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Case Report

Cervical Esophageal Injury from Gunshot Trauma: Endoscopic Management for Complication

Supaporn Opasanon, MD*
Asada Methasate, MD**
Thawatchai Akaraviputh, MD**
Pornprom Muangman, MD*
Kris Kaorochana, MD*

**Division of Trauma Surgery, Department of Surgery, ** Siriraj GI Endoscopy Center, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

Abstract **Penetrating esophageal injuries are common, primarily caused by gunshot and stab wounds. It can result in potentially life-threatening injuries that demand immediate attention and intervention. Clinical signs of esophageal injury infrequently present initially. Blast effect can cause injury far from the bullet track through the release of high energy with impact. Physicians may underestimate tissue damage from this effect. Early detection of esophageal injuries remains difficult and diagnosis more than a 24-hour delay is associated with a significant morbidity and mortality. Therefore they require a high index of suspicion to diagnose and treat properly.**

Treatment of esophageal perforation ranges from surgery to conservative treatment. In case with leakage and no sepsis, conservative treatment should be considered. However, conservative treatment would likely fail if an associated stricture exists. Correction of the stricture allows quicker recovery and higher chance to succeed. Meticulous examination using endoscopy plays an important role and should be incorporated in the armamentarium of the existing treatment options for esophageal perforation.

Key words: **esophageal injury, endoscopic management, gunshot trauma**

Case Report

A 29-year-old female presented with history of gunshot wound at right shoulder. Vital signs were stable. She had no sign of airway obstruction and oxygen saturation was 99%. Chest X-ray revealed the retained bullet at C7 level (Figure 1). Barium (Ba) swallowing showed contrast leakage at cervical esophagus. She urgently underwent neck exploration under general anesthesia. Finding was cervical esophageal perforation (C7 level), through and through, with a retained bullet (Figure 2). Esophageal perforation was debrided and primary repair was performed using vicryl 3-0, interrupted, two-layer suture. Penrose drain was left in situ for drainage. Enteral feeding via nasogastric tube was applied.

After the first postoperative week, esoghagogastroduodenoscopy (EGD) was performed using the pediatric endoscopy. Esophageal stricture was

Correspondence address : *Supaporn Opasanon MD, Division of Trauma Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand; Telephone: +66 80440 0269; Fax: +66 2419 7730; E-mail: anne_surgeon@hotmail.com*

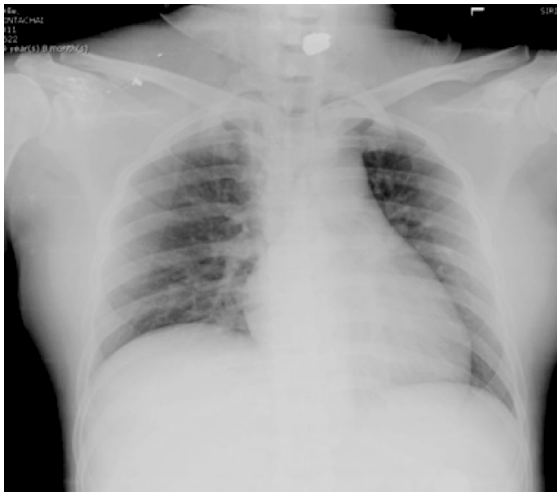


Figure 1 Chest X-ray showed the retained bullet.



Figure 2 A retained bullet was found intraoperatively.

demonstrated at anastomotic site. Percutaneous endoscopic gastrostomy (PEG) placement was done for feeding and improving nutrition. At the second week post operation, barium swallowing was performed. Extraluminal leakage of barium at right anterolateral aspect of cervical esophagus about C7 level was detected (Figure 3) while the patient's general condition was stable. The patient was transferred to the Siriraj GI center for re-evaluation. EGD was performed under local anesthesia with sedation. Stricture at the same site was found and the scope could not be passed to distal esophagus. Esophageal dilatation was performed from 20 Fr to 42 Fr using Savary-Gillard dilators (Figure 4). Three days later, barium swallowing was repeated and complete healing with no contrast leakage was confirmed (Figure 5 a, b). The patient then started oral diet with no further complication.



