Safety pin in an unsafe position: Retrieved by cystoscopy - A novel technique

Muthukumaran Jagannathan¹, N. Krishnan², A. Anirudhan¹
¹Departments of Paediatric Surgery and ²Anaesthesiology, Institute of Child Health and Hospital for Children, Chennai, Tamil Nadu, India

ABSTRACT

Foreign body ingestion in children is a common clinical problem. They are often asymptomatic and passed out spontaneously. Oesophageal foreign bodies are prone to complications such as perforation, mucosal ischaemia and necrosis due to pressure. We present a case of a 10 month-old girl child with an open safety pin lodged in the lower oesophagus. The safety pin was retrieved by a cystoscope through a small incision in the stomach. It is a safe and easy procedure to perform, which has not been published previously in the literature. Hence, we are reporting this case.

Keywords: Cystoscope, lower oesophagus, novel technique, open safety pin

INTRODUCTION

Sharp foreign bodies are prone to complications both in children and adults. However, in children the difficulty is the small size of the lumen and non-availability of pediatric instruments. This prompted us to use a “mini-gastrotomy approach” to remove an impacted lower esophageal foreign body in an infant.

CASE REPORT

A 10 month-old infant, was brought to the emergency department with a history of incessant crying and feeding difficulty. Mother gave a history of having felt a metallic foreign body on inserting her finger in the baby’s mouth. An urgent chest X-ray showed a safety pin at an open position at T10 vertebra level [Figure 1]. A diagnosis of a sharp foreign body (safety pin) lodged in the lower end of the oesophagus was made. The child was admitted and kept on nil per oral, intravenous fluids and antibiotics. An attempt was made to retrieve the foreign body by endoscopy, which was not possible due to the infant’s small size, open safety pin and fear of injuring the oesophagus. Hence, surgical retrieval was contemplated. After seeking the opinion of both a gastroenterologist and a radiologist, it was decided to remove the foreign body via a gastrotomy using a cystoscope. In view of avoiding mucosal injury to the oesophagus and its complications, this procedure was adopted. Under esophageal gastric tube airway, through an upper midline laparotomy, the stomach was identified and stays were placed. An incision was made in the anterior wall of the stomach in-between the stay sutures. A 9.5 French sheath cystoscope was introduced into the stomach and the gastroesophageal (GE) junction was visualised. Using saline irrigation, the GERD junction was mildly distented and the cystoscope was introduced into the lower oesophagus. The cuffed endotracheal tube, which was used for anaesthesia, prevented aspiration and its complications. The fulguration hook at the tip of the cystoscope was used to hold the reverse end of the safety pin to successfully remove it through the gastrotomy incision, which was later closed [Figure 2]. A rigid oesophagoscopy was done to ensure the mucosal integrity. The laparotomy

incision was closed in layers. The postoperative period
was uneventful with the baby tolerating milk on the 3rd
postoperative day and discharged home, the next day

DISCUSSION

Foreign body ingestion in children is usually accidental
in contrast to that in adults where it is due to other
causes such as intentional consumption, substance
intoxication or psychiatric illness. Infants and toddlers,
between the age group of 6 months and 3 years, are
commonly afflicted, and coins are the most commonly
ingested foreign bodies. Sharp foreign body, more so,
open safety pins are rare.[1]

Roughly, 90% of the foreign bodies in the digestive tract
pass out spontaneously. Only 10% require endoscopic
retrieval and <1% amongst them need surgical removal.[2]

Children ingest a variety of foreign bodies such as
coins, button batteries, jewel parts, water jellies, hooks,
pins and needles. Oesophageal foreign bodies are
considered as an emergency as even blunt objects in
the oesophagus, impacted for more than 24 h, can cause
complication such as pressure necrosis.[3] There are
three anatomical narrowing points in the oesophagus
where the foreign bodies may get impacted, namely: The
cricopharyngeal sphincter, arch of aorta crossing region
and lower oesophageal sphincter.[4] The symptoms range
from stridor, drooling of saliva, respiratory distress and
dysphagia. Older children can complain of retrosternal
chest pain, which is suggestive of mucosal ulceration.

Routine investigation includes a chest X-ray, both AP
and lateral views. The foreign bodies usually orient in
a sagittal plane when lodged in the trachea and coronal
plane when lodged in the oesophagus. If there is a
time delay, contrast-enhanced computed tomography

The advantages of using a cystoscope for retrieval include
the following:
1. Following a laparotomy, a mini 0.5 cm gastrotomy
   is enough for entering the stomach
2. Very good visualisation during retrieval
3. Saline irrigation used in the cystoscope helps in
dilating the lower oesophagus
4. The hook at the end of the instrument can be used
to engage the safety pin
5. Impinged open safety pin removed without mucosal
damage
6. Rapid procedure (roughly 20 - 30 min) – easily
reproducible technique.

A laparoscopic attempt would have been a time-
consuming, difficult procedure requiring multiple ports
and at least two gastrotomy incisions for retrieval of
this foreign body.

There are published series in the literature reporting
use of cystoscope in surgery for choledochal cysts.[6]
Similarly, in this case, due to the non-availability of
paediatric endoscopes, cystoscope was used as an
alternative procedure to retrieve the safety pin without
any risk of oesophageal tear or mediastinitis.

CONCLUSION

Impacted open safety pin in the lower end of the
oesophagus in an infant is rare. Endoscopic retrieval
should be attempted in all cases. When non-invasive
methods are not possible, surgical removal is mandatory. Retrieval through a mini gastrostomy using a cystoscope is a novel, easier, safe and easily reproducible alternate procedure in the absence of a paediatric endoscope.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**


