Internal Pancreatic Stent Causing Irreversible Dilatation of Pancreatic Duct

Mustafa Hasbahceci · Cengiz Erol

Received: 24 March 2012 / Accepted: 5 June 2012 / Published online: 21 June 2012
© Association of Surgeons of India 2012

Abstract A 28-year-old woman underwent a pylorus preserving Whipple procedure for pancreatic serous cystadenoma located on the head of the pancreas. During the operation, an internal stent (7F silastic catheter, 9 cm in length) was placed within the pancreatic duct in the area of pancreaticojejunal end-to-end Dunking type anastomosis to prevent development of fistula. The stent was positioned so that one third of its length would lie into the pancreatic duct, and it was anchored to the periductal pancreatic tissue with only one rapidly absorbable chromic suture. Leakage from the anastomosis was not observed, and she was discharged without any complaint. Early postoperative abdominal CT examination revealed that the stent was retained within the

normal caliber pancreatic duct (Fig. 1a). Six months after the operation, she began to complain to epigastric pain triggered by the meals. The laboratory analysis was normal, particularly liver biochemical tests and serum amylase. The internal pancreatic stent within the dilated pancreatic duct was detected by an additional CT examination (Fig. 1b). The stent was removed endoscopically at the third attempt. The pain was resolved after its removal. Control CT examination which was taken at the 18th month after removal of the stent showed dilatation of the pancreatic duct (Fig. 2a). The patient remained free of any complaint, although regressed pancreatic duct dilatation has persisted over 4 years of follow-up (Fig. 2b).

Keywords Pancreatic stent · Internal pancreaticojejunostomy · Complications · Stent occlusion

Affiliation in which the study was performed: The Religious Foundation of Turkey, Istanbul 29 May Hospital, Vatan Str, Fatih, Istanbul, Turkey.

M. Hasbahceci (✉)
Department of General Surgery, Umraniye Education and Research Hospital,
Adem Yavuz Str,
Umraniye, Istanbul, Turkey
e-mail: hasbahceci@yahoo.com

C. Erol
Department of Radiology,
Selcuklu Faculty of Medicine,
Selcuk University,
Alaeddin Keykubat Campus,
Selcuklu, Konya, Turkey
e-mail: drcengizerol@yahoo.com

Discussion

Pancreatic stents, either internal or external, are believed to be important to protect anastomosis and prevent pancreatic fistula formation [1, 2]. However, there were many conflicting results with regard to the efficiency of these stents to prevent fistula formation [1–4]. Besides uncertainty about optimal duration of these stents, it is thought that long-term use is of no benefit and potentially harmful. To prevent premature removal, they are usually secured with a single, absorbable suture to the pancreas. Internal stents are also presumed to pass

Fig. 1 **a** Curved multiplanar reconstruction CT image of the pancreas taken just after the operation shows that the stent (*asterisk*) is positioned in the normal caliber pancreatic duct (*arrows*). **b** Curved multiplanar reconstruction CT image of the pancreas taken after beginning of the abdominal pain shows that the stent (*asterisk*) is still in the dilated pancreatic duct (*arrows*)

spontaneously, and no measures are taken to ensure passage [2]. However, this assumption does not always hold true, as exemplified by our patient. In the present case, the stent was retained within the pancreatic duct without any migration proximally or distally, although it was secured by a single such suture (Figs. 1 and 2).

There are some specific complications in relation with the use of internal stents during pancreaticoduodenectomy procedures, including occlusion, migration, and morphologic abnormalities of the pancreatic duct [2, 4]. Pancreatic stent occlusion is an expected occurrence that develops as a result of several mechanisms, including protein deposition, calcium carbonate crystal formation, accumulation of necrotic cells, and bacterial colonization on the inner surface of the stent [2]. These stents also induce inflammation,

fibrosis, ductal and parenchymal changes of chronic pancreatitis in animal models. Therefore, stent occlusion may lead to chronic or episodic pain, acute pancreatitis, or chronic pancreatitis with pancreatic insufficiency [2]. There is also paucity of data regarding reversibility of these changes after stent removal. In our case, there is still some amount of ductal dilatation besides the removal of the stent after 4 years of follow-up. Although the patient is free of any complaint, we observe persistence of dilatation of the pancreatic duct with unknown long-term sequelae.

Due to lack of strong evidence for insertion of such pancreatic stents to prevent pancreatic fistula formation and possibility of such long-term complications, greater vigilance should be exercised to use and retain pancreatic stents.

Fig. 2 **a** Curved multiplanar reconstruction CT image of the pancreas taken after removal of the stent shows persistence of dilatation of the pancreatic duct (*arrow*). **b** Axial T2 weighted MR image shows that dilatation of the pancreatic duct *arrow* is still present after 4 years, although it is regressed

References

1. Schulick RD (2011) Use of pancreatic duct stents after pancreatoduodenectomy. *J Hepatobiliary Pancreat Sci* 2011 Sep 14
2. Levy MJ, Chari S, Adler DG, Clain JE, Gostout CJ, Harewood GC, Pearson RK, Petersen BT, Sarr MG, Farnell MB (2004) Complications of temporary pancreatic stent insertion for pancreaticejunal anastomosis during pancreaticoduodenectomy. *Gastrointest Endosc* 59:719–724
3. Smyrniotis V, Arkadopoulos N, Kyriazi MA, Derpapas M, Theodosopoulos T, Gennatas C, Kondi-Paphiti A, Vassiliou I (2010) Does internal stenting of the pancreaticejunostomy improve outcomes after pancreatoduodenectomy? A prospective study. *Langenbecks Arch Surg* 395:195–200
4. Price LH, Brandabur JJ, Kozarek RA, Gluck M, Traverso WL, Irani S (2009) Good stents gone bad: endoscopic treatment of proximally migrated pancreatic duct stents. *Gastrointest Endosc* 70:174–179