

COINS CAN BE SAFELY REMOVED FROM THE ESOPHAGUS BY FOLEY'S CATHETER WITHOUT FLUOROSCOPIC CONTROL

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Objective: Evaluate safety of the procedure of removing coins from the esophagus in children by Foley's catheter without fluoroscopic control. **Design:** Retrospective case-series. **Setting:** Tertiary care referral hospital, during 1992-94. **Subjects:** 302 consecutive children with coins impacted in the esophagus who presented to the hospital. **Results:** Coins were successfully removed in 283 (93.7%) children including 2 cases in whom the removal was difficult. **Conclusions:** Foley's catheter may be used for removal of impacted esophageal coins, even without fluoroscopic control. The technique is effective and safe.

Key words: Foreign bodies, Foley's catheter, Esophagus.

FOREIGN bodies in the esophagus are common in the pediatric age group and coins account for the majority (1-3). These coins may be asymptomatic or cause symptoms like drooling, vomiting, dysphagia, pain or a foreign body sensation (2,4). An esophageal foreign body can result in airway obstruction, esophageal perforation, esophago-aortic fistula, tracheo-esophageal fistula, and altered level of consciousness (5).

Several methods are in regular use for the removal of coins lodged in the esophagus viz., esophagoscopy under general anesthesia (2,3), flexible endoscopy (6). Foley's catheter technique under fluoroscopy control (5,7,8) and advancement using bouginage (9). In this report we describe our experience of removing coins impacted in the esophagus by a Foley's catheter without fluoroscopic guidance or general anesthesia in the emergency outpatient department.

Subjects and Methods

Detailed records for analysis were available in 302 children during January 1992 to December 1994.

Procedure. This procedure was performed in the emergency receiving room. Radiographic confirmation was obtained for the presence and location of the coin. Laryngoscope, Magill's forceps and suction apparatus was kept ready. Older patients were explained about the procedure and instructed to spit the coin out when they felt it in the oropharynx. The younger patients were wrapped in a towel so as to restrain movements, and placed in a prone oblique position with head slightly out of the edge of the examination table. Any uncooperative and struggling patient was sedated. A 14-Foley's catheter (appropriately smaller catheter for smaller children) was lubricated and introduced from the nostril and passed as far down as possible.

It was then inflated with 20-30 ml of normal saline or air and then withdrawn gradually by applying steady traction till the balloon or the coin came in the oral cavity. The child either spat out the coin or it was retrieved easily from the oral cavity. In case of failure to dislodge the coin the procedure was repeated upto 5 times. If the coin was not extracted then a repeat X-ray was done to reconfirm the position of the coin. If the coin was still in the esophagus, the patient was taken up for esophagoscopy extraction under general anesthesia. If the coin inadvertently passed into the stomach then the patient was advised to report back only in case of abdominal discomfort or if the coin did not pass in the stools over the next 48 h.

Results

Of 302 children, boys and girls figured equally. The ages ranged from 2-8 yr (median 3.5 yr). The total duration of coin impaction was less than 72 h in all patients. The coins were equally distributed between the upper, middle and lower third of the esophagus. All coins were either of 50 paise or Re. 1 denomination. The symptoms included dysphagia in all patients, vomiting and excessive salivation in one-third of patients each. There was no underlying esophageal pathology in any patient.

Coin extraction by Foley's catheter was successful in 283 (93.7%) children. In the remaining 19 children the coin had remained in the esophagus on check X-ray. It was extracted under general anesthesia either by laryngoscopy and MagiU's forceps in 15 patients (5%) where the coin was in the upper esophagus or by esophagoscopy in 4 (1%) patients where the coin was in the lower esophagus. In none of the children the coin got displaced distally or pushed into the stomach. There were no major complications like bleeding or esophageal tears. In 2 cases, the

coin dislodged from the esophagus but lodged in the nasopharynx. These were then dislodged by passing a stiff red rubber catheter from the nostril and successfully removed in both children. All patients were fed 2-4 h after the coin extraction and discharged from hospital soon afterwards. None of the children complained of any significant dysphagia after the procedure.

Discussion

A small sponge tied to a string was used to remove esophageal foreign bodies in the seventh century(10). Esophagoscopy under general anesthesia, in the operating room, has traditionally been the method of choice for removal of impacted coins in the esophagus in children. The use of Foley's catheter to remove a coin from the esophagus was first reported by Bigler(8) and subsequently by others(11). A large series has demonstrated the safety of Foley's catheter removal of esophageal foreign bodies under fluoroscopy with an overall success rate of 91% and a minor complication rate of 2%(5). Another series using the Foley's catheter technique with fluoroscopy has not reported any complication(7). The use of this technique "blindly" *i.e.*, without fluoroscopy has not been published till recently (12).

To ensure the safety of this procedure it is important to follow certain basic guidelines (7,11): (i) It should be used only for blunt foreign bodies like coins. In fact, we have not used this technique for any other esophageal foreign body, (ii) Basic resuscitation equipment (laryngoscope, endotracheal tube, suction apparatus, and an AMBU bag) should be at hand. We have, however, never required any of these except the suction apparatus on a few occasions. (iii) The patient should be in a semi-prone head low position, (iv) the duration of impaction should not be more than 72hr.

prone head low position, (iv) The duration of impaction should not be more than 72 hr. (v) There should be no underlying esophageal pathology, (vi) The catheter balloon should not be over-distended. (vii) Moderate steady traction only should be used to dislodge the coin.

We have preferred using the nasal route for the introduction of the catheter in order to avoid catheter bite, although the oral route has also been used(7). We do not recommend bouginage for advancing the coin from the esophagus into the stomach blindly because of the inherent risk of perforating the esophagus with a bougie.

In this center, for the past 8 yr, we have been removing coins impacted in the esophagus by a Foley's catheter blindly. During the 3 yr period of this study we have felt the need for esophagoscopy or laryngoscopy under general anesthesia for removal in only 6% patients. Prior to this esophagoscopy removal under general anesthesia was the procedure of choice(2). Exigencies of theatre times and arrangements required prompted the development of this technique which is done in the emergency outpatient department without using fluoroscopic control or general anesthesia. No significant complications were seen. The discomfort to the child was only slightly greater than that produced by nasogastric intubation. The procedure avoids the risk of general anesthesia, esophagoscopy and radiation exposure. The cost of hospital stay is also considerably reduced.

In a developing country like ours, the facility for esophagoscopy, fluoroscopy and general anesthesia are available only in a few centers. Removal of esophageal coins using Foley's catheter without fluoroscopy is a safe and cost-effective method which may be performed even at the level of primary health care centers.

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