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RESEARCH ARTICLE

TOTAL LAPAROSCOPIC DUODENOPANCREATECTOMY CASE REPORT

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Abstract

Total LaproscopicDuodenopancreatectomy (TLDP) was first done by Gagner in 1994 and considered a high complexity procedure. We present the first case published of TLDP done in Saudi Arabia according to our research in PubMed, Cochrane, Lilacs, and Bireme. A 35-year-old lady underwent successfully TLDP with surgery time of 480 minutes, no blood loss and 84h post op recovery. Surgical specimen showed ductal Adenocarcinoma of the head of pancreas, with invasion to the duodenum at the level of the ampulla, free margins and N0. Despite there is still no clear consensus of the advantage of TLDP over open duodenopancreatectomy, it provides faster recovery for the patients to start chemotherapy.

Introduction:-

Pancreaticoduodenectomy is one of the most complex gastrointestinal surgeries with high rate of morbidity and mortality. (1)

This operation done by laparoscopic approach has proven to be among the most demanding and complicated surgery, according to some authors it should be performed by highly experienced surgeons in high volume centers. (2) (3) (4)

In 1994 Gagner described the first Laparoscopic Duodenopancreatectomy (LDP), since then many hepatobiliary centers had adopted this approach with attempt to standardize it. (5)

However still the Total Laparoscopic Duodenopancreatectomy (TLDP) is not the gold standard approach for periampullary tumors.

Here we present as case report the first TLDP done at the General Surgery Department, Hepatobiliary team from King Fahad General Hospital in Jeddah, Saudi Arabia.

According to the data, until this day there is no published case of TLDP in Saudi Arabia.

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Case Report

A 35-year-old female medically and surgically free was admitted as a case of ascending cholangitis. She complained of vague abdominal pain at epigastric area since the last month with on and of choluria. She referred an episode of hematemesis that didn´t repeat. No loss of weigh, no knight sweets or fever despite the episode of cholangitis. No history of smoking or alcohol intake. No family history of malignancies.

Upon admission she was jaundice, with fever and abdominal right upper quadrant (RUQ) pain. Pale conjunctivae and tachycardia (110 bpm). First work up included labs and abdominal ultrasound (US). As positive she presented Total Bilirrubin 7.76 mg/Dl, Direct Bilirrubin 7,93 mg/Dl , Alkaline Phosphatase 546 U/L, Glucose 126,4 mg/Dl, WBC 15,400/L, Hb 7.5 G/Dl. US showed dilated common bile duct (CBD) up to 15mm, no gallbladder stones.

IV antibiotics started (Tazocine) and ERCP was done showing ampullary mass with area of bleeding, dilated CBD with no stones, dilated pancreatic duct (PD), a 10Fr stent was placed to drain the bile. Patient received 2 units of pack RBC and Hb improved to 10.7 G/Dl. She didn´t repeat fever and tachycardia subsided.

CT chest and abdomen with pancreatic protocol was done and showed doble duct sign (dilated CBD and PD) with small mass at the second part of duodenum at the level of the ampulla of Vater, no metastasis demonstrated at the liver or lungs. Tumor markers was requested, and she was booked for Total Laparoscopic Pancreaticoduodenectomy.

Operative Technique

The position adopted was French technique with the surgeon in between the legs of the patient, the first assistant at the left side and the second assistant at the right side. Five trocars were placed, three of them 12mm and two of them 5mm following a semilunar shape (figure 1).

First step was to mobilize the stomach and first part of duodenum exposing anterior surface of the pancreas by access through the gastro-colic ligament.

Second step consisted in extensive Vautrin-Kocher maneuver exposing the IVC and the left renal vein, the dissection progresses until the fourth part of duodenum and the first loop of jejunum until it could be easily mobilized behind the superior mesenteric vessels.The antrum of the stomach was transected with stapler line. (Fig 2)

Third step was the dissection of common hepatic artery (CHA), right hepatic artery (RHA), gastroduodenal artery (GDA), CBD and Portal Vein (PV). The GDA was clamped before ligation and section to verify arterial flow of the CHA. (Fig 3)

Fourth step included dissection of inferior surface of the pancreas creating a tunnel between the pancreas and Superior Mesenteric Vein (SMV) reaching the PV. The first 15cm of jejunum was dissected and transected.

