

Laparoscopic resection with minilaparotomy anastomosis for pancreatico-duodenectomy

K B Galketiya, V Pinto, R Rohankumar, B G Jayawickrama, A Herath
Teaching Hospital Peradeniya, Kandy, Sri Lanka.

Key words: Pancreatico-duodenectomy; laparoscopy

Introduction

Pancreatico-duodenectomy is the surgical treatment of choice for carcinoma of the periampullary region and head of pancreas. The open procedure is associated with considerable morbidity and occasional mortality. The long incision, continuous handling and prolonged use of retractors can result in post operative respiratory inadequacy due to severe pain and ileus. There is often significant blood loss. Laparoscopic assisted Whipples resection is an achievable alternative minimizing post-operative complications, thus facilitating early feeding, mobilization and discharge from hospital [1,2,4,6]. However literature indicates the need of further studies to recommend its routine use [4,5,6,7,8].

Case Report

A year 50 year old male presented with obstructive jaundice who was deeply icteric with a palpable Gall bladder. Imaging were suggestive of a periampullary carcinoma which was confirmed by endoscopy and biopsy. Laparoscopic assisted pancreatico-duodenectomy was planned.

Patient was evaluated for co-morbidities and optimized as required. His weight was 58kg with a BMI of 25.1kg/m². Procedure was carried out under general anaesthesia with invasive monitoring and supplemented by epidural analgesia. The patient was placed in reverse-trendelenburg 20 degrees and rotated to the left by 30 degrees with legs abducted to 60 degrees. Five ports were used. Pneumoperitoneum was created by insufflation of CO₂ at a pressure of 14 mmHg. The gastro-colic omentum was divided, entering in to lesser sac exposing the pancreas. Colon was mobilized from

the mid transverse colon to caecum. The duodenum was identified and 'kocherized' and the inferior vena cava was exposed until the left renal vein crossed the abdominal aorta. Mobilization of the duodenum was continued until the ligament of Treitz was divided allowing the jejunum to be pulled freely to the right side. The portal vein was exposed to the neck of pancreas and the dissection continued until the common bile duct and common hepatic artery hepatic artery and gastro-duodenal artery were exposed. The gastro-duodenal artery was divided in between clips. The stomach was transected with a stapler. The pancreas was divided in front of the portal vein.

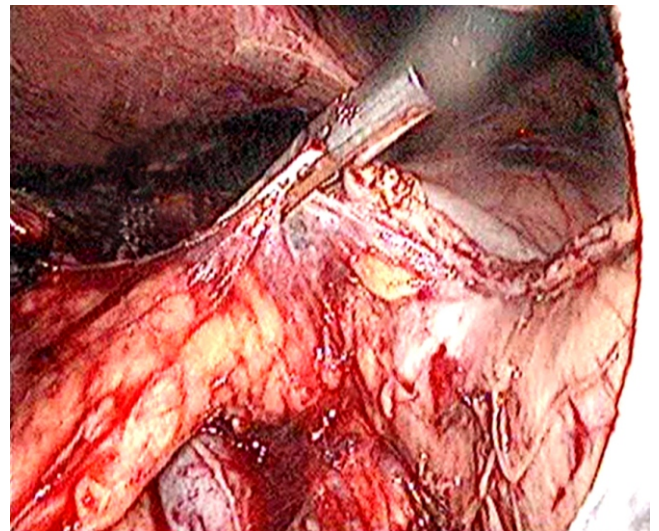


Figure1. Picture showing transected stomach and pancreas being divided in front of the portal vein

The jejunum was transected with a stapler. The divided pancreas and uncinata process were taken off from the portal vein. The common bile duct was transected and the resection was complete. The time for resection was 330 minutes with a blood loss of 400ml. The patient was stable during procedure and did not require blood transfusion.

A mid line laparotomy of about 10 cm was made to retrieve the specimen and perform the anastomoses -

Correspondence: K.B. Galketiya
E-mail: kbgalketiya@yahoo.com

pancreatico-jejunostomy, hepatico-jejunostomy and gastro-jejunostomy.

