



Ingestion of coins in children in pediatric intensive care unit: Our experience in emergency care at EHU Oran

BAKRI Sid Ahmed¹, SADOK Houcine¹, BOUMENDIL Dalila¹, BATOUCHE Djilali³,
BATOUCHE Djamilia-Djahida^{1,2}

1-Service anesthésie réanimation pédiatrique et néonatale EHU Oran

2-laboratoire de recherche LERMER université d'Oran

3- Hopital Kremlin Bicetre

Summary :

The ingestion of coins is an accident frequently encountered in children. In most cases, the ingestion is asymptomatic but requires instrumental exploration

Aim: is to report the experience of the pediatric resuscitation service in the management of these coins ingested at the EHU Oran

Material-methods: A prospective study from 01/01/2018 to 10/12/2019 was performed in the pediatric resuscitation department. Any child who has ingested a coin is referred to the ORL department for an endoscopic exploration.

A front and side cervical x-ray is taken to visualize the EC. The children were explored by a rigid endoscope under halogenated anesthesia and sedation by propofol in spontaneous ventilation and without trachéal intubation

Results: 35 foreign bodies (coins) ingested by the children were taken care of. Our children are divided into 19 boys (54,28%) and 16 girls (45,7%) with an average age of 25 months \pm (extreme 7 months-120 months) .85,7% of children were asymptomatic and 100% of children were explored; coin extraction was possible in 98.16% of the cases, without any complications

Conclusion: The endoscopic extraction of the coin from the upper digestive tract is harmless and effective

Keywords: coin, child, digestive endoscopy

Introduction:

Ingestion of coins is an accidental situation frequently encountered in the pediatric population. In most cases, the ingestion remains without clinical consequences and the extraction of the EC requires a rigid endoscopy

Material - methods: We conducted a prospective study from 1/1/2018 to 10/12/2019. All children who have ingested a coin are referred to the ORL service of EHU Oran, which calls the pediatric resuscitation anesthesia service for a instrumental exploration, in an anesthetic environment. After having visualized the EC by a frontal and lateral cervical X-ray, the children are then admitted to the emergency unit, after observing a fast before exploration and a consent signed by the parents. Sedation at the time of endoscopy is systematic in all children. Extraction is possible after halogenated anesthesia with a facial mask, and sedation performed by injection of propofol 3 mg / kg, fentanyl 1 gamma / kg (this attitude depends on the experience of the operator. The material used is a laryngoscope rigid, claw clips, "crocodile" clips.

If endoscopic exploration does not visualize a foreign body, an uninhabited abdominal x-ray (ASP) is performed in the recovery room.

The explored children are monitored 2 hours after the digestive endoscopy and then redirected to the ORL department.

Results: In one year we collected 35 cases of coin ingestion. Our children are divided into 19 boys (54,28%) and 16 girls (45,7%)

The average age of the children is 25 months (extreme 7 months-120 months), with a peak age frequency observed at 36 months and 5 years (fig. 1)

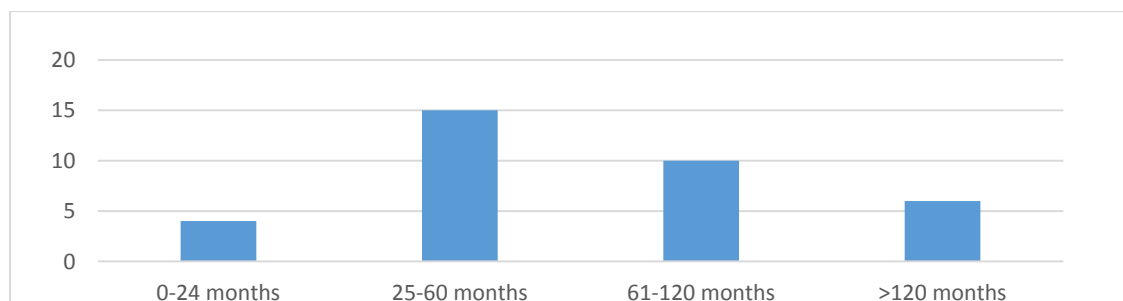


Fig 1: graphical breakdown representing the workforce by age expressed by age class in months

The average time for taking charge is 19.14 ± 0.729 hours; the children are oriented from different wilayas of central and western Algeria. All the children had no particular antecedents except two ashtmatic under treatment

Ingestion was asymptomatic in 30 cases. It was followed by a hyper sialorrhoea in 01 cases, a swallowing gene with vomiting in 2 cases and dysphagia in 2 cases. The clinical examination was unremarkable in all children.

