

## ORIGINAL ARTICLE

## REMOVAL OF COINS FROM OESOPHAGUS WITH FOLEY CATHETER UNDER KETAMINE EFFECT

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**Background:** Foreign body ingestion continues to be a common problem that contributes significantly to high morbidity and mortality worldwide. Coins are the most common foreign body lodged in the oesophagus. This study was conducted to describe our experience of removal of coins from oesophagus with Foley catheter under ketamine effect. **Methods:** This was a retrospective study conducted at District Head Quarter Hospital, Buner. Foley's catheter was used to remove the coins under ketamine effect. **Results:** Coins were successfully removed from 188 children without complications. Amongst these children 101 (53.72%) were male and 87 (46.28%) were female. The mean age of these children was 3.79 years. The coin was removed in first attempt in 154 (81.91%) cases. In 34 (18.08%) cases more than one attempts were required. The mean time for the removal of coin (i.e., initiation of catheter to removal of coin) was 55.30 seconds. The most commonly ingested coin was a one rupee coin (139, 73.93%), followed by two rupee coin (47, 25%), and 5 rupee coin (2, 1.06%). **Conclusion:** The coin impacted at the cricopharyngeus or upper oesophagus can be safely, easily, and quickly removed by Foley catheter under ketamine effect.

**Keywords:** oesophagus, coin, foreign body, Foley catheter

## INTRODUCTION

The ingestion of foreign body most commonly occurs in children especially in their first six years of age with a peak incidence at age 1–3 years.<sup>1</sup> Children are naturally susceptible to be involved in foreign body injuries due to lack of molar teeth, the tendency to oral exploration, and to play during the time of ingestion and the poor coordination of swallowing.<sup>2</sup> As the children explore the world, it is inevitable that they will put foreign body into their mouths and swallow some of them; coins are the most commonly swallowed object.<sup>3</sup>

The coins are commonly impacted in the upper oesophagus, most commonly the cricopharyngeus.<sup>4</sup> The preponderance of the coins may be due to the fact that coins are widely used and the free access of children to coins in our environment which are usually given as gift. The coins that traverse from oesophagus almost always pass spontaneously via gastrointestinal tract. Even safety pins and razor blades usually pass without incident, and rarely cause complications.<sup>5</sup> The items that lodge in the oesophagus typically require removal. Foreign bodies lodged in the oesophagus for a longer time may be associated with complications such as mucosal ulcerations, oesophageal obstruction, perforation, intrinsic stenosis and oesophageal diverticulum.<sup>6</sup>

There are various options for the removal of coins from the oesophagus, Observation<sup>4</sup>, rigid oesophagoscopy<sup>7</sup>, fibre optic oesophagoscopy, penny pincher method<sup>8</sup>, Foley catheter<sup>9</sup>, Magill forceps<sup>10</sup>,

and use of a Bougie to advance the coin into the stomach<sup>11</sup>.

The purpose of this study was to assess the safety and efficacy of the coin extraction from upper oesophagus by Foley catheter under ketamine anaesthesia.

## MATERIAL AND METHODS

This study was carried out in the Department of ENT and Head and Neck Surgery, District Head Quarters Hospital, Dagger (Buner), from May 2007 to May 2010. A total of 188 cases were included in the study. The inclusion criteria for this study were confirmation of the coin lodged in the upper oesophagus by plain X-ray neck, no previous history of oesophageal surgery, no history of respiratory distress, and no clinical evidence of oesophageal perforation. The child was kept nil per mouth for 46 hours prior to procedure. The usual monitoring devices were used.

After intravenous ketamine injection (1–2 mg/Kg body weight) with the head down position to minimise aspiration, having a functioning laryngoscope, forceps and airway equipment at hand, the balloon of an 8–12 French Foley catheter was tested to ensure that it inflates symmetrically. After lubricating the catheter with xylocaine jelly it was inserted through the mouth into the oesophagus with the help of laryngoscope. The balloon was inflated with 5–10 ml of air and a gentle traction was applied on the catheter until the foreign body reached the base of the tongue. The foreign body was then

grasped with Magill forceps and removed. If the first attempt failed, second or third attempts were tried.

## RESULTS

The upper oesophageal coins were successfully removed from all 188 children by the Foley's catheter technique. Among them 101 (53.72%) were male and 87 (46.28%) were female. The mean age of these children was 3.7 years (Range: 18 months to 14 years). Duration of the coin lying in the oesophagus was 1–36 hours (Table-1). The coin was removed in first attempt in 154 (81.91%) cases and in 34 (18.08%) on second attempt (Table-2). The mean time for the removal of the coin was 55.30 seconds, ranging from 35 to 135 seconds. The most commonly ingested coin was a one rupee coin (Table-3). Mean postoperative stay in the hospital was 5 hours and ranged from 3 to 6 hours. There were no major complications. Six patients were having mild mucosal ulcerations.

**Table-1: Time since coin ingestion (n=188)**

Duration	Frequency	Percentage
1 <sup>st</sup> 12 hrs	154	81.91
12–24 hrs	26	13.82
24–36 hrs	8	4.25

**Table-2: Success rate (n=188)**

No. of attempts	Frequency	Percentage
First Attempt	154	81.91
More than one	34	18.08

**Table-3: Types of coins removed (n=188)**

Coin	Frequency	Percentage
1 Rupee	139	73.93
2 Rupee	47	25
5 Rupee	2	1.06

## DISCUSSION

Foreign body ingestion is a common emergency in children. Coins are the most common foreign body lodged in the oesophagus. Children are more susceptible to coin ingestion. Several factors contribute to high incidence of foreign body in children including social factors (e.g., carelessness of parents, children's habit of putting objects into mouth, crying/playing during eating) and anatomical factors (e.g., absence of molar teeth, inadequate control of deglutition)<sup>12</sup>. The majority of foreign bodies in children lodge at the level of cricopharyngeus because it is the narrowest part of the gastrointestinal tract. Those that lodge in the oesophageal tract require removal. Coins that reach the lower oesophagus often pass spontaneously. Serious and life threatening complications like oesophageal abscess, mediastinitis, perforation and fistula can arise in impacted oesophageal coins.<sup>13</sup>

Rigid oesophagoscopy is the gold standard for the removal of foreign body in the oesophagus.<sup>14</sup>

We did not use this procedure because patient need hospitalisation, investigations, general anaesthesia; though the success rate is very high (almost 99.99%) but the complication rate is 5–10%<sup>15</sup>. Dokler ML *et al*<sup>16</sup> compared balloon extraction with endoscope for removal of coin and noted that endoscopy is costly by 400% as it needs general anaesthesia, and long hospital stay but they also pointed out 100% success rate with balloon extraction.<sup>16</sup> The technique used in this study allows removal of an ingested coin using an ordinary Foley's catheter. The use of this technique under fluoroscopic guidance has been described in the literature. However, fluoroscopic facilities and trained radiologists are not available everywhere. This technique is simple, safe and has success rate very close to endoscopy. Corner<sup>17</sup> has also concluded in a literature-based analytic study that paediatric coins removal by the Foley's catheter was far more cost-effective than was endoscopy. It should be considered the technique of choice in patients who lack evidence of significant oesophageal oedema causing tracheal compression.

## CONCLUSION

Foreign body removal by Foley catheter is a safe, effective, and economical treatment modality for uncomplicated coin ingestion. This simple technique may provide a valuable tool, especially when endoscopy is not available.

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