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Case Report

Endoscopic Retrograde Cholangiopancreatography (ERCP) in Patients with Choledocholithiasis: An Unexpected and Unique Complication

Vinod Kumar Singhal 1*, Adil Mohammed Suleman [2], Nufra Senopher [3], Faris Dawood Alaswad[4], Riya Singhal[5]

1. Vinod Kumar Singhal, Consultant surgeon, Department of General Surgery, Prime hospital, Dubai, UAE.

2. Adil Mohammed Suleman, Specialist General Surgeon, Department of General Surgery, Prime Hospital, Dubai, UAE.

3. Nufra Senopher, Department of General Surgery, Prime Hospital, Dubai, UAE.

4. Faris Dawood Alaswad, Consultant General Surgeon, Department of Surgery, Gladstone Hospital, Perth, Australia.

5. Riya Singhal, Student, SMCH, Dubai, UAE.

***Correspondence to**: Vinod Kumar Singhal, Consultant surgeon, Department of General Surgery, Prime hospital, Dubai, UAE.

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Abstract

Background: *CBD clearance for choledocholithiasis using balloon catheter is well established approach during ERCP. The most common and well known ERCP related complications include pancreatitis, bleeding, perforation and infection. We reported a unique complication of stuck balloon in CBD, and is probably first ever case recorded in literature.* ***Case presentation:*** *A middle aged female underwent ERCP for symptomatic choledocholithiasis. During procedure, CBD balloon (Biliary extraction balloon, Boston scientific) got stuck-in while doing balloon sweep and neither came out nor got deflate despite different and exhaustive manoeuvring. Given the uniqueness of complication and failure of endoscopic approach, we cut the balloon catheter distal to inflation and wire entry port and removed the duodenoscope leaving behind the stuck balloon with remaining catheter. Patient was taken up by surgery team and managed with open cholecystectomy with choledochotomy with T tube-drainage along with removal of stuck CBD balloon. While the Stuck stone near proximal summit of balloon explains the failure of balloon coming out and complete extrinsic compression of air passage of catheter by surrounding stones probably explains the failure of balloon inflation-deflation process.* ***Conclusion:*** *It seems pertinent to provide patients prior information about unique complications such as balloon stuck and balloon burst in addition to well-known complications and we should have back-up to deal with such cases. Hereby we reported a unique case of ERCP related complication and its subsequent surgical management.*

Key words: *Cholelithiasis, Choledocholithiasis, Endoscopic Retrograde Cholangiopancreatography, Balloon catheter.*

What is already known?

The well-known complications of ERCP are pancreatitis, perforation, bleeding and infections.

What is new in this study?

There is paucity of data regarding some rare complications of the ERCP. This report highlights the special consideration of some rare and unexpected complications like balloon stuck and balloon burst. We hereby report a unique and unexpected balloon stuck complication of ERCP, which is probably first ever report in literature.

What are the future clinical and research implications of the study findings?

It seems pertinent to provide patients prior information about unique complications such as balloon stuck and balloon burst in addition to well-known complications and we should have back-up to deal with such cases.

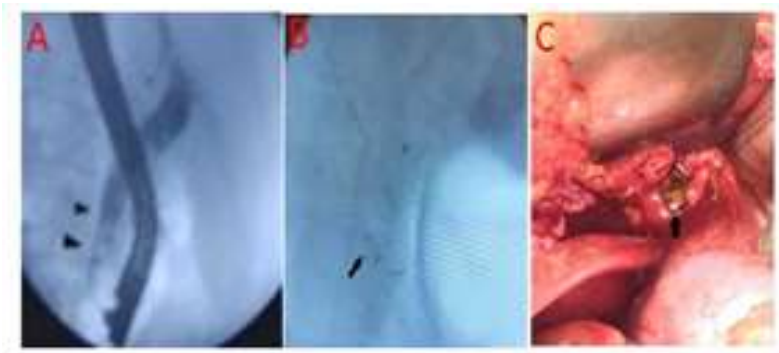
Introduction

Therapeutic ERCP remains a treatment of choice in patients with choledocholithiasis and balloon sweep is an important step during this procedure for the clearance of common bile duct (CBD). Although ERCP is generally a safe procedure yet there are definite complications like pancreatitis, bleeding, perforation and infections which are associated with it. There are some uncommon complications also recorded previous studies and we report an unexpected and unique complication of 'balloon stuck in CBD' in a case of choledocholithiasis and is probably first report in medical literature.