Front and side cervical radiography visualized the presence of a foreign body (coin) at the upper part of the esophagus in 28 children (80%), at the middle part of the esophagus in 05 cases (14 , 2%) and twice the foreign body was in the distal esophagus. (Fig. 2)

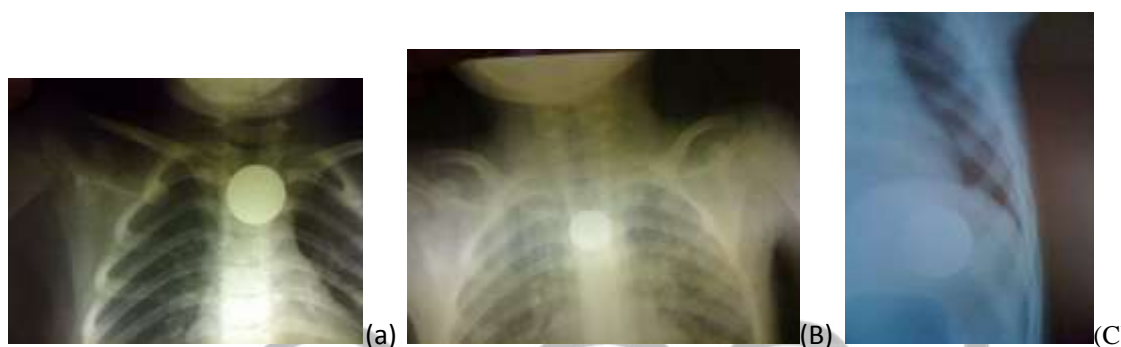


Fig. 2: location of the coin in different place of the esophagus: (a) upper part of the esophagus, (b) middle esophagus, (c) location of the part in the stomach



Fig 3: different types of coins

The part was extracted on the 1st attempt in 80.6%, on the second attempt in 11.3% and on the third attempt in 1.6% of the remaining cases. The median extraction time for the coin was 1 minute, ranging from 35 to 80 seconds, the median duration of sedation was 10 minutes. No complications related to endoscopic treatment were observed. Or even the anesthetic act. All the children were monitored for 02 hours in the recovery room and redirected to the ENT service. The children whose EC was viewed at the ASP had benefited from the control ASPs performed at the ENT service,

remotely from the acute episode and which showed the progression of the EC along the digestive tract until its expulsion by natural way.

Discussion:

The ingestion of coins is a frequent accident in children, with banal clinical consequences [1] and easily removed by endoscopy. [2]

The coins represent the foreign body (CE) most often encountered in children. [3–4] with a peak frequency between 6 months and 6 years old [3,5]. In a series that analyzed 320 esophageal CEs, they were coins in 83.8%. Ingestion occurred when children played in the presence of an adult in 85.3% of cases [6]. Almost all of the ingestion in children under the age of 5 did not go unnoticed in our study. 76% of our children were asymptomatic on admission, there was no significant difference between room size and clinical sign on admission ($p = 0.478$).

The passage of CE of less than 2 cm in diameter is generally easy through the esophagus. On the other hand, CE of 2 cm in diameter can be more easily impacted during their progression in the digestive tract with a risk of obstruction and perforation which is then increased, which justifies their endoscopic extraction. Other blocking sites are the pylorus, duodenum, Treitz angle, Meckel's diverticulum, ileocecal valve, appendix and recto-sigmoid hinge. The EC located at the upper third and at the middle third of the esophagus must be removed as soon as possible, because they are blocked, either at the cricopharyngeal ring or at the aortic arch, which are areas at risk of complications. [1] [6]

In the event of a delayed diagnosis, several complications can arise such as: esophageal ulcer, esophageal stenosis [7], esotracheal fistula [8].

The most frequent location (95%) is the cervical esophagus under the cricopharyngeal muscle [9, 10], it was observed in 81% in our study, and justifies instrumental extraction. Several attitudes have been described in the literature to allow this extraction. This is the use of the Magill forceps [11-13], the use of the Foley probe [14, 15], flexible [16] or rigid esophagoscopy [17]. A review article discussed the management of coin ingestion (published by Waltzman) [2] based on a retrospective study and a prospective randomized trial. with the use of rigid esophagoscopy in symptomatic patients, On the other hand, children with localized EC of the lower third can be monitored for 12 to 24 hours in the absence of functional signs, in the hope of expulsion which may prevent the need for general anesthesia.

