

# Roux-en Y Duodenojejunostomy for Larger Duodenal Defects

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## ABSTRACT

- Objective** To find the outcome of lateral duodenojejunostomy for larger duodenal defects due to different surgical conditions.
- Study design** Case series.
- Place & Duration of study** Surgical 'E' Unit Khyber Teaching Hospital Peshawar, from January 2014 to September 2016.
- Methodology** The clinical records were traced from the unit and hospital clinical record room. The data was collected and analyzed for the outcome of the procedure.
- Results** A total of six patients were managed with the surgical technique. All patients were allowed oral sips on 3<sup>rd</sup> postoperative day. One patient out of six needed ICU care of 42 days. Patient stay in ICU was of 42 days. Postoperative complications including anastomosis leak occurred in one patient. Nausea and vomiting was reported in two and wound infection in two patients. Mean hospital stay of the patients was 16.67 days.
- Conclusion** Roux-en Y duodenojejunostomy is a safe technique for the reconstruction of larger duodenal defects involving >50% (2/3<sup>rd</sup>) of the duodenal circumference.
- Key words** Duodenal defects, Roux-en Y lateral duodenojejunostomy, cholecystoduodenal fistula.

## INTRODUCTION:

Larger duodenal defects can pose a challenging clinical problem for surgeons because of the close proximity and fixation of the duodenum to the pancreas, the common opening of the common bile duct (CBD) and major pancreatic duct at the ampulla of Vater as well as their shared blood supply, the superior and inferior pancreaticoduodenal arteries. Surgical repair of larger duodenal defects is not only technically difficult but also associated with high

morbidity and mortality. The reasons for disruption of the repair are tissue loss, complex duodenal anatomy, tendency of mucosa extrusion through suture line and break down of suture material from the autodigestive effects of pancreatic and biliary secretions. The choices to repair and restore intestinal continuity includes omental patch, omental implantation, jejunal serosal patch, partial gastrectomy, gastric dissociation, duodenal exclusion or diverticulization, intestinal free flap or a Roux en-Y duodenojejunostomy.<sup>1-4</sup> However studies reporting outcome of these surgical procedures are lacking. In this study we present our experience of patients who underwent Roux en Y duodenojejunostomy for reconstruction of larger duodenal defects.

## METHODOLOGY:

A total of six patients with larger duodenal defects diagnosed on clinical and radiological background were operated between January 2014 to September

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2016 were included in this retrospective case series study. Clinical and operative data of these patients was collected from the hospital record. Study approval was obtained from the hospital ethical committee. Data obtained included patients' demographics and outcome including total hospital stay (number of days), and complications like postoperative nausea, vomiting, fever, wound infection, wound dehiscence, anastomotic leak and intra-abdominal abscess formation. Data was entered into SPSS version 19 and results were analyzed. Operation was done either by midline or Kocher's incision. After establishing and confirming diagnosis the edges of the defect in the duodenum were refreshed. Loop of the jejunum, about 25 cm from the duodenojejunal junction, was mobilized and transected after ligating the mesentery. Roux loop of the jejunum was brought through retrocolic route to the subhepatic area where it was anastomosed to the defect in the duodenum in two layers by using polyglycolic sutures. After this anastomosis the proximal loop was anastomosed end to side to the jejunum about 40 cm from the duodenojejunal anastomosis. In all patients subhepatic and pelvic drains were placed.

#### **RESULTS:**

Six patients were included in this series. There were two females and 4 males. Mean age of the patients was  $42 \pm 22$  year. Cause of duodenal defect in these patients were postcholecystectomy gossypoma in two patients, cholecystoduodenal fistula in one, blunt duodenal injury in two and duodenocolic fistula in one patient. Mean hospital stay was 16.6 days. One patient needed surgical ICU care of about 42 days. Postoperative complications included nausea and vomiting in two patients that resolved spontaneously within 72 hours. Two patients had wound infection. One patient developed postoperative anastomotic leak that was low output with daily drainage of 200-300ml from subhepatic drain. It resolved spontaneously within a week time. None of the patients develop complications related to duodenal narrowing within a follow up period of 2 months. The key features are mentioned in table-I.

**CASE-1 & 2:** Both of these female patients aged 45 year and 52 year had post cholecystectomy gossypoma. Both patients had open cholecystectomy few months back and remained symptomatic. Ultrasonography revealed suspicion of gossypoma in subhepatic area which was confirmed on CT scan in one patient. Both patients were hemodynamically stable. Both the patients were explored via Kocher's incision and gossypoma was removed. In both the patients the gauze had

eroded into the duodenum and removal of the gauze lead to formation of large duodenal defect that was >50% of the duodenal circumference. So both the patients underwent lateral roux en Y duodenojejunostomy. Both patients had uneventful recovery.

