Abstract: Isolated duodenal injury is uncommon with significant mortality (6 to 25) and morbidity (30 to 60) because the retroperitoneal situation of most of the duodenum makes rupture difficult to detect. Duodenal injury with leakage of bowel content along with bacterial contamination in retroperitoneum makes repair difficult. Mortality is usually due to the associated organ injuries. Successful surgical repair of a duodenal rupture was first reported in 1896, but it was not until 1905 that the first detailed case report of a survival appeared. Since this time, the number of patients with duodenal injuries increased markedly largely because of increased numbers of automobile accidents and the increased violence on our streets. Thus, physicians treating civilian trauma are being confronted with increasing numbers of duodenal injuries. Surgical management of duodenal injuries as presented in the literature is controversial, if not somewhat contradictory. The experience of most surgeons in this disorder is still limited by its relative infrequency. The surgical literature on duodenal injuries mostly consists of isolated case reports or collective reviews of small series and few authors have had sufficient experience with this injury to develop comprehensive analyses of the problem. Furthermore, many reported series include patients treated by highly variable surgical techniques during the early part of the twentieth century when principles of pre- and postoperative care were poorly developed.

Keyword: duodenostomy, gastrostomy, Pancreaticoduodenectomy, roux en y DJ, feeding jejunostomy

CASE HISTORY:
A 20 yr boy came to the emergency dept with the H/o accidental fall from tree (15 feet h)-4 days duration. There was H/o abdominal pain for the past 4 days- continuous, progressive with radiation to back. H/o vomiting -7 episodes which was mixed with food particles. There was H/o lower abdominal distention and obstipation -3 days. He was managed conservatively in a private hospital for the last 4 days and then referred to our hospital. O/E pt was conscious, pallor+, dehydrated and afibrile. Per abdomin examination revealed Generalised abdominal distention, guarding, and rigidity.

The liver dullness was not obliterated and bowel sounds sluggish. Per rectal examination was empty. In addition he sustained multiple fractures in both his hands (rt hand-distal radius and distal ulna #lt elbow-#coronoid process and radial neck#). His investigations revealed Hb-8.9g/dl , PCV-30%, Serum Amylase-121U. X RAY ABDOMEN-ERECT showed Air shadow around the rt kidney. Lumbar lordosis with concavity to the right. Absence of bowel gas in the rt upper quadrant.
With the above findings we decided to proceed with exploratory laparotomy after adequate resuscitation with a preop diagnosis of **retroperitoneal injury**. Incision-midline laparotomy incision, anaesthesia-ETGA, retroperitoneal bile staining in the region enclosing the duodenum and the transverse colon. About 200 ml of bilious fluid in the retroperitoneum, found after duodenal Kocherisation.

Procedure done was suturing of the duodenum done using 2/0 vicryl full thickness along with **tube duodenostomy** as controlled fistula. Temporary **gastrostomy** to ensure adequate gastric aspiration and decompression proximal to the duodenal closure. **Feeding jejunostomy** to start early enteral feed. With a DT in Morrison’s pouch and another in pelvis.

**Sutured duodenal rent with tube duodenostomy**

Post operatively, the pt was kept on NPO IVF, NG tube aspiration, Antibiotics (Inj. Tazobactum 4.5g TDS), Analgesics, Proton Pump Inhibitors. 2 units of blood transfusion given. Feeding Jejunostomy started on 5th POD. NJ tube removed on 7th POD. Gastrostomy and duodenostomy secretions filtered and given thru jejunostomy once in 2 hrs. Gastrostomy clamped on 15th POD once the secretions were reduced to minimum. Pelvic DT removed on 16th POD. Duodenostomy tube clamped once the secretions were reduced to minimum. DT in Morrison pouch removed once there is nil collection after 3 days of clamping. Gastrograffin studies confirmed there is no leak thru the duodenum and oral feeds started.
**POST OP DAY 22**

**DISCUSSION:**

**Causes of Duodenal Injuries Blunt Injury**

Following seat belt or steering wheel injury, fall from height, kicked or stamped upon Retroperitoneal rupture common (post surface of D2-MC)

**Penetrating Injury**

Following gunshot or stab wound

All parts of duodenum equally involved

**Grading Of Duodenal Injuries**

I Serosal tears or hematoma of a single portion
II Injuries > 1 portion or laceration < 50% of circumference
III Lacerations of 50-75% of the 2nd portion or 50-100% or any other part
IV Laceration > 75% of 2nd portion or distal CBD V Massive disruption of both duodenum and pancreas

**Associated Injuries with Duodenum Blunt:**

Pancreas – 40-50%

Penetrating: Liver – 54%, Small bowel – 50%, Colon 49%

Clinical changes in isolated pancreatic and duodenal injury may be extremely subtle until severe, life-threatening peritonitis develops

Significant latent period with feeling of well being (upto 1 day).

Severe pain in epigastrium and back with retracted vomiting, and Generalised sepsis with widespread retroperitoneal cellullitis are the characteristic features of this condition. X ray abdomen showsperirenal air bubbles, lumbar lardosis with concavity to rt, absence of bowel gas in rt upper quadrant and loss of rt psoas shadow.

Contrast Swallow is Useful to diagnosis perforation or hematoma 50% of perforations using water-soluble contrast (Gastrograffin). Barium probably more accurate.

Hematoma = “coiled-spring” appearance or complete obstruction

Intraoperative evaluation: Careful evaluation of pancreas/ duodenum Particularly if hematoma is overlying.

Diffuse peritoneal hematoma may need to be explored to rule out underlying duodenal, pancreatic, or major vessel injuries!

SEVERE EDEMA, CREPITANCE, OR BILE STAINING OR PERIDUODENAL TISSUES IMPLIES A DUODENAL INJURY UNTIL PROVEN OTHERWISE.

4 BASIC PRINCIPLES IN MANAGING DUODENAL TRAUMA:

1. Restore intestinal continuity

2. Decompress the duodenal lumen

3. Provide wide, external drainage

4. Provide nutritional support

5. Decompress the duodenal lumen

6. Restore intestinal continuity

Condition Management

Intramural hematoma

Conservative management Uncomplicated inj (grade 2 and 3) Simple duodenal repair Difficult duodenal repair delayed >24 hrs with Primary repair (rarely dy DJ)

with one of the evidence of retroperitoneal inf d e c o m p r e s s i v e p r o c e d u r e

d 1 . d u o d e n o s t o m y , g a s t r o s t o m y

F J 2. Pyloric Exclusion, GJ, FJ

S e v e r e c o m b i n e d d u o d e n a l a n d

P a n c r e a t i c o d u o d e n e c t o m y ( r a r e l y d o n e )

duodenopancreatitis


