

# ABSTRACT

## BACKGROUND

Management of Duodenal injuries is a challenging problem due to its difficult diagnosis and complex treatment. CT of the abdomen preoperatively is the choice of investigation in patients with subtle signs. Repeated CT should be done for patients in stable condition with signs of duodenal injury post conservative management. Most of the injuries are diagnosed intraoperatively following emergency laparotomies. Depending upon the grading and severity of the duodenal injury, it is managed from simple repair to triple ostomies and Whipples procedure for higher grade. Every patient with duodenal injury needs a technically demanding and time-consuming procedures.

Surgical management of duodenal lacerations hinges on the extent and severity of the duodenal injury, as well as the involvement of adjacent vasculature, biliary tree, and pancreas. Uncomplicated duodenal lacerations are repaired by Simple primary repair such as simple seromuscular Lembert suture or Duodenorrhaphy is an adequate method. If there is a risk of luminal narrowing post primary repair, then resection of the injured duodenum is warranted. In grade II, III or IV injuries, pedicled mucosal graft, jejunal serosal patches, omental patches, pyloric exclusion procedure and Roux en Y reconstruction can be done.

Primary repair with Tube Duodenostomy is an alternative & safe option for the complex cases with a protection against the wound dehiscence. Lower duodenal injuries on D3 & D4 are treated similar to the small bowel injuries.

In haemodynamically unstable patients, a damage control surgery should be done to avoid early deaths and postoperative complications and mortality.

## **AIMS AND OBJECTIVES**

- To analyse and compare the management of Duodenal injuries.
- To assess the role of early diagnosis and varied management.
- To assess the severity of injuries and complications with varied management.

## **METHODOLOGY (MATERIALS AND METHODS)**

Sample size: 35 cases.

Study Design: Prospective (Observational study)

Study population: 35 cases

Study period: May 2017 to September 2018

Study Centre: Rajiv Gandhi Government General Hospital & Madras medical college, Institute of General Surgery

Inclusion criteria: The patients admitted to various surgical wards in RGGGH with duodenal injuries.

Exclusion criteria: Children <17 years

Pregnant women

Patients with severe other system injury needing intervention for the same.

Assessment of Parameters:

All the patients who fit the inclusion criteria will be observed and following data collected.

Routine blood investigations like Total WBC count, Hb, Hct, ESR, Blood Urea, Creatinine, Coagulation profile, Blood Grouping & Typing, Liver Function Tests including Total Bilirubin, Direct/Indirect, SGOT, SGPT, ALP, Total protein, Albumin/Globulin, Serum Amylase & lipase, Serum Electrolytes.

Radiological investigations:

- X-rays
- FAST/ USG abdomen & Pelvis,
- CECT Abdomen and Pelvis

- MRCP
- ERCP reports
- OGD reports

Intra-Operative findings

Postoperative Drain values, blood investigations and follow up investigations & procedures.

## **RESULTS**

The following are the results of the study

- 65 % of patients presented with blunt abdominal injuries, vs 31% penetrating injuries.
- 71% of patients are operated on the day of trauma with better utilisation of CT in our institution, leading to early diagnosis & decreased morbidity & mortality.
- Most commonly injured part of the duodenum is 2<sup>nd</sup> part (37%), followed by 3<sup>rd</sup> part (20%), 1<sup>st</sup> part (17%) and 4<sup>th</sup> part is least affected (8%). 17% of patients presented with multiple part involvement.
- Pancreas is the most commonly associated organ to be injured (51%), followed by Transverse colon, jejunum, CBD, stomach, major vessels, liver, etc.
- Most patients (43%) presented with Grade II injuries. Then Grade I (34%), III (11%), IV (9%) & V (3%).

- Most of the patients are managed by primary repair (53%), followed by conservatively (34%), least by complex repair (12%).
- Most common complication following duodenal injury is duodenal fistula (22%), followed by pancreatitis, pneumonia, biliary fistula, sepsis, MODS, DVT, etc.
- Of 35 patients admitted, 21 undergone surgery & 6 patients died in the postoperative period. 25% of patients died with duodenal injuries.
- Average length of hospital stay is 14.3 days.

## **CONCLUSION**

Duodenal injuries present as simple hematomas, perforation and combined pancreaticoduodenal injuries. The majority of duodenal hematomas are managed conservatively with nasogastric suction and parenteral nutrition. Patients with suspected associated perforation, suggested by clinical deterioration or imaging with retroperitoneal free air or contrast extravasation, should undergo operative exploratory laparotomy.

Low grade duodenal injuries are treated by primary repair with running, single layer 3-0 monofilament. When there is substantial loss of duodenal tissue, complex repair is done.

Defects in the 2<sup>nd</sup> part of duodenum should be patched with a vascularised graft from jejunum or gastric body. Duodenal injuries distal to the ampulla of Vater and proximal to the superior mesenteric vessels are best treated by Roux- en- Y duodenojejunostomy with the distal portion of the duodenum is over sewn.

In injuries to the 3<sup>rd</sup> & 4<sup>th</sup> parts of duodenum, the injured segments are resected and a duodenojejunostomy is performed on the left side of superior mesenteric vessels.

For high grade pancreaticoduodenal injuries, Whipples procedure is done.

Complications after major pancreaticoduodenal injuries are more common. Duodenal fistula, if presumptively an end fistula following pyloric exclusion, will typically heal in 6 to 8 weeks with adequate drainage and control of intra-abdominal infection. Intra-abdominal abscesses are common and are managed by higher broad-spectrum antibiotics and percutaneous drainage.

## **KEY WORDS:**

Duodenum, Blunt injury, abdominal injury, duodenum, duodenal injury, haematoma, duodenal fistula, laceration, retroperitoneal hematoma, penetrating injury, primary repair, complex repair, Whipples, feeding jejunostomy, sepsis, grading, CT abdomen, Trauma, pancreatitis, bile duct injury.