Figure 3 Barium swallowing showed extraluminal leakage at C7 level.



Figure 4 Post esophageal dilatation using Savary Gillard dilators.

Discussion

Traumatic injury to the esophagus may occur through either penetrating or, less commonly, blunt injuries. Despite improved diagnostic modalities, a perforation or leak from the esophagus remains a major source of morbidity and mortality regardless of the cause. Delayed diagnosis and treatment was related with high morbidity and mortality in esophageal injury.[1] The overall mortality associated with esophageal

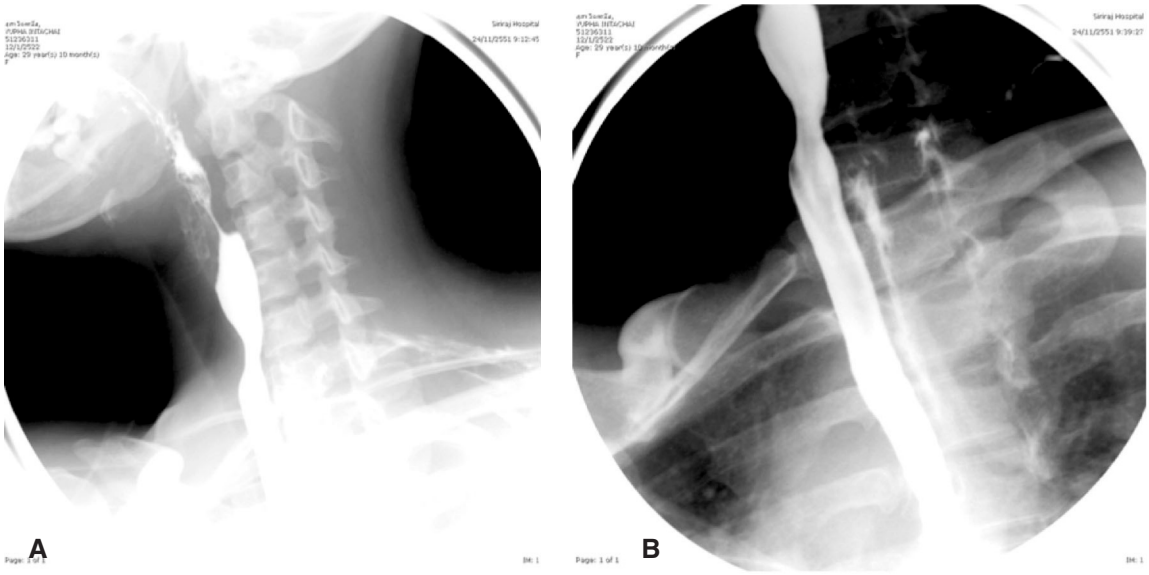


Figure 5A-B No contrast leakage after Barium swallowing on post dilation day 3.

perforation could approach 20%, and a doubling of mortality occurred in delayed treatment of more than 24 hours after perforation.[2] Contrast esophagography was the standard investigation with sensitivity of 48-100%.[3,4] However, it is limited in critically injured patients and has a high associated false-negative rate. On this occasion, direct visualization with flexible esophagoscopy may be used to achieve the diagnosis with reported accuracy rates of 85-97%.[4]

In the 5-year period review of Madiba et al,[5] conservative management of cervical esophageal injuries with "contained" extravasation of contrast consisting of a course of antibiotics, nothing-by-mouth and support nutrition was safe and effective. Nevertheless, each patient must be managed on an individual basis and if associated stricture exists, treatment of the stricture by means of esophageal dilatation should be performed. Variable length of time for closure has been reported between five days and three weeks. In this case, esophageal stricture inevitably led to high luminal pressure and it possibly caused conservative management to fail. Role of esophageal dilation should be considered in esophageal perforation with stricture. It is safe, effective and allowing quicker recovery. This method with role of endoscopy may be a new trend to treatment of esophageal injury in the future.

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