Medico Research Chronicles

ISSN No. 2394-3971

Case Report

DAMAGE CONTROL AND DEFINITIVE SURGERY IN A CASE OF FATAL BLUNT TRAUMA ABDOMEN

Suvendu Maji[1], Makhan Lal Saha[2], Kamal Singh Kanwar[3], Soumen Das[4]

1. Resident in Department of General Surgery, Institute of Postgraduate Medical Education & Research

2. Professor, Department of General surgery, I.P.G.M.E&R

3. Resident in Department of General Surgery, I.P.G.M.E&R

4. Assistant professor, Department of General surgery, I.P.G.M.E&R,

Submitted on: April 2015
Accepted on: April 2015
For Correspondence
Email ID:
drsuvendumaji@rediffmail.com

Abstract

Pancreaticoduodenal injuries are rare, life threatening and challenging to treat. Diagnosis is often delayed and needs high index of suspicion. Inspite of best management outcome remains grim. The concept Of Damage Control Surgery is well known and most of it comes from experiences in battle ground. It consists of treating the most serious injuries first, tackling infection and leaving definitive surgery to a later date. We herein describe such a case where a young boy sustained serious life threatening pancreaticoduodenal and vascular injuries, encountered by a surgeon bestowed with minimal facilities and little expertise, who aptly managed the case with damage control surgery, before referring him to us for definitive management. We conclude that damage control surgery and prompt referral to higher centers is a correct approach to management of patients presenting at non trauma/less equipped centers and must be practiced strongly.

Keywords pancreaticoduodenal injury, pyloric exclusion, damage control surgery, superior mesenteric vein tear, hemoperitoneum.

Introduction

Pancreaticoduodenal injuries are uncommon and remain one of the most complex injuries treated by the trauma surgeons. Its diagnosis and management still remains a formidable challenge often with poor outcomes. The outcome depends on early diagnosis, which is essentially based on a high index of suspicion. Such injuries often have a morbidity in the range of (36 to 60)% and mortality as high as (18 to 23)%.[1] Trauma to pancreaticoduodenal complex(PDC) are often associated with multiple other solid organ injuries and injuries to vital structures like Inferior Vena Cava(IVC), Aorta, Portal Vein(PV),Superior Mesenteric Vein(SMV).etc. These outline the importance of damage control techniques in such cases. Arresting haemorrhage and controlling peritoneal contamination remains the primary concern in such demanding situations. Avoiding lengthy and

complex procedures during the initial operation is most important. A staged approach to high-grade pancreaticoduodenal injuries also appears to preserve parenchyma and allows more frequent use of non-resectional alternatives.[2]

Case Report

A 17 year old male, sustained blunt trauma to his abdomen due to sudden fall from a moving bullock cart .He was then taken to a nearby hospital where he was diagnosed to have blunt trauma abdomen with hemoperitoneum and hypovolemic shock. An urgent exploratory laparotomy revealed:-

- Hemoperitoneum
- Transection of third part of duodenum
- Pancreatic head injury and
- Lateral tear to SMV

Unfortunately all attempts to control bleeding failed. In view of a poor infrastructure in a peripheral setup (no availability of vascular clumps), the emergency surgeon on duty decided not to proceed further. Three mops were next packed into the abdominal cavity to control bleeding and abdomen was closed temporarily with two drains inside. The patient was referred to this institute where he was received early in the morning of next day. On admission, patient was conscious but restless and in a state of hypotension. After resuscitation a redo laparotomy was undertaken through the same incision. 3 mops previously placed were removed and abdomen was explored. No peritonitis or active bleeding was found during initial exploration. Injuries found:-

- Transection of 3rd part of the duodenum
- Avulsion of uncinate process of pancreas from SMV
- Lateral tear of SMV
- Avulsion of middle colic vessel
- Gangrenous changes in mid-transverse colon

