

## Removal of Penetrating Sharp-Pointed Objects from the Stomach and Duodenum

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### إزالة الأجسام الحادة التي تخترق المعدة و الاثنا عشر

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#### الملخص:

**الهدف:** الأجسام الحادة أو المدببة الرأس مثل الدبابيس، الابرو و المسواك مجرد اختراقها لجدار المعدة فانها تبقى مشكلة في عملية التنظير. **المرضى:** تم دراسة خمس حالات لاستخراج هذه الأجسام، شوهدت ثلاثة منها في الفلم الشعاعي خلال عدة أسابيع دون أي تغيير في موقعها. ثلاثة منها مختزقة المعدة واثنان مختزقة الاثنا عشر، ثلاثة دبابيس معدنية واثنين مسواك خشب. باستخدام التخدير والمريض في وعيه في وحدة التنظير، شوهدت الاجسام الحادة منغمرة في الجدار. **النتائج:** بعد اخراجهم من الجدار عن طريق الكوي وملقط الخزعة، جميعهم تم استخراجهم من المعدة بواسطة ملقط الخزعة الضخم دون الحاجة لأكثر من انبوب أو الرأس الواقي. تم إنجاز هذا ببساطة عن طريق ملقط الخزعة الضخم لقبض او مسك نهاية الاجسام الحادة وتوصيلهم الى قناة منظار المعدة، ثم استخراج منظار المعدة مع الدبوس او المسواك تحت الرؤية المباشرة. **الاستنتاجات:** هذه طريقة آمنة وفعالة لاستخراج الأجسام الحادة وتقلل من فرصة اصابة المرئ والآثار الجانبية لاستخدام أكثر من انبوب.

**مفتاح الكلمات:** الأجسام المدببة، الأجسام الحادة المختزقة، المعدة الاثنا عشر، التنظير.

**Aim:** Sharp penetrating objects such as pins, needles, and toothpicks, once penetrating the gastric wall, continue to be a problem in endoscopy.

**Patients:** We report five cases of extraction of such objects; three of them were seen on plain X-ray films over few weeks without changing in their position. Three objects were penetrating the stomach and two the duodenum; including three metal pins and two wooden toothpicks. Using conscious sedation in endoscopy unit, the sharp object was seen embedded in the wall.

**Results:** After freeing them from the wall; by snare or biopsy forceps, all were retrieved from the stomach by the jumbo biopsy forceps without over tube or protective hood. This was accomplished simply by using the jumbo biopsy forceps to grasp the penetrating end of sharp-pointed objects and securing them in the gastroscope working channel; and then extracting the gastroscope with the pin or toothpick under direct vision.

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**Conclusion:** This is a safe and effective way of retrieving sharp objects and decreases the likelihood of esophageal injury and the side effects of over tube.

**Keywords:** Sharp-pointed objects, penetrating sharp object, Stomach and Duodenum, endoscopy.

## INTRODUCTION:

Foreign objects in the upper GI tract are a common problem, especially, in the pediatric age group<sup>1</sup>. Many coins and other blunt objects can be removed if they are seen over one to two weeks by plain x-ray<sup>1,2</sup>. The possibility of injury from such blunt objects is very rare. Conversely removal of foreign objects with sharp-pointed ends, such as pins, needles, toothpicks and sharp bones, can lead to catastrophic perforation of the esophagus<sup>1,2,3</sup>.

In the past two decades we have removed many of these foreign objects<sup>3</sup>. Classical teaching and the American society for Gastroenterology (ASGE) guidelines do not recommend removal of pins and needles, especially when the patient has a full stomach, an upper endoscopy the next morning, on empty stomach, may not see the pin<sup>1</sup>.

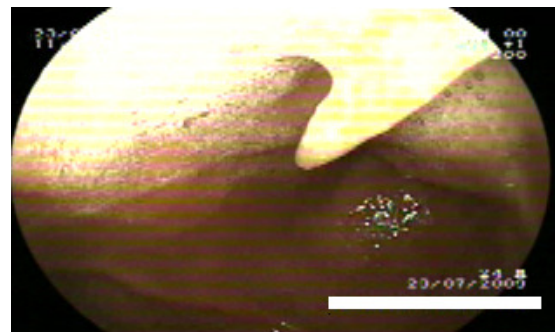
If a sharp object is retained on multiple plain x-rays over several weeks, (penetrating the wall), endoscopy should be done and the sharp objects must be extracted.

