A rare complication in a liver transplant patient: Meckel diverticulum perforation due to biliary stent

Uğur Topal*, Abdullah Ülkü, Ahmet Gökhan Saritaş, Atılgan Tolga Akçam
Cukurova University, Department of General Surgery, Adana, Turkey

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ABSTRACT

INTRODUCTION: Meckel's diverticulum is the most common congenital lesion of the small intestine. The incidence varies between 0.5% and 2%. Biliary stents can be used for the treatment of patients with bile duct complications. Intestinal perforation due to migrated stents is a very rare and life-threatening complication. “Perforation of the Meckel diverticulum due to stent”, and no case was found in the literature. For this reason, our case has been identified as the first case seen in the literature.

CASE PRESENTATION: A 20-year-old male patient liver transplantation was performed from a live donor. 3 years ago The patient presented at our clinic with abdominal pain, nausea and vomiting that has been present for 2 days. Abdominal computed tomography showed a foreign body in the small intestines. Patient was operated in emergency conditions. Meckel Diverticulum 40 cm proximal to the ileocecal valve and a biliary drainage catheter perforating the diverticule was seen Meckel's diverticulum was excised, primary repair was performed. Postoperative recovery was uneventful.

DISCUSSION: Complication rates due to a biliary stent range between 8–10% with a mortality below 1% (Konstantinidis et al. [1]). The most feared complication due to a biliary stent is stent migration. The perforation rate due to stent migration is below 1%. It most commonly occurs in the duodenum. Patients with stent related perforations are surgically managed as other GIS perforations.

CONCLUSIONS: Perforation due to stent migration should also be considered in differential diagnosis in patients with a biliary stent and Acute Abdomen.

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1. Introduction

Biliary plastic stent placements are commonly performed to treat a variety of biliary disorders. This procedure presents short-term complications such as hemorrhage, pancreatitis, cholangitis, and perforation, in addition to long-term complications such as stent migration and late perforation [2]. Migration of biliary stent is an uncommon event and occurs in 5–10% of patients [3,4]. Most migrated stents are spontaneously expelled with passage. Serious complications such as intestinal perforation of migrated stents are very rare (<1%) and life threatening [5]. The diagnosis and the treatment were carried out at University Hospital of Cukurova. This work is reported in line with the Surgical Case Report Guidelines (SCARE) criteria [6]. The legal tutor agreed with the publication of the case and signed the informed consent.

2. Case presentation

A 20-year-old Middle Eastern male patient, while being treated with ALL maintenance treatment 3 years ago, developed acute hepatic failure and underwent living donor liver transplantation utilizing a right hemi-liver graft from his mother. The patient walked into Emergency with abdominal pain, nausea and vomiting that has been present for 2 days. He had a history of liver transplant was taking medications including Tacrolimus 1 mg for these conditions. The patient did not have any contributory family, or psychiatric history. He has no history of smoking or other metabolic diseases. On physical examination, a sensitivity and rebound was detected in the lower right and upper right quadrant of the abdomen. Body temperature was 38 °C. BMI 20. Other system examinations were normal. The following lab results were obtained: WBC: 10.2/mm [3], AST: 71U/L, ALT: 76U/L, ALP: 108U/L, (GOT): 226 U/L, total bilirubin: 2.9 mg/dl, direct bilirubin: 0.9 mg/dl. Hgb: 128 g/dl, Htc 39%, Plt 144.000 mm [3], BUN: 10 mg/dl, Creatinine: 081 mg/dl sodium: 144mEq/L; potassium: 4.4mEq/L, and albumine: 3.1 g/dl. Abdominal computed tomography showed changes secondary to liver transplantation, intrahepatic bile duct enlargement and air density, suspicious thickening on the cecum wall and plastering fluid adjacent to the cecum, and a foreign body in the

* Corresponding author at: Department of General Surgery, Cukurova University Medical Faculty, 01330 Cukurova, Adana, Turkey.
E-mail address: sutopal2005@hotmail.com (U. Topal).

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small intestines (Fig. 1). Patient was admitted to intensive care unit intravenous fluid and antibiotic therapy (piperacillin-tazobactam) were given before operation. Patient was operated in emergency conditions. After anesthetic clearance, emergency laparotomy was performed under general anesthesia. The operation performed by experienced team of transplant surgeons. In the exploration, purulent drainage in the pericecal area, Meckel Diverticulum 40 cm proximal to the ileocecal valve and a biliary drainage catheter perforating the diverticule was seen (Figs. 2, 3). Meckel’s diverticulum was excised, primary repair was performed, and the abdomen was irrigated with abundant warm SF. Operation time was 1 h 15 min and blood loss was 50 ml. The patient was followed up in the postoperative intensive care unit. Postoperative follow-up was followed by Antibiotic therapy (piperacillin-tazobactam), intravenous fluid, analgesics (paracetamol), anti-emetics were administered and the oral intake was started after the gastrointestinal passage was achieved. Because our patient is immunosuppressed, infectious parameters should be followed closely. The treatment of the patient who had no problems was planned and they were discharged on the 5th postoperative day. The patient had no specific postoperative complications any wound complication did not develop. We do not need re-discovery / revision surgeons. We have not experienced post-operative 30 day and long-term morbidity / mortality. The patient was followed up as an outpatient 10 days after discharge and was well with no further complaints. Another follow-up
was done at 6 months. The patient should be closely followed in terms of biliary complications

