

## Management of Duodenal Injury Post Laparoscopic Cholecystectomy; A Case Report

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### Abstract

Duodenal injury is a rare serious complication due to Laparoscopic Cholecystectomy (LC) and it is mostly thermal injury. In this paper we demonstrate an injury in a fifty-five years old female at the second part of duodenum caused by LC and treated by duodenostomy and pyloric exclusion and gastrojejunostomy.

**Keywords:** *Laparoscopic cholecystectomy; Gastrojejunostomy; Duodenal injury*

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### Introduction

Laparoscopic cholecystectomy is considered to be the gold standard for the removal of a diseased gallbladder with a very low complication rate [1].

The incidence of gallstones increases with age, and they are more likely to be formed at females, approximately 20% of women and 5% of men have gallstones in the sixth decade of life [2].

While extra hepatic bile ducts injuries are more common to happen at LC procedures, vascular and duodenal injuries are less likely to occur. Duodenal injury is a lethal uncommon complication that is related to laparoscopic cholecystectomy, and it is related to environmental factors and technical inaccuracy due to (thermal injury, insertion of trocar, and rarely due to dissection or adhesiolysis) [3-8]. Whereas almost half of duodenal injury cases are recognized intraoperatively, others are diagnosed by postoperative complications (peritonitis, intraperitoneal abscess, sepsis, or fistulas) [4].

### Case Presentation

A fifty-five-year-old woman was diagnosed with symptomatic gallbladder stones, and she was referred to our institution for surgery. She had medicated hypertension for two years and no other remarkable medical history. An LC was performed on September 26th 2018.

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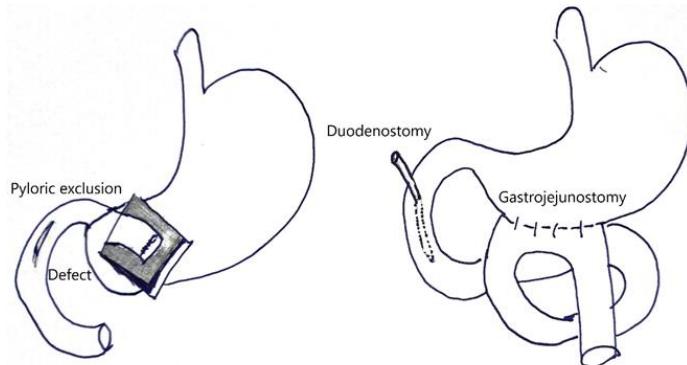
The patient underwent a traditional LC; procedure went on smoothly without complications and an infra-hepatic drain was inserted. On the second post-operative day the drain was filled up to a 1000 ml of yellow liquid, patient had pain in the upper quadrant with slight fever, an abdominal ultrasound revealed a small amount of liquid in the gallbladder space. Laboratory work showed leukocytosis with raised neutrophils at W/N 16000/85%, liver tests came in normal. We inserted a nasogastric tube (NGT), and injected methylene blue into it, which came out through the drainage tube. Thus for, the decision for revision was clear; in order to investigate a duodenal injury.

By laparoscopy we found local biliary peritonitis and no obvious duodenal or biliary injury, but with high suspicion of duodenal injury we moved to laparotomy. A defect measuring one inch between the 1st - and 2nd part of duodenum was detected. Therefor we decided to perform a debridement of the defect, primary closure with interrupted sutures in addition to duodenostomy using a Foley catheter, a pyloric exclusion and gastrojejunostomy (Figure 1).

A NGT and abdominal drain next to the anastomosis were also placed. We started the patient on light, clear, liquid diet. After a few days we started closing the NGT alternatively, and we put the patient on high protein liquid diet.

On the 9th post-operative day POD we removed the NGT and the patient was discharged on the 15th POD in a stable state.

Four weeks later, a contrast image showed good passage through the duodenum with no leak, so the duodenostomy catheter was removed.



**Figure 1:** Shows the surgical procedure.

## Discussion

LC is now considered the classic procedure to treat benign gallbladder diseases, and its complications are rarely found, due to the high frequent number of LC procedures performed daily across the world. There is a quit good understanding on the common bile duct injuries as they are more possibly to occur at LC procedures than vascular and duodenal injuries, that is why more information is available and the guidelines of management are clearer.

About half of iatrogenic duodenum injuries are discovered intraoperatively. And the second part of the duodenum being the most common site of injury (61%) [1]. Our patient had a defect right between the first and second part of the duodenum, the injury was probably caused by heat of the electrocautery used for dissection as it is reportedly the causative agent in most cases [4].

The site of the injury is an important factor in expecting the prognosis, as injuries around the ampulla of Vater have bad prognosis because they require more complexed surgical approaches, with higher mortality rates [5].

Management of the duodenal injuries at LC is still on debate. Duodenorrhaphy (primary closure) is the most performed procedure (63%) when the injury is discovered on table, and mostly the surgeon moves to laparotomy (79%) rather than carrying out laparoscopically. Other procedures included percutaneous drainage, tube duodenostomy, gastric resection, pyloric exclusion or even whipple resection. And better outcomes with immediate surgical interventions [4,8], with some cases also being treated conservatively [6,7], in our case we decided to perform duodenostomy through the injured part, pyloric exclusion with gastrojejunostomy.

We were able to detect the injury on the second day, and by the information collected it is to notice that the sooner to detect the injury, the better outcomes to expect (94%) survival rate if injury detected on the first post-operative day to 80% if detected on the second post-operative day, and less more when detected later on.

Many symptoms may contribute to detecting the injury with pain being the predominant but also misleading, as it usually happens after LC. Other signs may be fever, nausea, vomiting, anorexia and abdominal distention [4]. High amylase level at the liquid from the drain inserted intraoperatively or by imaging guided aspiration may also indicate bowel injury. Our patient had a yellow green liquid coming of the drain with pain and slight fever mostly caused by the peritonitis. Ultrasound showed a small amount of liquid in the gallbladder space, usually ultrasound and Computed Tomography (CT) are used to detect injuries and liquid collections, and sometimes it can only be detected by upper gastrointestinal endoscopy [9].

We advocate the placement of drain in all patients to undergo LC especially technically difficult because these procedures can help to detect injuries early.

## **Conclusion**

While LC complications are rare to happen, and they are not to be ignored as the results can be fatal. Early detection and proper management are still the corner stone in getting the best outcomes.

## **Patient Consent**

Consent to publish the case report was not obtained because; this report does not contain any personal information that could lead to the identification of the patient.

## **Authorship**

All authors attest that they meet the current ICMJE criteria for authorship.

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## **Conflict of Interest**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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