## MATERIALS AND METHODS:

From June 2009 to Dec 2010, (over 18 months), we collected five patients with such a problem; the first was a 26-year-old male with chronic epigastric pain.

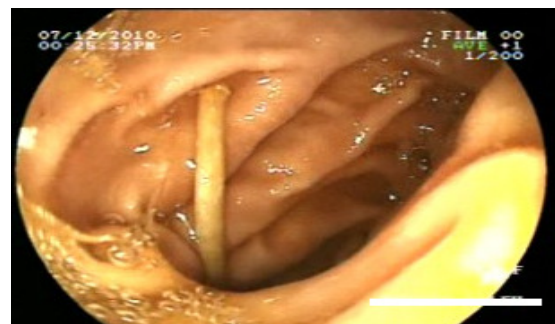
The remaining three patients were young females, who ingested pins from scarves covering their heads while dressing (Fig 3: A, B).

Upper endoscopy demonstrated an object penetrating the antrum, a wooden toothpick was found penetrating the antrum, on lesser curve side (Fig 1).

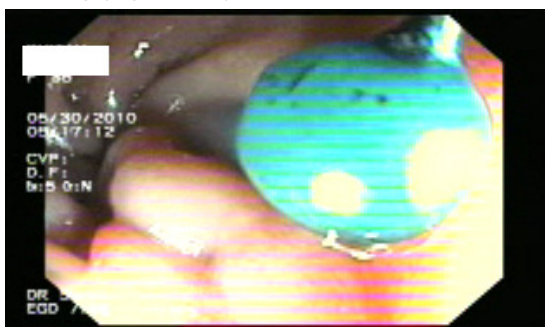


**Fig 1:** Toothpick penetrating the stomach.

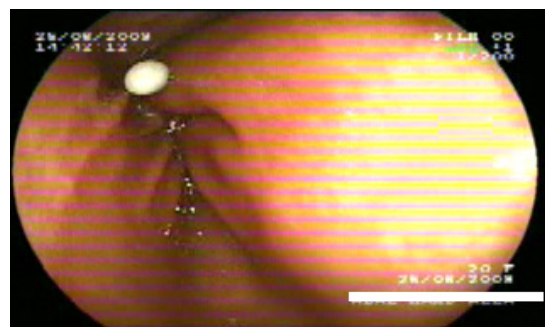
In a similar case, a work up for a 61-year-old female, with epigastric pain and anemia revealed a toothpick penetrating the second portion of the duodenum (Fig 2).



**Fig 2:** Toothpick penetrating second part of duodenum.



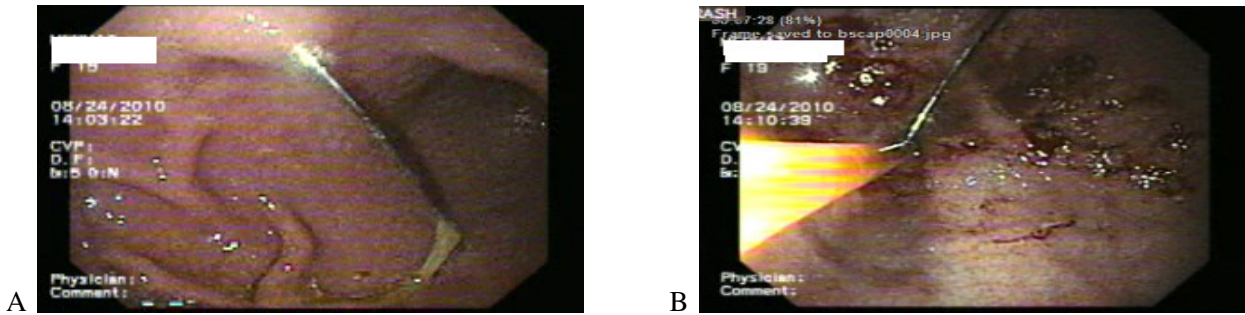
A



B

**Fig 3:** (A) Pin penetrating the duodenum and (B) the antrum.

One of these girls had a sewing needle with a broken thread hole, with two sharp pointed ends penetrating the antrum, in two different sites (Fig 4: A, B).