3. Discussion

The most common complication of the Meckel diverticulum in adults is obstruction and has an incidence of 26.2%–53.4%. Other complications are bleeding (32%), diverticulitis (22%), umbilical fistula (10%) and diverticulum perforation [7]. The most frequently encountered complication after liver transplantation is biliary stenosis, and usually appears after 9–11 months after transplantation. Balloon dilatation and stenting with PTK or ERCP are often successful. Complication rates due to a biliary stent range between 8–10% with a mortality below 1% [1]. The most feared complication due to a biliary stent is stent migration. The risk of stentto a biliary stent range between 8–10% with a mortality below 1% [1]. The most feared complication due to a biliary stent is stent migration. The risk of stent migration appears to be higher for benign as compared to malignant biliary strictures. The migration rate in plastic stents has been reported to be higher compared to metal stents, single stents have also been shown to have a higher rate of migration [8]. Distal (intestinal and colonic) migration is less common than proximal (duodenal) migration. Generally, in order to prevent migration after the diagnosis of stent migration has been made [1], patients with known risk factors such as adhesions, diverticular disease and hernias should be followed up carefully and stents retrieved if possible. The perforation rate due to stent migration is below 1%. It most commonly occurs in the duodenum. Apart from this, the right colon and the adhesion sites related to previous operations are places where perforation is frequently seen. Perforations due to stents have been reported in loops in parastomal or incarcerated hernias or in the presence of pathologies such as colonic diverticula [5,9,10].

Patients with stent related perforations are surgically managed as other GIS perforations. Pubmed, Google Academic and Ulakbim were screened with the “perforation of the Meckel diverticulum due to stent”, and no similar case was found in the literature. For this reason, our case has been identified as the first case seen in the literature.

4. Conclusion

When the intestinal lumen, was blocked caused by reasons such as diverticulitis a hernia, or luminal pathologies, created a resistance to this thrust, after which the stent, left between these two forces, perforated the intestinal wall. In conclusion perforation due to stent migration should also be considered in differential diagnosis in patients with a biliary stent and Acute Abdomen. Patients with comorbid abdominal pathologies, including diverticula or abdominal hernia, may be at increased risk of perforation from migrated stents.

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Conflicts of interest

No conflicts of interest were declared.

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Ethical approval

I certify that this kind of manuscript does not require ethical approval.

Consent

Written informed consent for publication of his clinical details and clinical images was obtained from the patient.
Author contribution

Uğur topal.- Ahmet gökhan sarıtaş study concept, writing the paper, final decision to publish, data collection. Abdullah ülkü. - study concept, data collection. Atilgan tolga akçam. - data collection and analysis.

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References

[1] Christos Konstantinidis, Panagiotis Varsos, Sotirios Kypouris, Spyridon Volteas, Migrated biliary plastic stent causing double sigmoid colon perforation, J. Surg. Case Rep. (2014) 1–2, http://dx.doi.org/10.1093/jscr/rju134:12.

[2] C. Cerisoli, J. Diez, M. Gimenez, M. Oriol, R. Pardo, M. Pujato, Implantation of migrated biliary stents in the digestive tract, HPB (Oxford) 5 (2003) 180–182.

[3] J.F. Johanson, M.J. Schmalz, J.E. Geenen, Incidence and risk factors for biliary and pancreatic stent migration, Gastrointest. Endosc. 38 (1992) 341–346.

[4] P.R. Tarnasky, P.B. Cotton, J. Baillie, M.S. Branch, J. Affronti, P. Jowelle, S. Guarisco, R.E. England, J.W. Leung, Proximal migration of biliary stents: attempted endoscopic retrieval in forty-one patients, Gastrointest. Endosc. 42 (1995) 513–520.

[5] Elvan Isabel Erdoğan, Fatih Tekin, Mustafa Harman, Murat Sözbilen, Ömer Öztemiz, Biliary stent migration onu bagli gelisen duodenal perforasyon duodenal perforation due to migration of a biliary stent, İzmirakademik gastroenteroloji dergisi 15 (2) (2016) 92–94.

[6] R.A. Agha, A.J. Fowler, Saeta, I. Barai, S. Rajmohan, D.P. Orgill, SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 6 (September (34)) (2016) 180–186.

[7] A.T.A.K. veark Sunumu, Meckel Divertikoluna Bağlı intestinal Obstrüksiyon: professor KOLON Rektum Hast Derg, Mart, 2011.

[8] Challenge Shounak Majumder, Pradeepa Kumar Sethy, Usha Goenka, Sudip Roy, Pinaki Banerjee, Mahesh K Goenka Institute of Gastroenterology, Apollo Gleneagles Hospita Biliary Stent Migration: A Therapeutic I, 58, Canal Circular Road, Kolkata, J. Digest. Endosc. 1 (2010) 19–21.

[9] H. Issa, M. Nahawi, B. Bseiso, A. Al-Salem, Migration of a biliary stent causing duodenal perforation and biliary peritonitis, World J. Gastrointest. Endosc. 5 (2013) 523–526.

[10] Yılmaz Remzi, Kızıltan Oktay, Aydin Vedat, Bayrak Çetin, Kotan Hindawi, A rare complication of biliary stent migration: small bowel perforation in a patient with incidental Hernia Özkan Publishing Corporation, Case Rep. Surg. Vol. (2015), 602986, 3pages.