



POST TRAUMATIC ISOLATED DUODENAL INJURY-A RARITY?

Dr.magesh Kumar J*	Sree Balaji Medical College & Hospital, Bharath University, Chromepet, Chennai – 600044*Corresponding Author
Dr Naveen Kumar .V	Sree Balaji Medical College & Hospital, Bharath University, Chromepet, Chennai – 600044
Prof. Dr. P. Sasikumar	Sree Balaji Medical College & Hospital, Bharath University, Chromepet, Chennai – 600044
Dr. P. Suresh Babu	Sree Balaji Medical College & Hospital, Bharath University, Chromepet, Chennai – 600044
Prof. K. S. Ravishankar	Sree Balaji Medical College & Hospital, Bharath University, Chromepet, Chennai – 600044

ABSTRACT

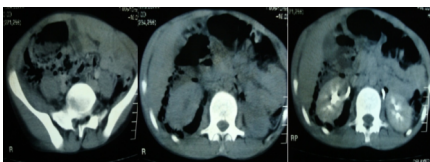
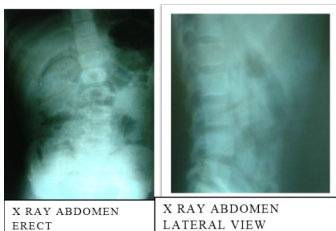
Isolated duodenal injury is uncommon with **significant mortality (6 to 25%) and morbidity(30to 60%)** because the retroperitoneal situation of most of the duodenum makes rupture difficult to detect. Duodenum is easily narrowed by suture. Duodenal injury with leakage of bowel content along with bacterial 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.

KEYWORDS :

CASE REPORTS

A 20 yr boy came to the emergency dept with the H/o accidental fall from tree(15 feet ht)-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 afebrile. Per abdomen 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.

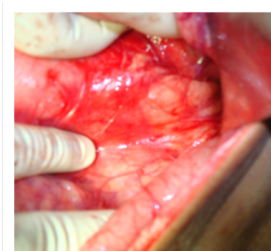


With the above findings we decided to proceed with exploratory laparotomy after adequate resuscitation with a preop diagnosis of ?RETROPERITONEAL INJURY.

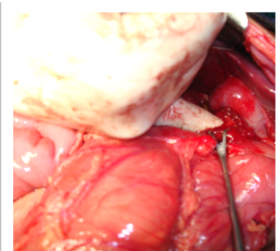
Incision-midline laparotomy incision, Anaesthesia-ETGA, Retroperitoneal bile staining in the region enclosing the duodenum and the transverse colon. About 200 ml of bilious fluid in the retroperitoneum, found after duodenal Kocherisation.



Duodenal Tear At D2-d3 Junction Inv Half Of The Circumference Involving Anterior And Lateral Wall



Pancreas norma



Finger in the duodenal rentl



Sutured Duodenal Rent With Tube Duodenostomy Post Op Day 22

Post operatively, the pt was kept on NPO IV,NG tube aspiration, Antibiotics(Inj.Tazobactam 4.5g TDS), Analgesics ,Proton Pump Inhibitors.2 units of blood transfusion given. Feeding Jejunostomy started on 5 th POD. NJ tube removed on 7 th POD. Gastrostomy and duodenostomy secretions filtered and given thru jejunostomy once in 2 hrs. Gastrostomy clamped on 15 th POD once the secretions were reduced to minimum. Pelvic DT removed on 16 th 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.

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% Major vessels – 52%, 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 retractable vomiting, and Generalised sepsis with widespread retroperitoneal cellulitis are the characteristic features of this condition.

X ray abdomen shows perirenal air bubbles, lumbar lordosis 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.Different manoeuvres are **1.Kocher** – expose 1st, 2nd, 3rd portions of duodenum and head of pancreas,**2.Cattell** – exposing root of mesentery of R colon if inadequate exposure from Kocher and **Opening lesser sac** – visualize pancreatic body and tail.**Retroperitoneal hematomas 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:

- Restore intestinal continuity
- Decompress the duodenal lumen
- Provide wide, external drainage
- Provide nutritional support

The vast majority of procedures described for duodenal injury suggest that **none of them is perfect** as the management depends on 1.time of presentation, 2.grade of injury, 3.with or without evidence of retroperitoneal infection, 4.general condition of the patient and 5.associated organ injury

Different procedures are Debridement of devitalised tissue and Primary repair transversely with one of the following to **defunctionalise** the sutured duodenum,1.diversion of gastric secretions by **GJ,DJ or duodenostomy**,2.internal decompression of the repair as in **affarent jejunostomy** 3.exclusion of gastric secretions as in **pyloric closure** 4.removal of gastric secretions as in **temporary gastrostomy and** 5.inhibition of gastric secretion by **antrectomy and vagotomy** .In cases of severe duodenal or duodenopancreatic injuries, primary repair ,pyloric exclusion and gj is ideal with a low duodenal fistula rate of 2.2%

Advantages of gastrostomy over GJ There is an increased incidence of **marginal ulcer following GJ** for which truncal vagotomy becomes necessary.

GJ with vagotomy takes a longer operative time than gastrostomy GJ takes a longer time to decompress the duodenum which starts once the edema subsides. There is an increased incidence of **marginal ulcer following GJ** for which truncal vagotomy becomes necessary.

Condition	Management
Intramural hematoma	Conservative management
Uncomplicated inj(grade2 and 3)	Simple duodenal repair
Difficult duodenal repair/delayed >24 hrs with evidence of retroperitoneal inf	Primary repair /roux en y DJ with one of the decompressive procedure 1.duodenostomy,gastrostomy,FJ 2.Pyloric Exclusion,GJ,FJ
Severe combined duodenal and duodenopancreatic inj	Pancreaticoduodenectomy(rarely done)

CONCLUSION

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.

REFERENCES

1. Bacon, L. H. and LeCount, E. R.: Automobile Injuries. A Study From Records of Postmortem Examinations. Arch. Surg., 18:769, 1929
2. Bartlett, M. K. and Lowell, W. H.: Acute Postoperative Duodenal Fistula. A Report of 12 Cases. N. Engl. J. Med.,218:587, 1938.
3. Brawley, R. K., Cameron, J. L. and Zuidema, G. D.: Severe Upper Abdominal Injuries Treated by Pancreaticoduodenectomy.Surg. Gynecol. Obstet., 126:516, 1968.
4. Burrus, G. R., Howell, J. F. and Jordan, G. L., Jr.: Traumatic Duodenal Injuries: An Analysis of 86 Cases. J. Trauma, 1:96, 1961.
5. Cegielski, M.: Rupture of the Duodenum in Blunt Abdominal Trauma. Mo. Med., 62:903, 1965.
6. Cleveland, H. C. and Waddell, W. R.: Retroperitoneal Rupture of the Duodenum Due to Nonpenetrating Trauma. Surg. Clin. North Am., 43:413, 1963.
7. Cocke, W. M. and Meyer, K. K.: Retroperitoneal Duodenal Rupture. Proposed Mechanism, Review of Literature and Report of a Case. Am. J. Surg., 108:834, 1964.
8. Colp, R.: External Duodenal Fistulae. Ann. Surg., 78:725, 1923.
9. Donovan, A. J. and Hagen, W. E.: Traumatic Perforation of the Duodenum. Am. J. Surg., 111:341, 1966.