Case Presentation

A 50-year-old female with no underlying comorbidity presented to gastroenterology OPD with 2-month history of recurrent biliary colic. Her physical examination was unremarkable. On evaluation, Blood work revealed no abnormality and ultrasonography of abdomen showed contracted Gallbladder containing sludge with dilated CBD up to 1.78cm proximally with multiple calculi in distal CBD of maximum size of 9x8mm.The patient was labelled as symptomatic gall stone disease with choledocholithiasis and planned for elective ERCP. During the procedure, ampulla looked normal and CBD was cannulated via guide wire cannulation. Cholangiogram revealed dilated CBD with multiple filling defects in mid and distal CBD (Fig 1). Subsequently CBD balloon was passed over biliary guide wire and inflated to 6ml of capacity. On attempting for CBD balloon sweep we encountered resistance and balloon was not coming out. Despite multiple attempts with exhaustive manoeuvring balloon could not be removed out. To our most unexpected surprise, we were not even able to deflate balloon. Given the uniqueness of complication and failure of

endoscopic approach, duodenoscope was removed leaving stuck balloon catheter therein (Fig 2). The case was discussed with surgery team and on rapid sequence patient was taken up for open surgical laparotomy to deal with this complication. The finding on laparotomy were, small thick-walled gallbladder with largely dilated CBD of size of 1.8cm with normal surrounding anatomy. On intra operative examination, multiple calculi were palpated in CBD along with inflated balloon in distal CBD. After performing cholecystectomy, CBD was explored and multiple calculi were seen in CBD along with inflated balloon (Fig 1), and few of the stones were snugly attached to balloon catheter near proximal balloon summit and this was likely reason of blockade of air passage of balloon catheter which did not let balloon deflation to occur. The stones were removed from CBD and the stuck balloon was punctured and subsequently catheter was pulled through mouth and balloon was successfully retrieved (Fig 4) and distal patency of CBD was ensured. The surgery was uneventful and patient was subsequently shifted to post op ward and is currently doing well. The final procedure was, open cholecystectomy with choledochotomy with T tube drainage.



A:Cholangiogram showing multiple filling defects (black arrow heads)

B: Cholangiogram showing stuck balloon (Black arrow)

C: Intra-operative image showing stuck balloon along with CBD calculus (black arrow)

Fig 1

Discussion

ERCP remains to be treatment of choice for patients of choledocholithiasis and its success and efficacy is evidenced by previous data (1). The CBD stone retrieved could be either achieved by basket or balloon catheter. Recent study by Ekmektzoglou et al, showed that balloon catheter is non inferior to basket device and the choice between the two depends upon CBD dimensions and stone size and number (2). ERCP is

generally regarded as a safe procedure. However, ERCP has been associated with a higher rate of complications than most other endoscopic procedures despite technologic advances, adherence to safety protocols, and advanced endoscopy training programs. While the well-known complications of ERCP are pancreatitis, perforation, bleeding and infections (3), a number of uncommon adverse events have also been described. Uncommon complications of ERCP include severe respiratory and cardiac side effects, anaphylactic reactions to contrast agents used during ERCP, malfunction or incorrect use of electrosurgical equipment and accessories during therapeutic procedures, opacification of the portal vein has been described with multiple therapeutic interventions, appearance of gas in the portal venous system, cardiac and cerebral air embolism, intraperitoneal haemorrhage from injury to the spleen, liver, or abdominal vessels, pneumothorax, pneumomediastinum, and pneumoperitoneum, complications related to biliary and pancreatic stents, and gallstone ileus due to the release of large stones, usually over 25 mm, into the duodenum. However, the potential problems with the use of balloon catheter device is squeezing between the stone and the wall in a largely dilated duct system and impacted stone. Although there are reports of some other rare and unexpected complication of ERCP like balloon burst (4), our case adds a unique entity to literature. In the present case, we demonstrated stuck extraction balloon as a rare complication of using balloon catheter as stone retrieval device. Prior to procedure we by routine checked the condition of balloon and patency of catheter as a precaution, however, we could not prevent this unique yet serious complication. While the Stuck stone near proximal summit of balloon explains the failure of balloon coming out and complete extrinsic compression of air passage of catheter by surrounding stones probably explains the failure of balloon inflation-deflation process. Adding the literature, the present case study likely represents the first ever report related to stuck balloon as a potential complication of ERCP using balloon catheter as stone extraction device, which required an immediate rescue surgery. Given our experience, it seems pertinent to provide patients prior information about such unique complications in addition to well-known risks of ERCP.

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