The respiratory and cardiovascular parameters were monitored carefully and were stable. Following extubation, the patient was managed in the ICU. Pain relief was provided using the epidural catheter for the first day. Subsequently the patient was comfortable with diclofenac sodium suppositories 100mg twice a day. He was mobilized after twenty four hours and started on oral sips forty eight hours after surgery. Semisolids were started after four days and a normal diet by the sixth day. He was discharged on the eighth post operative day.

Discussion

Laparoscopic pancreatico-duodenectomy creates a new learning curve for the gastrointestinal surgeon. The patient positioning, port placement, adequate retraction, traction and counter traction, precise appreciation of anatomy and tissue planes are all required for successful completion. Adherence to meticulous haemostasis is crucial.

We successfully completed the laparoscopic resection in this patient. This was after conversion to open surgery at various stages of resection in seventeen patients. For the reconstruction, we opted for a minilaparotomy [3]. Anastomoses could be performed laparoscopically, for which a skill in laparoscopic suturing is essential. The next goal to achieve is performing the hepatico-jejunostomy laparoscopically. Then the pancreas can be anastomosed to the posterior wall of the stomach. This and the gastro-jejunostomy could be performed with a mini incision of about 5cm.

The meticulous fluid balance, monitoring and vigilance reduced complications due to altered physiology owing to pneumoperitonium, position, abdominal compartment syndrome with aorto-caval compression leading to impediment of perfusion to organs, possibility of gas embolism during this surgery which took 330 minutes [9].

Conclusion

Laparoscopic pancreatico-duodenectomy may well be performed safely with minimum blood loss in an acceptable time with minimal complications and speedy post operative recovery. Persistence during the learning curve is a must in reaching the goal.

References

1. Gagner M, Palermo M. Laparoscopic Whipple procedure: review of the literature *J Hepatobiliary Pancreat Surg.* 2009;16(6):726-30. doi:10.1007/s00534-009-0142-2. Epub 2009 Jul 28.
2. Dulucq JL, Wintringer P, Stabilini C, Feryn T, Perissat J, Mahajna A. Are major laparoscopic pancreatic resections worthwhile? A prospective study of 32 patients in a single institution. *Surg Endosc.* 2005 Aug;19(8):1028-34. Epub 2005 May 26
3. Lee JS, Han JH, Na GH, Choi HJ, Hong TH, You YK, Kim DG. Laparoscopic pancreaticoduodenectomy assisted by mini-laparotomy. *JSLs.* 2013 Jan-Mar;17(1):68-73.
4. Lei P, Wei B, Guo W, Wei H. Minimally Invasive Surgical Approach Compared With Open Pancreaticoduodenectomy: A Systematic Review and Meta-analysis on the Feasibility and Safety. *Surg Laparosc Endosc Percutan Tech.* 2014 Apr 16. [Epub ahead of]
5. Tan-Tam C, Chung SW. Minireview on laparoscopic hepatobiliary and pancreatic surgery. *World J Gastrointest Endosc.* 2014 Mar 16;6(3):60-67.
6. Nigri G1, Petrucciani N2, La Torre M2, Magistri P2, Valabrega S2, Aurello P2, Ramacciato G2. Duodenopancreatectomy: Open or minimally invasive approach? *Surgeon.* 2014 Feb 10. pii: S1479-666X(14)00012-2. doi: 10.1016/j.surge.2014.01.006. [Epub ahead of print]
7. Bao PQ1, Mazirka PO, Watkins KT. Retrospective Comparison of Robot-Assisted Minimally Invasive Versus Open Pancreaticoduodenectomy for Periapillary Neoplasms. *J Gastrointest Surg.* 2013 Nov 15. [Epub ahead of print]
8. Zenoni SA1, Arnoletti JP2, de la Fuente SG2. Recent developments in surgery: minimally invasive approaches for patients requiring pancreaticoduodenectomy. *JAMA Surg.* 2013 Dec;148(12):1154-7. doi: 10.1001/jamasurg.2013.366.
9. Gerges FJ, Kanazi G, Jabbour-khoury S. Anesthesia for laparoscopy: a review. *J Clin Anesth.* 2006;18:67-78.

Key Points:

- Laparoscopic pancreatico-duodenectomy is a treatment method which leads to reduced perioperative complications and speedy recovery. However there is a steep learning curve to be negotiated before it becomes standard practice.