MANAGEMENT OF DUODENAL INJURIES: REPAIR AND ADJUNCTS

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ABSTRACT

Background: Duodenal injuries have been very notorious for their dreadful outcome in past. Many complex procedures, like Triple-ostomy, Burney Duodenal Diverticulization, Pyloric Exclusion, have been used along with repair of duodenal perforation/transection.

Objective: To evaluate the results of simple repair along with omental wrapping in terms of duodenal fistula formation.

Methodology: This cross sectional study was conducted in department of surgery Quaid e Azam Medical College Bahawalpur in Bahwal Victoria Hospital from 1st December, 2012 to 31st December, 2017. All patients found to have duodenal injury which could be approximated with stitches were included in this study. Data was analyzed by SPSS 20.

Results: Consecutive 39 patients having duodenal injuries were treated with simple repair along with omental wrapping. Out of total, 36 (92.3) of our patients were treated successfully and 3 (7.7%) patients developed duodenal fistula: 2 of which were treated successfully with parenteral nutrition and drainage, only 1 patient expired due to sepsis and multi organ failure.

Conclusion: Simple repair along with omental wrapping is effective way of treating duodenal injuries to prevent dreadful duodenal fistula.

Key Words: Duodenal injuries, Simple repair, Omental wrapping, Duodenal fistula

INTRODUCTION

Duodenal injuries have become more frequent nowadays, due to road traffic accidents and assaults.[1] Injuries are more frequent with penetrating trauma but crushing and perforation from blunt trauma is not so uncommon.[2,3,4] Such injuries are many a times associated with other intraabdominal injuries.[2] The management of duodenal injuries is problematic and controversial, because of its common blood supply with pancreas; limited operative mobilization, opening of ampulla of Vater in the 2nd part, contents passing through are high in volume and rich in digestive enzymes.[3,4] Variety of adjunctive procedures have been added to repair/anastomosis to protect suture line e.g. pyloric exclusion[3] and gastro jejunostomy, triple ostomies (gastrostomy, tube duodenostomy, feeding jejunostomy).[4] Duodenal fistula formation remained high, Omental patching began in 1937, when Roscoe Reid Graham of Toronto reported 51 cases of perforated duodenal ulcer successfully treated with an omental patch.[5] The objective of this study was to determine the outcome of simple repair/anastomosis augmented with omental patch in terms of duodenal fistula.

METHODOLOGY

This cross sectional study was conducted in department of Surgery Quaid e Azam Medical College, Bahawalpur in Bahawal Victoria Hospital, from 1st Dec, 2012 to 31st Dec, 2017. All patients found to have duodenal injury, which could be approximated with stitches were included in this study. The management of patients consisted of initial stabilization in the ER before performing laparotomy. Margins of the perforation were debrided and simple continuous repair/anastomosis with Vicryl 2/0. The repair was then augmented with omental patch fixed with Vicryl 1. All the surgeries were performed by senior specialist surgeons. Patients having comorbidities like Diabetes Mellitus, Liver or Kidney disease and heart disease were excluded. Ethical approval was sought from Hospital Ethical Committee. Data was analyzed by using SPSS 20.

RESULTS

In this study, 39 patients were operated for duodenal injuries and 31 (79.5%) patients had penetrating mechanism and 8 (20.5%) had blunt mechanism of injury. The technique of repair was the same for both types of injuries as mentioned above. There was no significant difference between them with respect to mortality and morbidity. All the patients were male.

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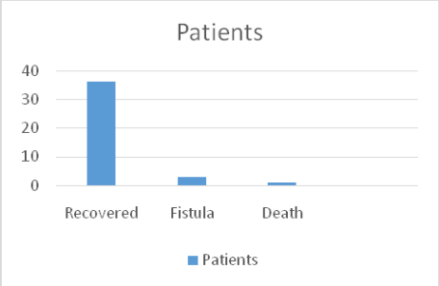
Only 3 (7.7%) patients had exclusively duodenal injury the rest of the 36 (92.3%) patients had injury to other viscera as well, most common organ involved being the liver. In his study, 22 (56.4%) patients had Grade II injury while 17 (43.6%) had Grade III injury, all the patients underwent the same surgical procedure. Among the 39 patients treated with simple repair along with omental wrapping, 36 (92.3%) were treated successfully and 3 (7.7%) developed duodenal fistula: 2 (5.1%) of which were treated successfully with parenteral nutrition and drainage, only 1 (2.6%) patient expired due to sepsis and multi organ failure.

Figure I: Outcome of the patients



DISCUSSION

The complex nature and rare presentation of duodenal injury makes its management a difficult task for the surgeon.[6] Duodenum rarely sustains a stand alone injury in trauma.[7,8] In our study liver was the most common associated organ injury. In most of the patient duodenal injury can be safely managed by simple techniques as primary repair with or without omental patch.[9-11] For large defects where there is chance of narrowing of lumen by primary closure procedures like pedicle mucosal grafts, duodenal diverticulization, pyloric exclusion, Roux-en-Y reconstruction, jejunal serosal patch can provide an apt alternative.[12- 14] Pyloric exclusion is also practiced in many centers but it increases operative time and gastric suture line ulcers and in return offers little benefit over primary repair of duodenum with ample nasogastric drainage.[6] Tube Decompression was also tried in a few centers. Tube decompression can be antegrade, proximal to the injury or it can be retrograde such as a jejunostomy. Several reports show that no significate difference in duodenal fistula formation between patients treated with tube decompression and primary repair, rather patients treated with tube decompression had significantly increased hospital stay and cost as compared to primary repair.[15, 16] Another series of 3 patients with delayed surgery patients were treated with inserting Foley's Catheter inside the defect and inflating the balloon. The catheter was deflated and removed gradually 2 months later, after track was formed. All 3 patients recovered well.[12]

Stone and Fabian first introduced tube duodenostomy as triple ostomy (gastrostomy, duodenostomy, jejunostomy). The concept was to protect he suture line in the duodenum.[17] While with tube decompression it had high success rates without tube decompression there was significant fistula formation. This complicated procedure is advocated by some authors,[8,18,19] while others reject it.[20,12,15]

A recent approach by Ivatuary and collegues is to treat patients according to their hemodynamic stability. In hemodynamically unstable patient damage control surgery is done, controlling hemorrhage, and rapidly sealing and resenting all perforations and temporarily closing the abdomen. Gastrointestinal continuity is established in 2nd surgery after adequate resuscitation in ICU. In hemodynamically stable patients and large perforations (>3cm) primary closure may narrow the lumen or may cause tension, segmental resection and anastomosis is preferred in such cases. Pyloric exclusion is opted when presentation is late and there is significant tissue edema.[12] In hemodynamically stable patients with grade II and III lesions primary repair is a sufficient treatment.[11,16]

In our experience primary repair with omental patch augmentation of duodenal perforations yielded excellent results with 92.3% successful recovery without any complications. Even perforations equal to or larger than 3cm were treated this way in our trial all of whom recovered uneventfully.

CONCLUSION

In conclusion, we suggested simple primary repair with omental patch augmentation of duodenal injuries. Primary Repair with omental patch is a physiological repair. It is a simple procedure which is easy to perform and takes little operative time and is highly successful. A further trial with larger patient series is required to draw a more potent conclusion.

Authors Contribution

GH: Write-up, Data collection and analysis. **IA:** Write-up and Data analysis. **MIH:** Data collection & Data Collection. **GH:** Analysis. All authors critically revised and approved its final version.

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