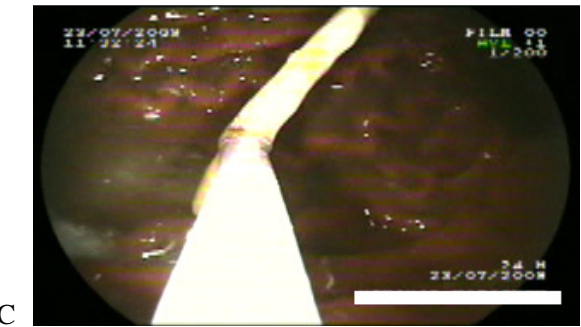
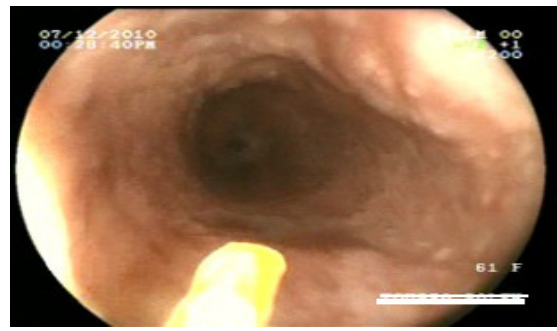
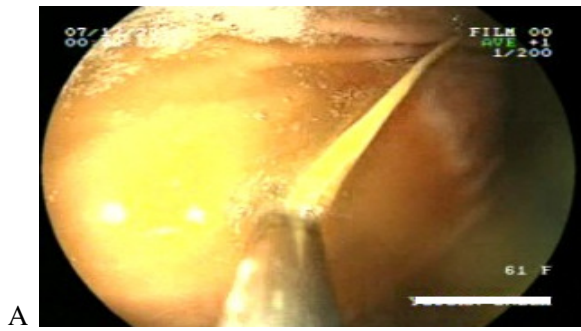
**Fig 4:** (A) A needle with two sharp-pointed ends, (B) Grasped by the biopsy Forceps

All patients underwent conscious sedation using Midazolam 2.5-5 mg IV, and upper endoscopy was performed as an outpatient. Olympus (EVIS GIF160 system, or Fujinon (EG-250WR 5) Gastrosopes were used. Snare and Biopsy forceps were used to free and extract the sharp pointed object. No over tube or rubber hood were used.

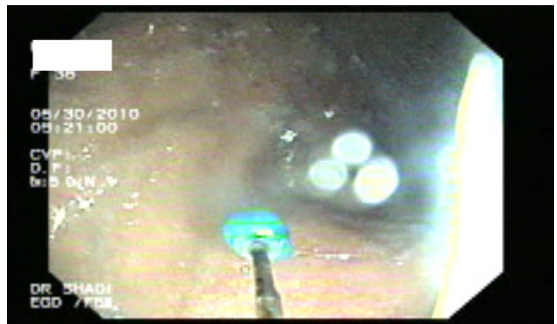
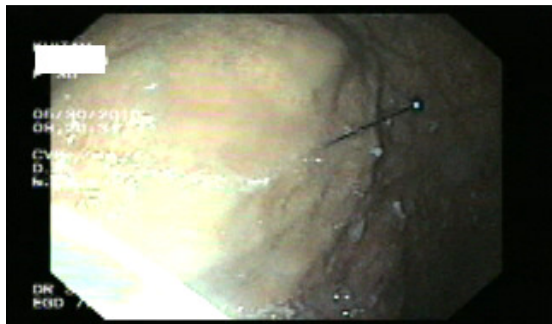
## **RESULTS:**

The total number of patients was five, with penetration of the stomach and duodenum. Four females, and one male, two patients with toothpicks (Fig1 and 2). Two with pins (Fig 3: A, B) and one with a sewing needle. (Fig4: A,B). The penetrating object was there for an average of three weeks. Average time of procedure, from intubation to extraction, was 5.2 minutes. The sharp pointed object was freed from the gastric or duodenal wall and then retrieved (Fig5: A, B, C, D). Knowing the direction of the object is important before freeing it, in order not to cause injury to the gut wall. One must generate the force of pulling in the same axis (direction of penetration), and not rotating or perpendicular to the penetration axis. Doing so will