In our current practice, digestive endoscopy was performed in 100% of the cases. It is a digestive endoscopy with a rigid tube due to the lack of availability of the flexible pediatric endoscope. and no complications secondary to the endoscopic procedure were noted. Same technical procedure used

by J.R. Benito Navarro et al. [19]. However, it is important to remember that esophagoscopy, whether flexible or rigid, is associated with a risk of esophageal perforation during the procedure evaluated between 5 and 10%

As for the anesthetic protocol our attitude depends on the experienced operator or little, so the extraction procedure was performed without intubation, under anesthesia sevoflurane, and in 20% of cases associated with the injection of propofol spontaneous ventilation. This extraction was 100% successful. In the Cetinkursun et al [12] series, the extraction was performed without intubation under sedation inhaled with sevoflurane. Similarly in the series of Baral coll [18], extraction was done in 21 children sedated by propofol in spontaneous ventilation and without tracheal intubation. Janik E et al [13] mentioned the risk of respiratory complications in the absence of tracheal intubation. Nevertheless, in our series, strictly respecting the rules of preoperative fasting, and as elsewhere, laryngospasm or desaturation have not been recorded as in the literature Cetinkursun S, et al [12], The post-exploration suites were favorable, the children are monitored for 2 hours post-exploration, then handed over to the parents.

Conclusion: The ingestion of coins is a frequent accident in children and the diagnosis is most often evident by a cervical x-ray. Endoscopic exploration is easy with halogenated anesthesia and propofol sedation, after respecting the preoperative youngster. But like any accidental situation, prevention requires good education for parents and young children.

Conflict of interest: the authors declare that they have no conflict of interest.

References

- 1-Sharief GQ, Brousseau TJ, Bradshaw JA, Shad JA Acute esophageal coin ingestions: is immediate removal necessary? *Pediatr Radiol* (2003): 33:859–63
- 2 Waltzman M.L. Management of esophageal coins, *Curr. Opin. Pediatr.* 18 October (2006) ; (5) 571–574.
- 3- Cheng W, Tam PK Foreign-body ingestion in children: experience with 1,265 cases. *J Pediatr Surg* (1999) 34: 1472-6
- 4-Hachimi-Idrissi S, Corne L, Vandenplas Y. Management of ingested foreign bodies in childhood: our experience and review of the literature. *Eur J Emerg Med*1998; 5:319-23
- 5 -Webb WA Management of foreign bodies of the upper gastrointestinal tract: update. *Gastrointest Endosc* (1995) 41: 39-5
- 6-Chinski A, Foltran F, Gregori D, Ballali S, Passali D, Bellussi L. Foreign Bodies in the Oesophagus: The Experience of the Buenos Aires Paediatric ORL Clinic. *Int J Pediatr* 2010; pii: 490691.
- 7- Bhasin A, Elitsur Y. Esophageal stenosis, a rare complication of coin ingestion: case report. *Gastrointest Endosc* 2004;59:152–4
- 8 - Amouri A. Medhioub M. Mnif L. Fistule oesotrachéale secondaire à l'ingestion d'une pièce de monnaie *Acta Endosc.* (2012) 42:29-32
- 9-Crysdale W.S., Sendi K.S., Yoo J. - Esophageal foreign bodies in children: 15-year review of 484 cases. *Ann. OtoL Laryngol*, 1991, 100, 320-324.
- 10-Hawkins D.B. - Removal of blunt foreign bodies from the esophagus. *Ann. OtoL RhinoL Laryngol*, 1990, 99, 935-940.
- 11-Mahafza TM Extracting coins from the upper end of the esophagus using a Magill forceps technique. *Int J Pediatr Otorhinolaryngol* (2002) 62:37–9
- 12- Cetinkursun S, Sayan A, Demirbag S, Safe removal of upper esophageal coins by using Magill forceps: two centers' experience. *Clin Pediatr (Phila)* (2006) 45:71–3
- 13- Janik JE, Janik JS Magill forceps extraction of upper esophageal coins. *J Pediatr Surg* (2003) 38 :227–9
- 14- Schunk JE, Harrison M, Corneli HM, Nixon GW Fluoroscopic Foley catheter removal of esophageal foreign bodies in children: experience with 415 episodes. *Pediatrics* (1994) 94:709–14
- 15-. Dunlap LB Removal of an esophageal foreign body using a Foley catheter. *Ann Emerg Med* (1981) 10:101–3
- 16-Bendig DW Removal of blunt esophageal foreign bodies by flexible endoscopy without general anesthesia. *Amer J Dis Child*(1986) 140:789–90
- 17-. McPherson RI, Hill JG, Othersen HBEsophageal foreign bodies in children: diagnosis, treatment, and complications. *AJR Am J Roentgenol* ,(1996) 166:919–24
- 18- Baral BK, Joshi RR, Bhattarai BK, Sewal RB Removal of coin from upper esophageal tract in children with Magill's forceps under propofol sedation. *Nepal Med Coll J* (2010) 12:38–41
- 19-. Benito Navarro J.R, del Cuvillo B.A, Porrás Alonso E., Esophageal foreign bodies. Our ten years of experience, *Acta Otorrinolaringol. Esp.* (2003) 54 (4) 281–285.