

Analysis of resection margins and lymph node dissection in laparoscopic assisted pancreatico-duodenectomy

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Abstract- Laparoscopic assisted pancreatico-duodenectomy is expected to minimize patient discomfort, blood loss and enable early feeding, mobilization and discharge; thus reducing institutional costs. It has a steep learning curve. We are presenting the adequacy of resection with regards to resection margins and lymph node harvest of our series.

Index Terms- laparoscopy, pancreatico-duodenectomy, resection margins, lymph node evaluation

I. INTRODUCTION

Pancreatico-duodenectomy is the surgical treatment of choice for carcinoma of the peri ampullary 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 pancreatico-duodenectomy is an achievable alternative minimizing post-operative complications, thus facilitating early feeding, mobilization and discharge from hospital(1,2,4,6,9).

Laparoscopic pancreatico-duodenectomy necessitates a steep, stepwise learning curve and literature indicates the need of further studies to recommend its routine use.(4,5,6,7,8,9).

A resection margin free of tumour need to be performed. Prognostic value of the ratio of involved lymph nodes to evaluated lymph nodes is shown in many studies(10,11,12).

We have evaluated the resection margins and lymph node clearance of our series.

III. RESULTS

Twenty patients underwent surgery over two years.

Laparoscopic Dissection done up to	Portal vein dissection	Supra-duodenal dissection	Division of stomach and pancreas	Complete resection
Number of patients	10	05	03	02
Resection margins free of tumour	Yes	yes	Yes	Yes
Lymph node harvested in specimen	8-12	10-14	12-14	10-14

Table -stage performed with laparoscopy, resection margins and lymph node clearance

In all patients irrespective of the stage of conversion the resection margins were free of tumour. There was no difference of lymph node clearance as well.

II. PATIENTS AND METHOD

Patients were assessed for co-morbidities and optimized as required. Procedures were carried out under general anaesthesia supplemented by epidural analgesia.

We used five ports. Pneumoperitoneum was created by insufflation of CO₂ at a pressure of 14 mmHg. The gastro-colic ligament was divided to enter the lesser sac. 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. Duodenal mobilization was continued until division of the ligament of Treitz

Subsequently the portal vein was exposed to the neck of pancreas. Dissection continued until the common bile duct and common hepatic artery were exposed. This was followed by clipping and division of the gastro-duodenal artery. Stomach was transected using staplers and the pancreas was divided in front of the portal vein. The jejunum was transected using staplers.

The gall bladder was separated from the liver bed and division of the common hepatic duct completed the resection.

A mid line laparotomy of not exceeding 10 cm was adequate to retrieve the specimen and perform the anastomoses - pancreatico-jejuno-stomy, hepatico-jejuno-stomy and gastro-jejuno-stomy(9).

The resection margins and lymph node clearance were analyzed.

IV. DISCUSSION

Laparoscopic pancreaticoduodenectomy poses a steep and challenging learning curve for a surgeon. The usefulness and progress to laparoscopic pancreaticoduodenectomy with necessity for hand assisted or hybrid adaptations was reviewed by Gagner and Palermo in 2009.

Adaptation to a sequential learning curve requiring conversion to open surgery at varying stages of the procedure due to lack of progress or risk of bleeding was practised for the safety of the patient. Prior experience of the open technique is a necessity (9).

Tumour free resection margins were achieved irrespective of the stage of laparoscopy, facilitated by evaluation of pre-operative imaging. The amount of lymph nodes cleared was also not affected which was comparative to that obtained by open pancreaticoduodenectomies done in our unit. However the median lymph nodes evaluated in published data are higher than in our series (10).

V. CONCLUSIONS

Sequential surgical progression towards laparoscopic pancreaticoduodenectomy was practiced to minimize patient discomfort, blood loss and enable early feeding, mobilization and discharge; thus reducing institutional costs. The resection margins were free of tumour with comparable lymph node clearance irrespective of the stage of conversion, just as in open procedure.

Therefore adequate tumour and lymph node clearance were not limiting factors during the learning curve of laparoscopic assisted pancreaticoduodenectomy, in our series.

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