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Case Report

Artery First Approach to Preserve Replaced Right Hepatic Artery during Laparoscopic Pancreaticoduodenectomy

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Abstract

Replaced right hepatic artery constitutes frequent anatomical variation of the hepatic artery, its preservation constitutes a critical issue during laparoscopic pancreaticoduodenectomy. Hereby, we report a technique to deal with such an anatomical variation during laparoscopic pancreaticoduodenectomy for cancer.

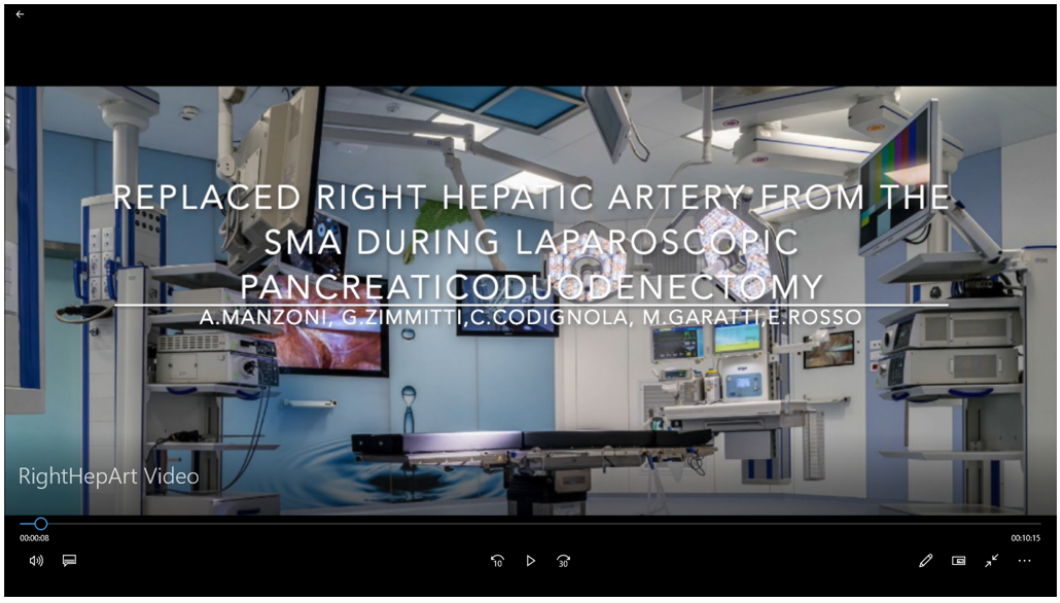
Keywords: *Right Hepatic Artery; Laparoscopic Pancreaticoduodenectomy*

Introduction

The incidence of variation of the hepatic artery varies from 55 to 79% [1-3]. A replaced right hepatic artery (RrHA) arising from the superior mesenteric artery (SMA) is a common variant, occurring in 9 - 24% of patients [4-7]. The preservation of RrHA during pancreaticoduodenectomy (PD) is a critical issue to avoid post-operative major complications [5]. In this report, we describe a case of laparoscopic PD in a patient having a RrHA.

Case Report

This is the case of 68 years old Male with a past medical history of pulmonary embolism and appendicectomy. The patient presented with a painless jaundice. The CT scan showed a 2 cm tumoral lesion of the head of the pancreas with dilatation of the common bile duct. The CT-angiography showed RrHA from the SMA. The tumor was in contact with the portal vein for less than 180°. The CA-19-9 was normal and the Bilirubin was 10 times the upper normal limits. The endoscopic ultrasound with fine needle core biopsy confirmed a resectable adenocarcinoma of the head of the pancreas. The patient underwent an endoscopic retrograde cholangiopancreatography with associated plastic biliary stenting. The case was discussed at the HBP multidisciplinary meeting and validated for a laparoscopic PD. During the operation the patient was placed in the supine position with the legs in abduction. Under general anesthesia, the pneumoperitoneum was induced at a pressure of 12 mmHg using a Hasson's technique in peri-umbilical area, the remaining trocars were inserted under direct vision, two 10 - 12 mm trocars on both sides of the first one, a 5 mm trocars on both flanks and one 10 mm trocar for the smoke-suction system (AirSeal®) in subxiphoid area after having tackled falciform ligament with a stay suture. The SMA was identified at its origin above the left kidney vein and dissected toward the mesentery following the periadventitial plane (Video). Then the dissection was pursued on the right border of the hepatic pedicle in view to clearly identify: the portal vein, the common bile duct and the distal part of the RrHA which was isolated individually with a vessel loop. At this point the intervention was continued in a standard fashion, therefore the stomach was sectioned as well as the bile duct, the gastroduodenal artery, the first jejunal loop at the Treitz ligament and pancreas at the neck. The uncinate process was gradually freed from the right border of the SMA and after having isolated on vessel loop the portal vein as well as the mesenteric vein and the spleen vein, the resection of retroportal lamina was completed preserving the RrHA up to its origin on



Video: *In the present video is described surgical technic with allow to preserve a replaced right hepatic artery during laparoscopic pancreaticoduodenectomy.*

the SMA. Finally, after clamping the porto-mesenteric venous axis the resection phase of the PD was completed. The reconstruction was achieved by: termino-lateral manual hepatico-jejunal anastomosis with 5/0 resorbable monofilament, pancreaticogastrostomy, latero-lateral linear gastro-jejunostomy on a second jejunal loop and finally a latero-lateral linear jejuno-jejunal anastomosis. The patient had post-operative cholangitis which required antibiotics treatment. The patient was discharged on postoperative day 14. The pathological report showed a well differentiated pancreatic adenocarcinoma pT2 N1 (2/28) R0 (> 1 mm vascular margin).

Discussion

Inadvertent injury of the RaHA during PD may lead to intra-operative bleeding or major post-operative complication or death due to liver abscess or bilio-enteric anastomotic leakage. Currently, pre-operative CT angiography is considered to gold standard to identify the vascular anatomy of the hepatic artery allowing surgeons to plan the better surgical strategy [1]. The combination of an artery first approach to SMA, early proximal (at the hepatic hilum) identification of the RrHA and gradual mobilization of the head of the pancreas, in view to obtain a favorable access the SMA, are the keys for a safe isolation and preservation of the RrHA [5].

According to the literature the preservation of RrHA did not result in increased positive margins or a reduced survival, indeed, the present case keeping the dissection of the RrHA on the periadventitial plan allowed to reach an R0 resection [2,7].

Conclusion

A RrHA is a frequent variation of hepatic artery, its preservation during PD is mandatory, in view to avoid severe post complications. Pre-operative CT scan allows to identify RrHA and plan the surgery. The artery first approach is a feasible, safe technic to preserve RrHA during laparoscopic PD.

Declaration

The present manuscript and video are original and they were not published elsewhere or presented at any congress.

IRB approval was not required for the present paper

Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images and video.

Acknowledgment

None.

Disclosure

No conflict of interest.

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