**CASE-3:** He was a 60 year old male patient who underwent laparoscopic cholecystectomy for cholelithiasis. In this patient a cholecystoduodenal fistula was found so converted to open procedure. Gallbladder from the duodenal wall was released and cholecystectomy done. Defect in the duodenum was larger 50% thus roux-en-Y lateral duodenojejunostomy was performed. The recovery was smooth.

**CASE-4:** He was a 14 year old child brought after blunt trauma to the abdomen. X ray abdomen showed air under the diaphragm. Patient was operated in emergency. At surgery a large defect found in the 2<sup>nd</sup> part of the duodenum involving >50% of the circumference. Roux-en Y lateral duodenojejunostomy was done. Patient recovered well.

**CASE-5:** A 65 year old male patient presented with acute abdomen. On investigations there was air under diaphragm. Patient was operated in emergency. There was a perforation in the transverse colon so right hemicolectomy with ileostomy performed. In postoperative period there was bile leak in the drain so patient was re-explored. A large defect in the duodenum was noted which was probably missed. Roux-en-Y duodenojejunostomy was done. In postoperative period there was minor bile leak that stopped spontaneously within a week time and patient was discharged on 14<sup>th</sup> postoperative day.

**CASE-6:** A 16 year old boy operated for blunt trauma was referred for further management after 7 days of primary surgery. The operative notes stated that there was ascending colon perforation which was closed primarily and covering ileostomy made. The child had features of generalized peritonitis. Drains had bile stained fluid. Re exploration was done. There was big defect in the 2<sup>nd</sup> part of duodenum and tear of duodenojejunal (DJ) junction. Procedures done were primary closure of the DJ junction tear, Roux-en-Y duodenojejunostomy and feeding jejunostomy. Postoperative ventilatory support was given in SICU. TPN and feeding via feeding jejunostomy initiated. There was bile leak in postoperative period that stopped spontaneously after two weeks. Patient was discharged home on

Table I: Comorbid and Cause of Duodenal Defect				
Patient	Age	Gender	Comorbid	Cause of Duodenal Defect
1	45 Year	F	DM, HTN	Post Laparoscopic cholecystectomy
2	52 Year	F	HTN	Post Laparoscopic cholecystectomy
3	60 Year	M	DM	Cholecystoduodenal Fistula
4	14 Year	M	None	Road Traffic Accident - Blunt Trauma
5	65 Year	M	HTN	Duodenocolic Fistula
6	16 Year	M	None	Road Traffic Accident

DM: Diabetes Mellitus HTN: Hypertension

48th postoperative day and planned for ileostomy reversal which was also performed at a later appointment.

#### DISCUSSION:

Duodenal defects are difficult to manage because of its complex anatomy and therefore a number of procedures have been devised for the repair of larger duodenal defects.<sup>1</sup> For small duodenal perforations some authors have advocated primary repair and stated that duodenal perforations of 1-3 cm can be repaired primarily without developing symptoms of gastric outlet obstruction.<sup>2,3</sup> For larger duodenal defects when greater than one third to one half of the circumference of the duodenum is involved, primary repair is not preferable due to the risk for luminal narrowing and leak at the suture line.<sup>4</sup>

Büyüka<sup>o</sup>ik O et al used serosal patch in patients with larger duodenal defects of >3cm but they did very extensive procedure of cholecystectomy, Roux en Y choledochojunostomy and truncal vagotomy along with this serosal patch repair of larger duodenal defect.<sup>3</sup> This is not advisable procedure in patients who are already are in compromised hemodynamic status. In literature Roux en Y duodenojejunosotomy has been discussed mainly in case reports except one case series where it is recommended as being safe for duodenal reconstruction.<sup>5</sup> Same approach was adopted in current case series with good outcome.

#### CONCLUSIONS:

Roux-en Y duodenojejunosotomy is a safe technique for the repair of larger duodenal defects involving >50% (2 / 3rd) of the duodenal circumference.

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#### Author's Contributions:

Mujeeb Ur Rehman: Report writing.

Muhammad Ismail Khan: Data collection.

Mohammad Zarin: Report writing.

Rooh Ul Muqim: Review of manuscript.

Mahmud Aurangzeb: Critical analysis of manuscript.

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