Fifth step was the transection of the pancreas and identifying the PD. Then started the dissection of the Henle trunk and the inferior pancreatic artery. Completing the dissection of the PV the gallbladder was dissected controlling the cystic artery, the CBD was dissected and transected completing now the resection, the CBD stent was removed and send for culture. (Fig 4) (fig 5)

The reconstruction started with pancreaticojejunostomy (PJ) end to side duct-to-mucosa technique with catheter in the PD using PDS 5-0. The hepaticojejunostomy was done 10 cm from the PJ, end to side with two running sutures with vicryl 3-0, one posterior and one anterior as the CBD was widely dilated. The last anastomosis was the gastrojejunostomy (GJ) side to side at the posterior wall of the stomach with laparoscopic stapler and reinforcement with vicryl 3-0. (Fig 6)

Two drains were placed, the left one at the PJ running behind the GJ. The right drain was placed posterior to the HJ. The specimen was removed in one hole piece by endo-bag trough an umbilical incision with an extension not more than 5cm. Operative time was 480minutes, blood lose was insignificant (preop Hb 10,7 G/L and postop 10,2 G/L), no vasopressors needed and after recovery she was extubated and shifted to ICU for 24 h observation.

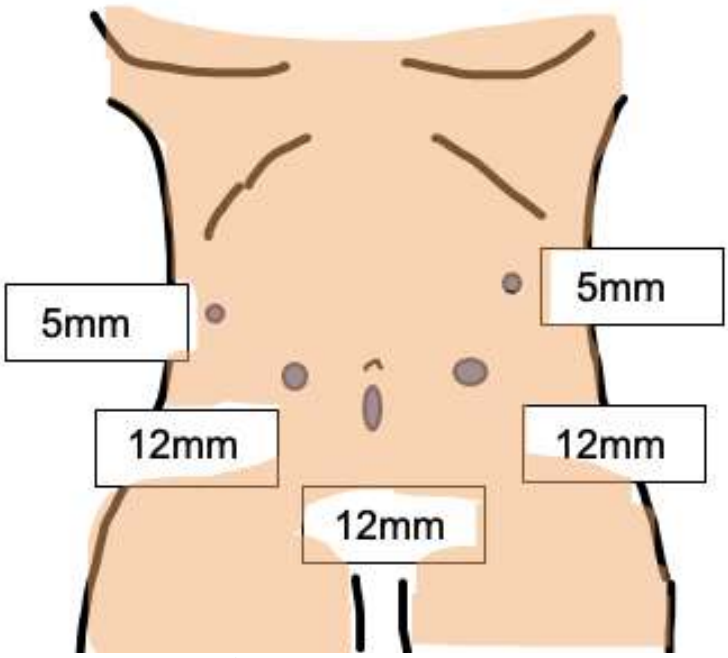

Figure 1:- Trocar position.