The transected duodenum was repaired with primary end-to-end anatomises using 2-0 vicryl. Pyloric exclusion and Roux en y Gastrojejunostomy was next done [fig.1]. Head and neck of the pancreas was found uninjured. Avulsed uncinate process was overrun using Mersilk sutures. While over running the uncinate process, oozing of blood started from the lateral tear of SMV which was initially not evident. Bleeding was controlled with application of bulldog clamps. SMV tear repaired with 4-0 prolene sutures [fig 2]. Biliary diversion done by inserting a T-tube after choledochotomy. The gangrenous segment of the transverse colon [fig 3] was resected and continuity achieved with end-to-end colo-colic anatomises. Avulsed middle colic vessels were transfixed. In view of poor general condition a proximal diverting ileostomy and feeding jejunostomy was made**.**

Postoperative Course

The patient was managed with routine post operative care in intensive care .Drain and T tube output monitored.Ileostomy moved on 3rd post op day. FJ feed was started after 24 hours with clear fluids. Oral feed was started on 4th postoperative day. Subsequently he was discharged and he remains in excellent health on two months follow up.

Discussion

Damage Control Surgery[3]: The concept of tailoring the operation to match the patients physiology and staged procedures to prevent physiological exhaustion is called "damage control surgery". This concept allows treatment of the most serious life threatening injuries first and deferring definite management to a later time. Our case was a perfect example of Damage Control Surgery where the surgeon did more in a less manner without attempting anything heroic to control bleeding. Prompt referral to a well equipped centre proved life saving for the patient. Due to the rarity of PDC injuries, diagnosis is often unsuspected prior to exploration. Physical examination and

laboratory tests often contribute little to diagnosis. However presence of an elevated amylase should alert one of the situation[4].Plain X-rays may show presence of free intraperitoneal gas. Diagnostic peritoneal lavage is often negative. CT where available has become the initial investigation of choice

Duodenal injuries often require operative interventions. However conservative management is feasible in selective scenarios .Often duodenal hematomas can be managed with non-operatively with nasogastric decompression, parenteral nutrition, fluids, antibiotics and close monitoring of the patient.[5] Similarly considerable evidence exists about conservative management of endoscopy induced duodenal injuries[6].Duodenal lacerations depending upon their grade are treated either with primary repairs or resection of the injured portion followed by primary anastomosis[7-11].An alternative to this is a Roux En Y duodenojejunostomy. Higher grade injuries often require adjunctive procedures in form of duodenal diverticulisation or Pyloric Exclusion[12-14] to protect the anatomosis from dehiscence. A traumatic Whipples procedure may be considered in situations where the entire pancreaticoduodenal complex has been destroyed**!**

Conclusion

Pancreaticodudenal injuries are rarely suspected preoperatively and often takes the surgeon by surprise at exploratory laparotomy. Management of such life threatening injuries can be extremely difficult when experience ,skill and good facilities are scarce. Such injuries should be kept mind while putting the patient for a laporotomy. Threshold for referral to a higher centers from a peripheral health care should be low. Adequate resuscitation and damage control surgery should be undertaken deferring definitive procedures to a later time. This can often prove life saving as was in our case!

References

1. Sharma. Atul. K Management of Pancreaticoduodenal Injuries. *Indian Journal of Surgery*.2012;74(1):35-39
2. Moore EE. Staged laparotomy for the hypothermia, acidosis and coagulopathy syndrome. Am J Surg.1996;172:405–410. doi: 10.1016/S0002-9610(96)00216-4. [PubMed] [Cross Ref]
3. Bailey &Love. *Short practice of surgery*. 25th ed. Great Britain. Hodder Arnold; 2008
4. Kochar SK. *Principles and Practice of Trauma Care*. 2nd ed. NewDelhi. Jaypee Brothers; 2013
5. Desai KM, Dorward IG, Minkes RK, Dillon PA. Blunt duodenal injuries in children. J Trauma 2003;54:640–5; discussion 645–6
6. Fatima J, Baron TH, Topazian MD, et al. Pancreaticobiliary and duodenal perforations after periampullary endoscopic procedures: diagnosis and management. Arch Surg 2007;142:448–54; discussion 454–5
7. Ivatury R, Nassoura Z, Simon R, Rodriguez A. Complex duodenal injuries. Surg Clin North Am 1996;76:797–812
8. Rickard MJ, Brohi K, Bautz PC. Pancreatic and duodenal injuries: keep it simple. Aust N Z J Surg 2005;75:581–6.
9. Seamon MJ, Pieri PG, Fisher CA, et al. A ten-year retrospective review: does pyloric exclusion improve clinical outcome after penetrating duodenal and combined pancreaticoduodenal injuries? J Trauma 2007;4:829–33.
10. Clendenon JN, Meyers RL, Nance ML, Scaife ER. Management of duodenal injuries in children. J Pediatr Surg 2004;39:964–8.
11. Cogbill TH, Moore EE, Feliciano DV, et al. Conservative management of

