



A Case of Gastric and Esophageal Perforation Caused by Endoscopic Retrograde Cholangiopancreatography

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Authors' contributions

This work was carried out in collaboration between all authors. Authors SY, ES designed the study, and wrote the first draft of the manuscript. Authors EC, ADU, NE, MY and DAC participated in data acquisition, data analysis, literature review, and drafting and critical revision of the manuscript. All authors read and approved the final manuscript.

Case Study

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ABSTRACT

Aim: Endoscopic retrograde cholangiopancreatography (ERCP) is no longer in use as a diagnostic procedure but rather when a therapeutic intervention is needed or most likely to be needed depending on the pre-ERCP imagings as transabdominal ultrasonography (TAUS), endoscopic ultrasonography (EUS), magnetic resonance cholangiopancreatography (MRCP), because it is an invasive procedure with potential life-threatening complications specially perforation, because most of the diagnosis that ERCP can provide, can be solved by the above mentioned cross sectional imagings. One the most serious complication of this widely used intervention is perforation. We present a case of ERCP-induced perforation of the lesser curvature and esophagus with literature review.

Presentation of Case: A 90 years old female patient admitted to secondary level hospital with chronic abdominal pain, yellow discoloration of skin and sclera. ERCP was planned for differential diagnosis of periampullary tumor. Patient is redirected to Izmir Bozyaka Education and Research Hospital General Surgery Department for iatrogenic perforation during the procedure starting from lesser curvature of the stomach extending to thoracic

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esophagus. Unconsciousness, hypotension (70/40mmHg), tachycardia (140/min) tachypnea (24/min) were the first presenting symptoms. Body temperature was 38°C. Generalized tenderness and rigidity were presented during abdominal examination. An emergency operation was planned with these findings. Operation including total gastrectomy, transhiatal esophagectomy and feeding jejunostomy was the definitive surgery performed. At postoperative 14th day the patient lost her life after sudden cardiac arrest.

Discussion and Conclusion: ERCP has some complication risks like every invasive procedure. Early diagnosis and correct management are crucial in the management of the intervention related complications.

Keywords: ERCP; stomach; esophagus; perforation.

1. INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is an important endoscopic procedure used in the treatment of biliary tree, pancreas and ampulla related disorders and more than 500.000 procedures are performed annually in USA [1]. It can cause life-threatening complications like every other invasive procedure. Pancreatitis, cholangitis and bleeding are the mostly encountered complications after ERCP but perforation is the most feared one due to high mortality rate. Reported incidence of perforation after ERCP is 0.3%-0.6% in the literature [1,2]. Sepsis and multi-organ failure will be inevitable unless urgent diagnosis and prompt treatment is established in ERCP related perforation cases which will be the leading cause for increased mortality. The most common sites of perforation are duodenum and periampullary region. Perforation of stomach and duodenum together is not a reported case encountered in the literature. We presented an ERCP related case of stomach lesser curvature and esophagus full thickness perforation with recent literature review.

2. PRESENTATION OF CASE

A female patient at 90 years old had admitted to a hospital in rural area with chronic abdominal pain, yellow discoloration of skin and sclera. Biochemical parameters revealed hyperbilirubinemia endorsing mechanical biliary obstruction (total bilirubin:8mg/dl, direct bilirubin: 6.7mg/dl, serum alkaline phosphatase:670mg/dl). ERCP has been planned with differential diagnosis of periampullary tumor or choledocholithiasis. An iatrogenic perforation starting from lesser curvature of the stomach extending to thoracic esophagus happened during the procedure. Patient is redirected to Izmir Bozyaka Education and Research Hospital our General Surgery Department.

After six hours of transportation time, patient was hospitalized. Unconsciousness, hypotension (70/40mmHg), tachycardia (140/min) tachypnea (24/min) were the first presenting symptoms. Body temperature was 38°C. Decreased breathing sounds and rales at the basal portion of lungs were identified. Generalized tenderness and rigidity were presented during abdominal examination. Oliguria was evident after urinary catheterization. White blood cell count was 36.000/mm³ and arterial pH value was 7.17. Chest x ray revealed bilateral pleural fluid accumulation but no pneumothorax or pneumomediastinum. (Fig. 1). An emergency operation was planned.