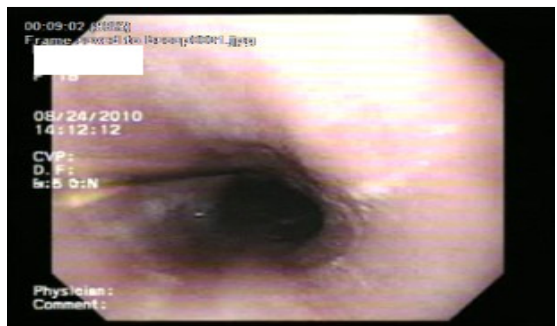
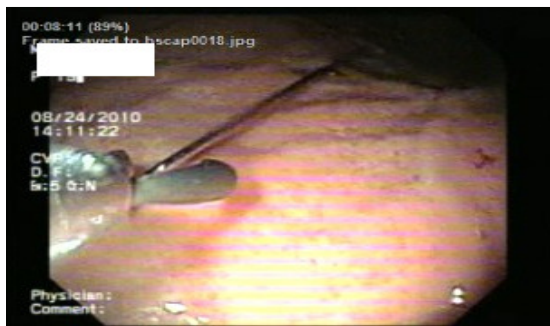
minimize tissue injury to the penetrated bowel. After the sharp object was freed by this maneuver, it was dropped in the stomach (Fig6: A). Using a jumbo biopsy forceps (Multi-bite biopsy forceps, Boston Scientific), the sharp pointed-end was grasped by the cusps of the forceps, by putting the forceps wire in the same axis of the pin, closing the biopsy forceps in the axis will put the pin in the same axis of the biopsy forceps, then it will be pulled through the working channel of the scope (Fig6: B; Fig7: A, B). More than one-third of the sharp pointed object was kept safely in the biopsy channel. Both were removed under direct vision. None of our patients had any procedure related adverse event or surgical intervention.



**Fig 5:** Toothpick removed from D2 by catching the penetrating end by the biopsy forceps (A), and pulling it into the channel (B). Removal of toothpick (Fig 1) from antrum (C), and then to esophagus (D).



**Fig 6:** (A) After freeing the pin in Fig 2B, and dropped in the stomach, (B) the biopsy forceps are used to grasp the sharp-pointed end and pull it to the biopsy channel.



**Fig 7:** the sewing needle in fig4 after freeing it from the antrum, the sharp-pointed end grasped by the Biopsy forceps (A), and then pulled to the working channel (B).

## DISCUSSION:

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Ingestion of sharp objects may pass through the GI tract without any complication<sup>1,4</sup>. ASGE recommended in the guidelines not to try to retrieve pins and needles from the stomach, nor try to remove pins, needles and toothpicks while the patient has a full stomach, since this may lead to failure and the patient to aspirate. The penetration of esophagus or stomach and duodenum may add to complications of such ingestion, such as liver abscesses, mediastinitis, migration of such sharp pointed object to the bowel, and may require surgery<sup>5-7</sup>. Death may result from sepsis after penetration of toothpick to the intestine<sup>8</sup>. Sewing needle can penetrate the proximal gut and migrate to liver and lead to liver abscess, and surgical intervention is a life saving procedure<sup>9</sup>.

In this paper we are the first to describe a new method of retrieving such sharp pointed objects from the upper GI tract. Other existing methods described the protective hood and over tube to extract them without any injury to the esophagus. With this new method, none of our patients were referred to surgery.

## CONCLUSION:

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Ingestion of sharp-pointed objects is a clinical and endoscopic dilemma. Penetration of the upper GI wall may lead to severe illness and complications. The first step in solving such a problem is by freeing the sharp object from the wall, then extracting it outside the upper GI without causing any luminal injury or tearing the esophagus. Using the biopsy forceps to grasp the penetrating end of sharp object and secure it in the working channel of gastroscop is an effective and a safe way to retrieve sharp objects. We found that this new method was not reported before. Sharp pointed objects can be removed without complication or surgical intervention.

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