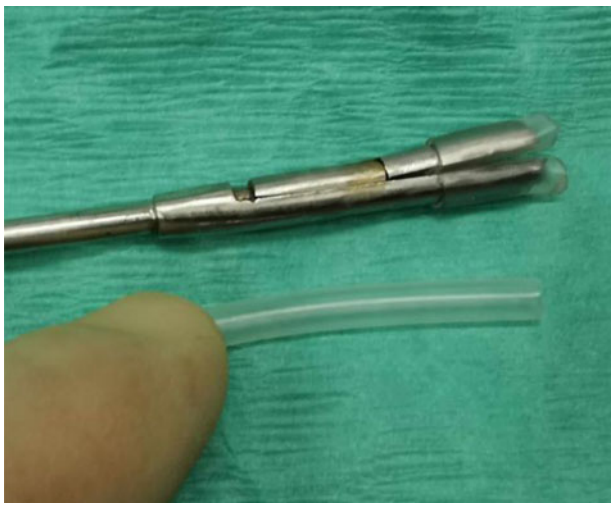

Fig. 1. Grasping forceps with giving set attached.

A review of commercially available instrument catalogues demonstrated a large number of differing grasping forceps with a range of distal graspers. No plastic or soft compound grip surfaces were identified for rigid scopes.[2–4] There are four likely reasons for this: (1) their deterioration over multiple uses; (2) challenges in maintaining sterility; (3) a lack of high volume purchasing as a result of infrequent usage; and (4) a potential inability to withstand high temperatures in autoclave.

This paper demonstrates a very simple method with ubiquitous availability and inexpensive additional equipment (giving set), which can be used in any hospital setting, with an approximate cost of less than £1.00 GBP.[5]

Limitations

Whilst the giving set sits tightly over the grasping surface, one potential limitation arising from the unsecured tubing is loss into the digestive tract. The authors believe this is unlikely to cause significant iatrogenic sequelae given that the tubing is made of soft plastic and the piece used is small in size (approximately 10 mm).

Furthermore, this method is proposed as an alternative for challenging cases, as described above, where open surgery is being considered for a foreign body that is seemingly irretrievable endoscopically. The technique has been successfully applied by the authors to this end.

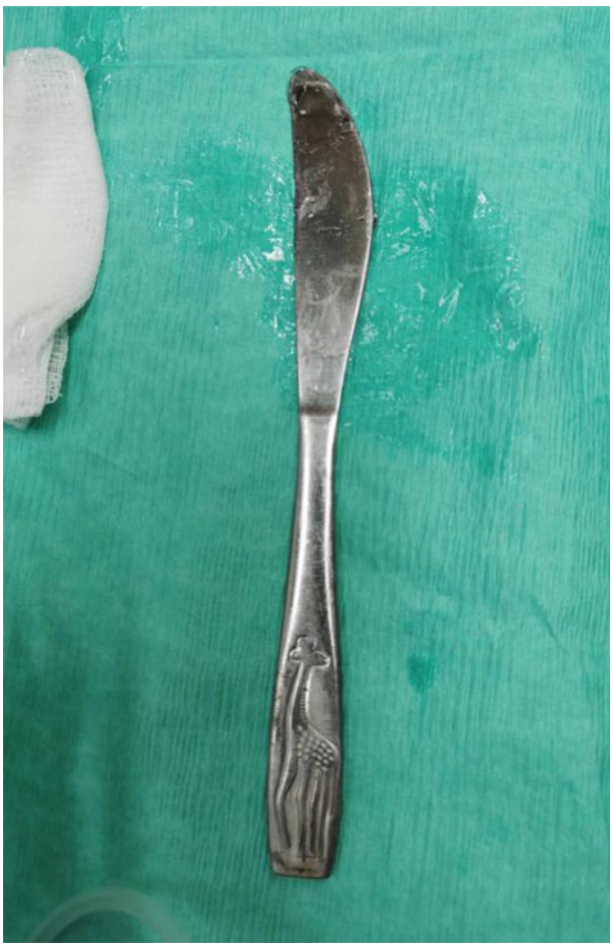

Fig. 2. Successfully removed large oesophageal foreign body.

Competing interests

None declared

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