Fig. 1. Chest x-ray of the case revealed bilateral pleural fluid

Operation was started by using lateral oblique cervical incision in order to reach cervical esophagus. Esophagus was dissected and cut. Cervical esophagostomy was matured while distal end was closed. Laparotomy with midline incision was done afterwards. Approximately 1500cc hemorrhagic fluid was encountered in the abdominal cavity. Extensive exploration revealed full thickness perforation starting from lesser curvature of the stomach and extending up to the mid-upper thoracic esophagus. Operation including total gastrectomy, transhiatal esophagectomy and feeding jejunostomy were done. Hemodynamic instability was tried to correct by using positive inotropic agents and operation was ended after inserting bilateral tube thoracostomy.

Broad spectrum antibiotics beside of antifungal therapy were started at early postoperative period. Inotropic support was terminated postoperative 2nd day. Thoracal tubes were removed at postoperative 5th day. No hyperpyrexia was observed during early postoperative period. Insufficient spontaneous breathing and frequent aspiration mandated tracheotomy at

postoperative 8th day. Antibiotic regime was reset at postoperative 10th day due to fever and bilateral pneumonic infiltrations at chest x ray. Positive inotropic agents were restarted because of intractable hypotension and tachycardia. Patient lost her life at postoperative 14th day after sudden cardiac arrest.

3. DISCUSSION

ERCP is widely used effective therapeutic intervention in pathologies related to biliary system, pancreas and ampulla. Mortality related to therapeutic application of ERCP is higher in contrast to its diagnostic use. Perforation is the most unwanted complication of ERCP due to its high mortality rate. The longer the procedure, older age, Oddi sphincter dysfunction, previously performed sphincterotomy existence, papillary stenosis and Billroth II reconstruction are accepted ERCP related perforation risk factors [3].

Mallery et al. [1] has divided ERCP related perforations into three types as (a) guide wire related perforations; (b) periampullary perforations occurred during sphincterotomy; and (c) perforation far from papilla (lateral wall of duodenum, stomach, esophagus). In our case, since ERCP was not made in our institution, we did not know the exact mechanism that serious complication occurred. While sphincterotomy is made, the endoscopist should fixed the duodenoscope over Oddi sphincter with a handle, after sphincterotomy is completed, it is pulled back. We thought retrospectively that the endoscopist made sphincterotomy but the handle did not work to make duodenoscope free and when the endoscopist pulled the duodenoscope but the duodenoscope injured the whole mucosa and submucosa of the stomach and also esophagus.

Even though early surgical intervention is traditionally accepted as a first choice of treatment for ERCP related perforation, conservatory management alone was shown to be effective in selected cases [4]. Surgery is selected much more as a choice in perforations far from papillary region. Perforations at the stomach, esophagus, duodenum lateral wall and jejunum tend to be larger and obligate prompt surgical intervention. Perforation in this case was far from papillary region and full thickness involving stomach and esophagus.

It is reported that most of the ERCP related perforations can be managed by conservative approach including nasobiliary drainage for bile leak, nasogastric tube insertion for intestinal material leak to the retroduodenal space, prohibition of oral intake and broad spectrum antibiotics [5]. Predictably high morbidity and mortality rates are inevitable consequences if they fail as reported [4].

There are cases in the literature where iatrogenic perforations at the stomach, esophagus and duodenum could be treated successfully with endoscopic instruments like endo-clips, endo-loops etc [4].

Regardless of the cause, the mortality rate of esophagus perforation is high. Thoracal esophagus perforation is related to higher mortality rate than the perforation at the cervical portion [6]. Chest x ray can detect esophagus perforation up to 90% with pleural effusion or pneumomediastinum appearance but small perforations at early period can be overlooked [7,8]. Computed tomography (CT) is more sensitive imaging method. Mediastinal air, pleural effusion and slimming at the esophageal wall can be detected with CT. Surgical therapy in esophagus perforation consists of primary closure of the defect, surgical drainage, diversion and esophagectomy. According to the literature, diversion alternative increases survival when primary suturing is not possible in esophagus perforation [9]. Cervical esophagostomy,

transhiatal esophagectomy and total gastrectomy procedures were applied in our case because primary repair of the esophagus perforation was impossible.

4. CONCLUSION

Similar to every invasive intervention, ERCP has some complication risks. Urgent management of the intervention related complications should be established with early diagnosis.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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