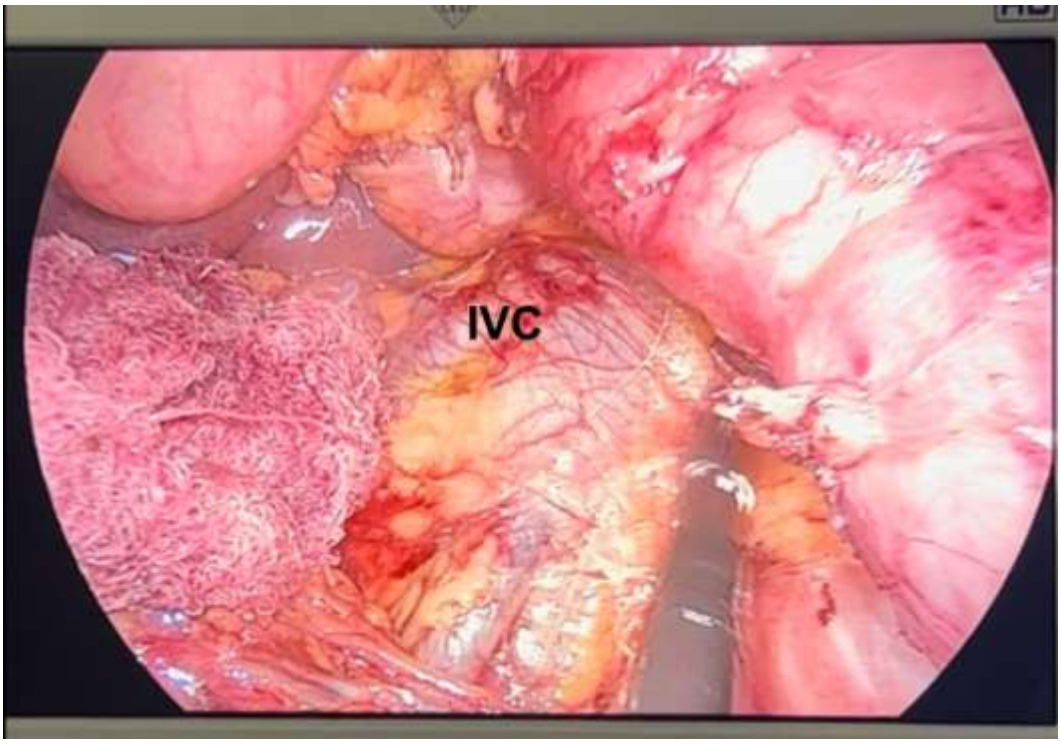

Figure 2:- Vautrin-Kocher maneuver.
IVC: Inferior vena cava.

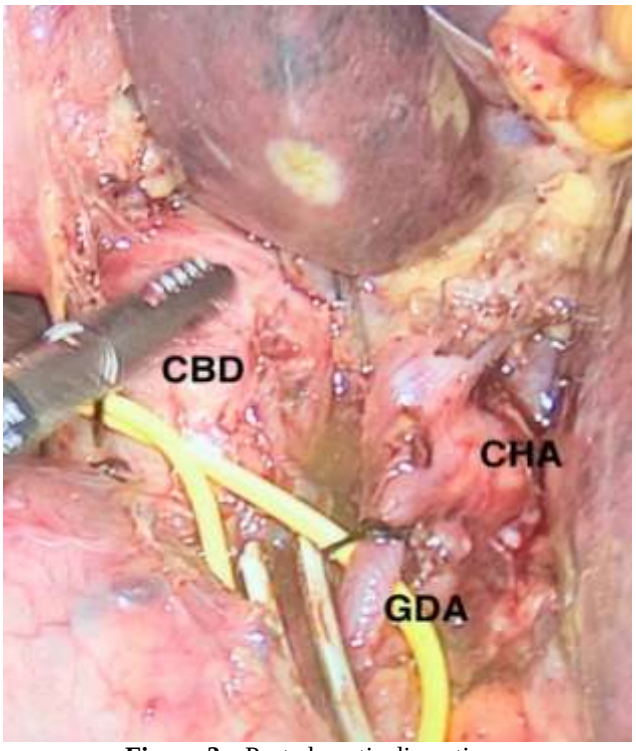

Figure 3:- Porta hepatis dissection.
CBD: Common bile duct. CHA: Common hepatic artery.
GDA: Gastroduodenal artery.