duodenal trauma: a multicenter perspective. J Trauma 1990;30:1469–75
12. Vaughn G, Grazier O, Graham D, et al. The use of pyloric exclusion in the management of severe duodenal injuries. Am J Surg 1977;134:785–90.
13. Martin T, Feliciano D, Mattox KL, Jordan GL Jr. Severe duodenal injuries: treatment with pyloric exclusion and gastrojejunostomy. Arch Surg 1983;118:631–5.
14. Kashuk JL, Moore EE, Cogbill TH. Management of the intermediate severity duodenal injury. Surgery 1982;92:758–64.

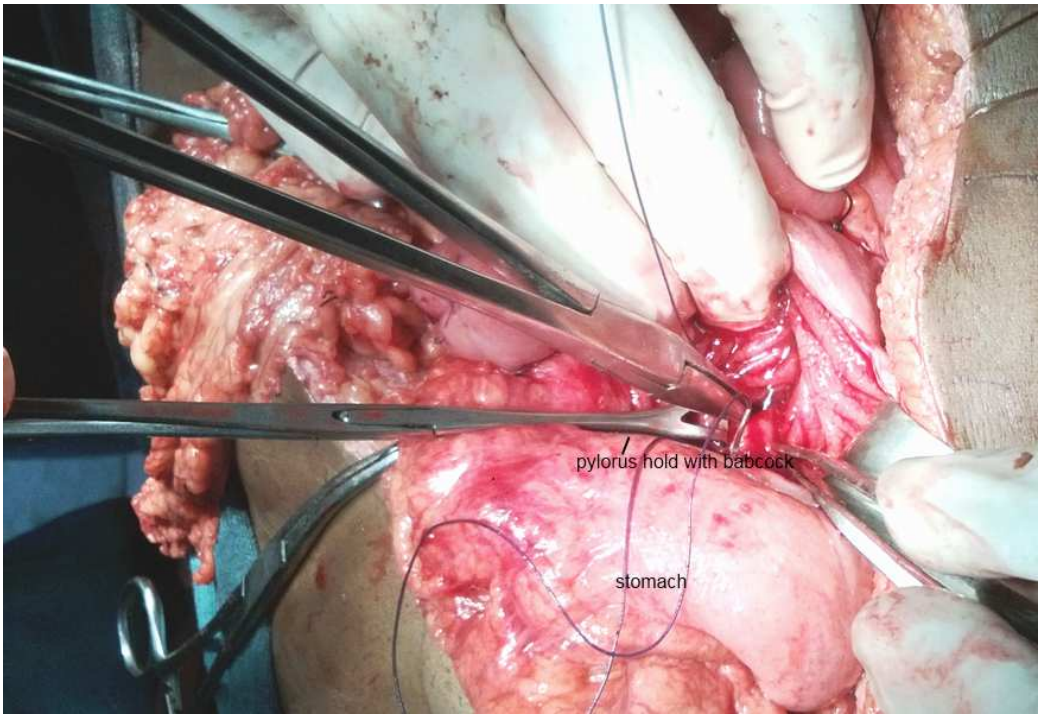
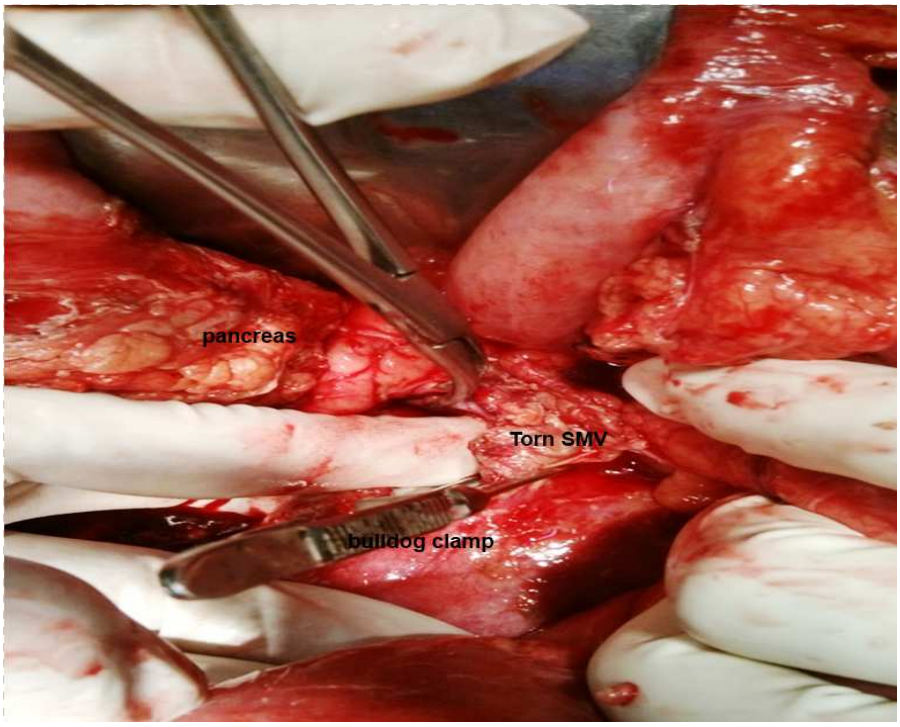


