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Original Article

Coin Impaction at Upper end of Esophagus; Wait or Intervene

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ABSTRACT: OBJECTIVE : To document logical management of coin impaction at upper end of esophagus. STUDY DESIGN: Prospective, observational. PLACE & DURATION OF STUDY. This study was done in two centers, PNS Shifa, Karachi and Combined Military hospital Quetta from August 2009 to December 2010. PATIENTS AND METHODS: 83 children with history of coin impaction at upper end of esophagus were included after radiological evidence of impaction at upper end of esophagus. Rigid endoscopy under general anesthesia was planned in every case. Prior to endoscopy, base line investigations done and patients were kept nil by mouth for six hours. Just before endoscopic intervention repeat X-ray neck & chest was done in every patient to see the latest location of impacted coin. RESULTS: There were 53 boys and 30 girls. Age varied between 2 to 6 years. Five rupee coins impacted in 37(44.57%), two rupee coin in 24(28.91%) and one rupee coin in 22(26.50%). Size of five rupee coin in millimeters is 25, two rupee coin 22 mm and one rupee coin is 20 mm. 4 five rupee coins, 9 two rupee coins and 15 one rupee coins spontaneously passed from esophagus to stomach within 06 hours. CONCLUSION: Chances of coin impaction is directly proportional to its size and inversely with the age of child. An impacted coin, 20 mm or below in size must be given a chance for at least 6 hours to pass spontaneously.
Key Words: Coin impaction, Foreign bodies esophagus, Spontaneous passage of coin, Esophagus.

INTRODUCTION: The history of coin impaction in esophagus is as old as invention of first coin " Lydian electrum trite" in 600 BC. Presently a vast variety of coins of different sizes ranging from 4 mm to 85 mm are in use all over the world. Three varieties of coins being used in Pakistan. These coins price as five, two and one rupees. Although a coin impaction is least complicating and easy to handle emergency, yet it creates a lot of panic among parents. A tactful and good doctor has to treat kid and council parents. Coin is the commonest foreign body in children and its documented incidence is 5 %[1]. More than one coin impaction in same child at same site or different sites in esophagus is a rare happening and few have been reported[2]. Out of three anatomical potential sites for impaction, most coins (70 %) stuck up at upper end of esophagus. Generally, impacted foreign bodies in esophagus are not life threatening these days and reported deaths in America is one in five hundred .In case of coins it is lower than this[3]. During 1900s fatality was more than 50% .Most of the coins impact during first decade of life and age in more than 60 % cases is four years or below[4,5]. Dominant signs and symptoms of impaction are dysphagia, increased salivation, vomiting and regurgitation. A thorough history coupled with plain radiography is sufficient to diagnose all coins and most of other foreign bodies. Good quality metal detectors are useful and economical recent tools for diagnosing and tracking metallic foreign bodies. These metal detectors, as screening tool have been recommended by American Society for Gastrointestinal Endoscopy[6]. We have multiple options to remove a coin like rigid endoscopic removal, fibreoptic endoscopic removal, balloon catheter removal, and conservative management to wait for spontaneous passage. The rigid endoscopy still remains the gold standard for removing any foreign body[7].

PATIENTS AND METHODS: This study was conducted simultaneously in two centers, PNS Shifa Karachi and Combined Military Hospital Quetta. 83 cases were included in this study (64 patients in PNS Shifa Karachi and 19 patients in Combined Military Hospital Quetta) over a period of sixteen months. Every patient reporting with history of coin ingestion, was immediately subjected to plain radiography of neck and chest obtaining both Antero posterior and lateral views. Patients with radiological evidence of coin impaction at upper end of esophagus were included in the study and admitted for planned rigid therapeutic endoscopy. Every patient was kept nil by mouth for 6 hours and closely monitored for vitals and signs of complications like choking, pain and vomiting. Mean time patient was prepared for general anesthesia after completing base line investigations. Next of kin was taken in confidence after detailed counseling. Informed consent was taken in every case. Few minutes before endoscopy, X-Ray was repeated in every case to see the latest location of impacted coin. Rigid endoscopy under general anesthesia was the method of removal in our study. After removing the coin second look esophagoscopy was performed by senior available consultant. Every patient remained nil by mouth till fully conscious and clearance of X-ray findings.

RESULTS: Out of total 83 cases 53(63.85%) were boys 30(36.15%) were girls. Mean age of patients were four years. Five rupee coin was impacted in 37 (44.57 %), Two rupee coin in 24(28.91%) and one rupee coin in 22(26.50 %) as shown in figure 1 & 2. On getting repeat plain radiography just before shifting the patient to operation theater for rigid endoscopy under general

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Figure 1 : Pakistani coins of rupee one, two & five.

anesthesia, Out of 37 five rupee coin impactions only 4(10.80%) got spontaneous passage within 06 hours, out of 24 coins of two rupee impactions 9(37.5 %) had spontaneously passed within 6 hours and out of 22 one rupee impactions 15(68.18 %) had spontaneously passed into stomach within 6 hours as shown in figure 3. Age of patients in 67(80.72 %) impactions was under 4 years. In our study no impaction at upper end of esophagus was seen under one year and over six years of age. All 83 patients were asymptomatic on admission and remained symptom free till removal by endoscopy after six hours.