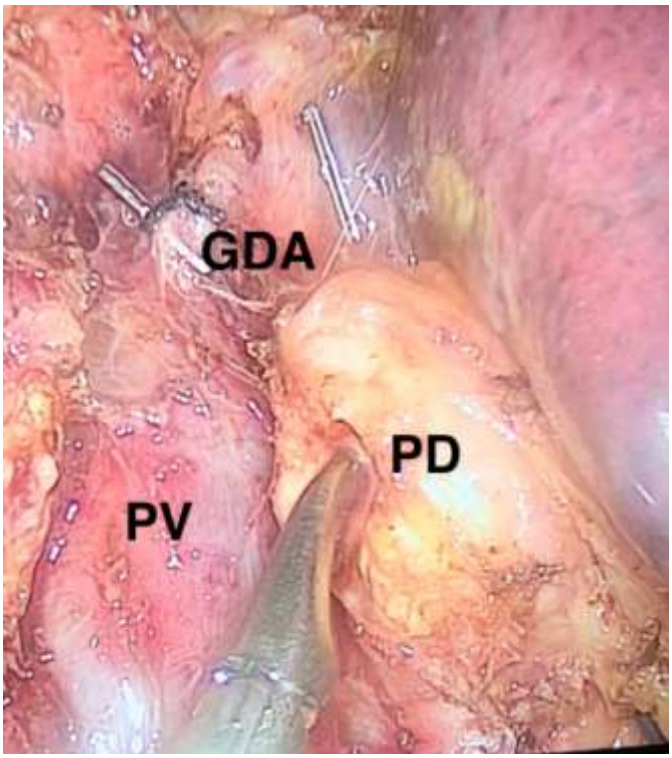

Figure 4:- Pancreatic transection.
PV: Portal vein. PD: Pancreatic duct.
GDA: Gastroduodenal artery.

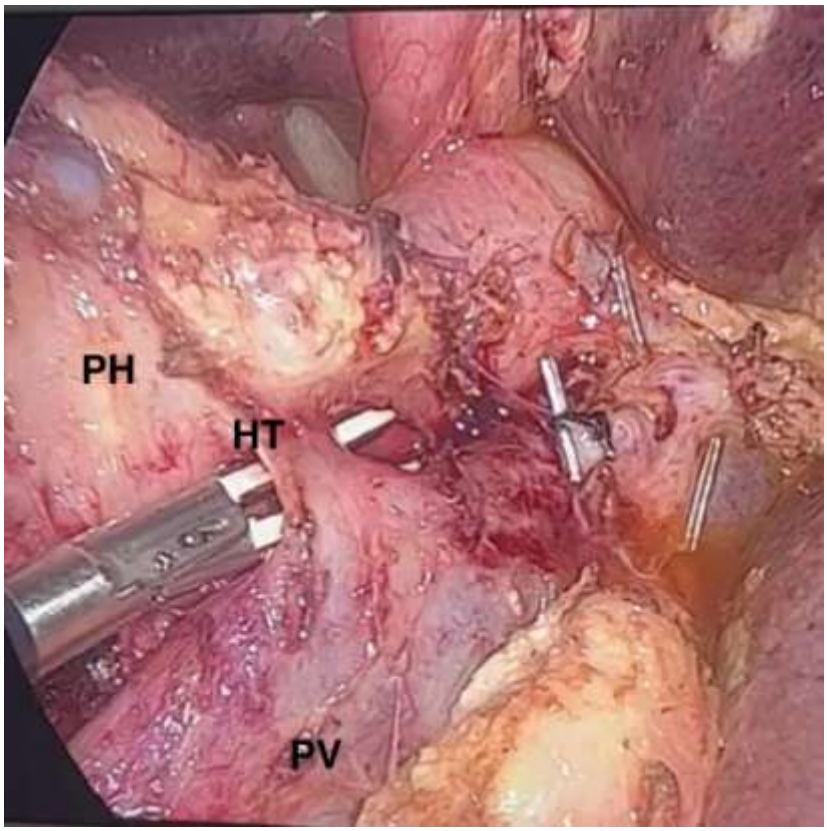

Figure 5:- Dissection of Henle trunk.
PH: Pancreatic head. HT: Henle trunk. PV: Portal vein.