Figure 1.showing pyloric exclusion being performed



Fig,2 Torn SMV ,controlled with bull dog clamp application.

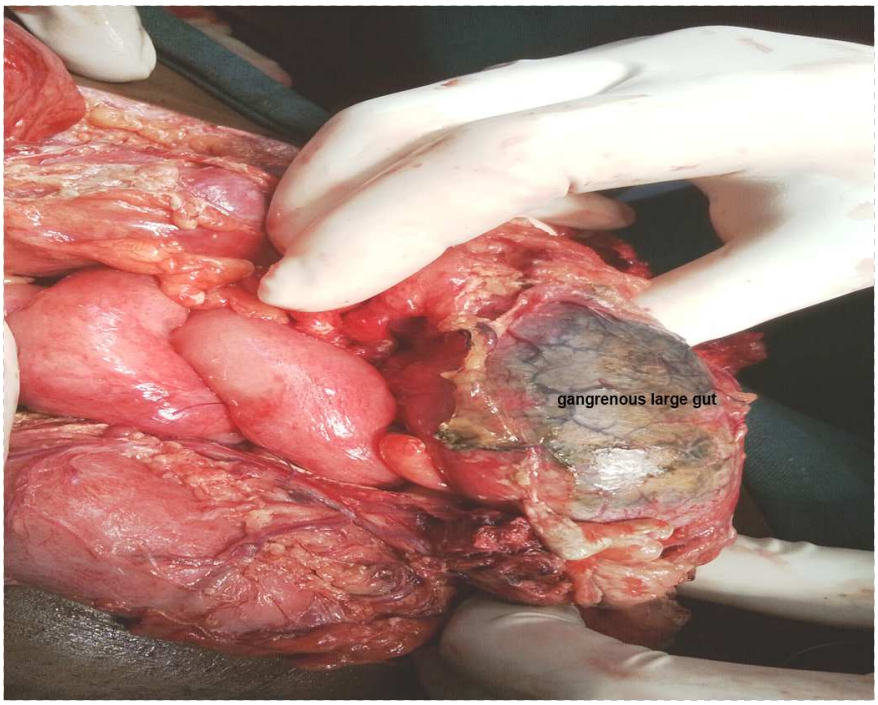


Fig.3 gangrenous segment of large gut.