DISCUSSION: Conventionally foreign bodies of esophagus are divided as true foreign bodies and edible foreign bodies. Common true foreign bodies are coins, metallic buttons, plastic items, battery cells, common pins, safety pins and variety of toy parts and school items. Among true foreign bodies coin is the commonest foreign body of esophagus. In our study male dominance of coin impaction closely matched with most of previous studies. In this study there was not a single case having two or more coins in the same patient. This does not negate the importance of second look esophagoscopy after removal of coin during endoscopy because medical literature has documented two or more coins in the same patient at same site as well as at other sites of anatomical constrictions in esophagus. Double and triple coin impaction in same patient at same location have been documented in few studies and case reports[2,8]. Management of coin impactions in our study was not at all difficult and all endoscopies were rigid without a single complication but the justified panic of the parents of kids is very difficult to control and one needs a special counseling session for making them wait for six hours. Even after spontaneous passage of coin into stomach anxiety of parents never fades away and it needs repeated reassurance and radiograph. We observed all our cases who had spontaneous passage of coin into stomach for minimum 24 hours. There was not a single complication and all the coins passed from stomach safely. Previously documented safety of such like cases is 80 %[9]. Although this is generally agreed that chance of coin impaction is directly proportional to its size and inversely to the age of child, yet there are many unanswered and debatable questions on the topic of coin impaction and its management like which coin size is risky and what should be the criterion to wait for spontaneous passage? On completion of our study we are confidant to document that a coin below 20 mm in size must be conservatively treated for about 6 hours awaiting spontaneous passage and coins above this size rarely pass spontaneously and need endoscopic removal. Obtaining second x-ray just before operation in coins above 20 mm in size is wasting of time and economy. Another research on this issue supports our study concluding that size of most impacted coins at upper end of esophagus is between 22 to 26 mm[10]. Certain studies recommend, a asymptomatic child with impacted coin irrespective of coin size must be given a chance for spontaneous passage of coin for two to five hours[11-13]. Our study is conflicting with this recommendation because only 4 five rupee coins out of 37 (10.80%) with size of 25 mm could pass spontaneously and 15 one rupee coins out of 22 (68.18%) with a size of 20mm passed spontaneously within six hours. A logical approach is recommended in various studies, performing immediate endoscopy in those cases who are symptomatic (pain, vomiting, choking, excessive regurgitation and restlessness) and wait for spontaneous passage in rest

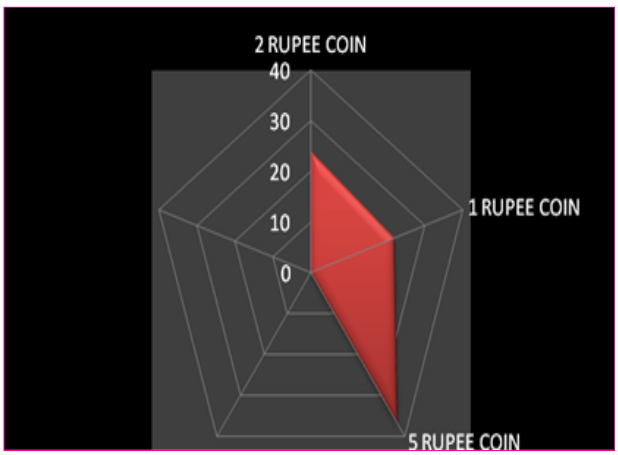

Figure 2 : Type and number of coin impactions.

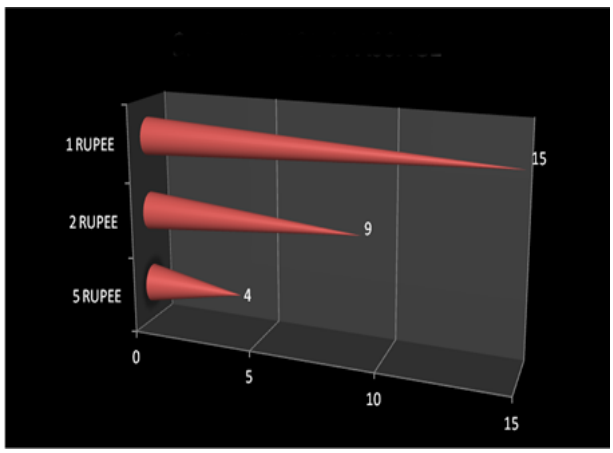

Figure 3 : Spontaenous passage.

coin impactions[14].We agree that chance of spontaneous passage of a coin after impaction at upper end is less as compare to mid and lower esophagus[15] but at the same time we must not forget that age of child and size of coin are the decisive factors for its spontaneous passage. Not mentioning the size and initial coin location, cases with a single coin impaction have 28% documented spontaneous passage[16]. In our study 77.27% spontaneous passage in coins with a size of 20 mm and only 5.40% spontaneous passage in case of coin above 24 mm in size clearly concludes that size of coin plays major role in its spontaneous passage or impaction. A never ending controversy still exists in terms of the best method of removal of coin and other foreign bodies. Rigid endoscopy was used by Jackson and Jackson in 1937.It is still most commonly used and is time tested. Fibreoptic option was first time used by Morrissey in 1972[17]. Bonadio used dilators to push the coins in to stomach[18] and Bigler in 1966 reported using Foley catheter technique of removing blunt foreign bodies .In recent past a two center study has come up with a least invasive technique of removing coins from upper end of esophagus showing 96.4% success rate and average time of removal is 33 seconds using Magill Forceps[19]. These days mostly fibreoptic and rigid endoscopy is in practice. In our opinion rigid endoscopy is an ideal technique.

CONCLUSION: In the light of our study, we believe that doing a second X-ray and keeping a patient nil by mouth for so long in case of an impacted coin with a size more than 20 mm is wasting of time and economy. These should be removed as early as possible. It is strongly recommended that a coin below 20 mm size should be conservatively managed at least for six hours to allow likely spontaneous passage and if coin is still impacted on repeat X-ray after six hours, go for endoscopic removal. If possible medical authorities may please advise the Government to redesign the coin sizes. This will surely reduce the incidence of coin impactions and save the hospital economy. Print and electronic media can be used to educate the masses about the hazards of coin handling by kids.

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