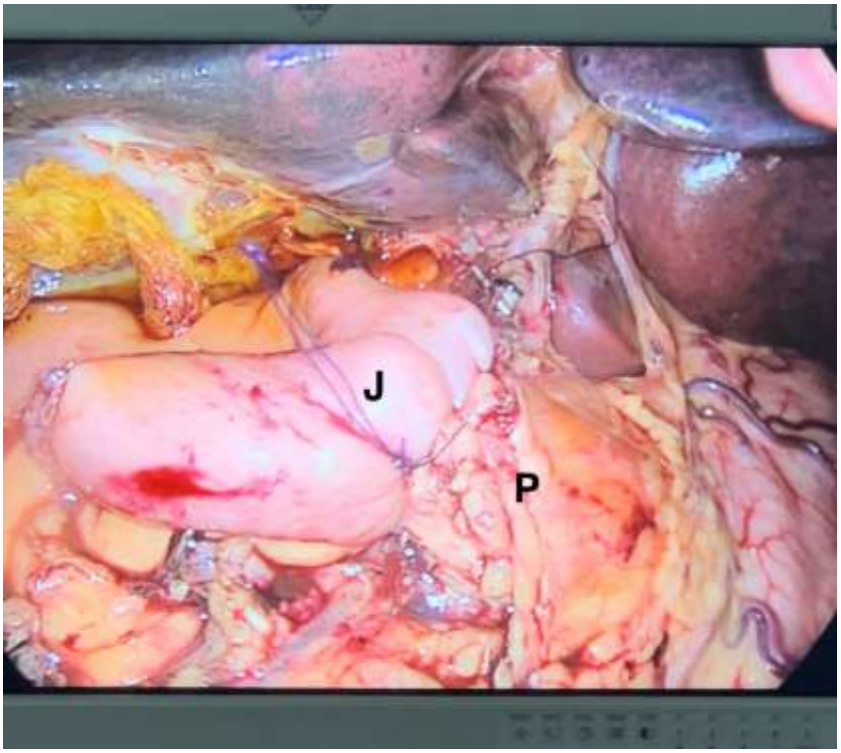

Figure 6:- Pancreatojejunostomy duct-to-mucosa.
P: Pancreas. J: Jejunum.

Postoperative care

Post operative day 1 she was on nasogastric tube(NGT), drains bringing hemoserous fluid, the right 50cc and the left 35cc. No pain, positive bowel sounds. NGT started to be clamped and sips of water was aloud. Patient was shifted to regular ward.

Day 2 post op amylase level of the left drain was 21 U/L, output was 45cchemoserous, right drain was 50cchemoserous. Foley catether was removed, diet progressed to full liquid, NGT was removed.

Day 3 post op she presented one episode of vomiting that didn´t repeat, after that she tolerated soft diet. Right drain output was 100cchemoserous, left drain output was 50cchemoserous.

Day 4 post op she passed stool, she started to tolerate regular low-fat diet, right drain was 100 cc hemoserous, left drain was 50cchemoserous and amylase level less than 20 U/L, left drain was removed, and she was discharged with the right one.

Day 7 post op she was evaluated at the clinic as outpatient, no pain, no fever, no jaundice, tolerating orally and passing bowel motion. Drain had null output, so it was removed. Histopathology showed pancreatic adenocarcinoma invading duodenum at the level of the ampulla, no metastatic lymph node demonstrated, no peri vascular or peri neural invasions.

Discussion:-

The evidence regarding benefit of TLPD over OPD is still in conflict. (6)

The operative time at the beginning of the learning curve reach 7.7 h, and at the end it decreases to 5.3 h. (4)

There is clear advantage in the minimal invasive approach regarding blood lose, postoperative pain, early mobilization, wound infection, and incisional hernia. (7)

The R0 rate resection, the lymph node yield resection, major complications such as pancreatic fistula, and the 90-day-mortality where all comparable between the minimally invasive approach and the open surgery approach. (7) (8) (9)

The short-term recovery after TLPD seems to be promising, the long-term outcomes showed that disease-free survival is superior in TLPD comparing to OPD, but comparing the overall survival there is no significant difference. The clear advantage with TLPD was that the patients receive in a shorter time after the surgery the postoperative adjuvant chemotherapy. (10)

There is one report of port-site recurrence of pancreatic adenocarcinoma after laparoscopic pancreaticoduodenectomy, compared to the increasing number of resections done by TLPD seems not to be a concern. (11)

Conclusions:-

As a high center with an average of 25 Whipple procedures per year, we have begun to approach this surgery by laparoscopy. The success is directly related to the laparoscopic skills of the surgeon, to master the steps of the TLPD it is needed to go through a long learning curve of laparoscopic surgery in different fields, including bariatric, colorectal, gynecology, urology, abdominal wall, and biliopancreatic procedures.

Our research in Pubmed, Lilacs, BVS and Cochrane didn´t show any published case of TLPD from Saudi Arabia. Considering it the first case done in the country we communicate it to the scientific community.

This is the first step to switch the OPD to TLPD taking the advantage of faster recovery and inclusion to begin postoperative adjuvant chemotherapy. The latest articles showed that until now there is no difference in the long-term outcome comparing TLPD with OPD, but it is noted that the load of laparoscopic approach still is not enough to take final conclusions.

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