

## Iatrogenic lesions of the bile duct

Cárdenas Mora Oscar<sup>1</sup>, Daza Villa Tavata Lizbeth<sup>2</sup>

<sup>1,2</sup>Hospital General de zona No.1 IMSS Villa de Álvarez, Colima

### ABSTRACT

Bile duct iatrogenies are adverse events that occur in patients undergoing surgical, endoscopic or radiological procedures in the bile duct region. Bile duct iatrogenies are serious complications that can have a significant impact on a patient's quality of life. The prevention of these complications is essential and depends on the experience of the professional who performs the procedure, knowledge of the anatomy of the bile duct and the proper use of available technology. Proper repair of biliary lesions is critical to reducing long-term complications.

**KEYWORDS:** bile duct, iatrogenies, complications

### ARTICLE DETAILS

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### INTRODUCTION

Bile duct iatrogenies are adverse events that occur in patients undergoing surgical, endoscopic or radiological procedures in the bile duct region. These complications can have a major impact on the patient's quality of life, including the need for additional procedures, prolonged hospitalization, morbidity and mortality, and additional economic costs. This article will review the epidemiology, diagnostic methods, theoretical framework, repair, long-term complications, discussion and conclusions of bile duct iatrogenies.

The incidence of bile duct iatrogenies varies depending on the type of procedure and the experience of the surgeon or endoscopist. In laparoscopic cholecystectomy, the incidence of biliary lesions ranges from 0.2% to 0.6%, while in open cholecystectomy it is 0.1% to 0.2%. In retrograde endoscopy of the bile duct, the incidence of iatrogenies varies from 0.2% to 2%, being more frequent in patients with a history of previous biliary surgery.

The diagnosis of bile duct iatrogenesis depends on the type of procedure performed and the clinical presentation of the patient. In patients undergoing laparoscopic cholecystectomy, iatrogenesis may present as jaundice, abdominal pain, fever, and increased serum bilirubin. In patients undergoing open cholecystectomy, iatrogenesis usually presents as a biliary fistula. In patients undergoing retrograde bile duct endoscopy, iatrogenesis presents as abdominal pain, fever, and increased serum bilirubin.

### Causes of bile duct iatrogenies

Bile duct iatrogenies can be caused by diagnostic or therapeutic procedures, such as laparoscopic

cholecystectomy, choledochotomy, endoscopic sphincterotomy, and biliary stenting. Bile duct iatrogenies can be acute or chronic, and can range from a mild injury to a complex injury requiring surgical repair.

In laparoscopic cholecystectomy, careful dissection of the cystic artery and cystic duct is critical to prevent biliary injury. Bile duct injury can occur during cystic artery dissection, cystic duct ligation, misidentification of the bile duct, or injury during gallbladder removal.

In retrograde endoscopy of the bile duct, the main causes of iatrogenies are injury during cannulation of the duodenal papilla, overinflation of the common bile duct, removal of stones and excessive manipulation of the endoscope.

### Diagnostic techniques

The clinical suspicion of bile duct iatrogenesis is based on the presence of abdominal pain, fever, jaundice, elevated levels of bilirubin and liver enzymes, and the presence of changes in radiological images. Diagnosis is made by abdominal ultrasound, computed tomography, intraoperative or endoscopic cholangiography, or magnetic resonance imaging.

### Treatment Options

Treatment of bile duct iatrogenies depends on the severity of the injury and the presence of complications. In most cases, surgical intervention is required to repair the injury, although in selected cases retrograde endoscopy may be used for injury repair.

In the case of surgery, direct repair of the lesion can be performed, with or without biliary stent placement. In some

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cases, resection of the affected segment of the bile duct and biliodigestive anastomosis is required.

In retrograde endoscopy, repair can be performed by placing an endoscopic biliary stent, performing an enlarged sphincterotomy, or performing a papilloma. In some cases, retrograde endoscopy may be used to remove gallstones that may be causing iatrogenesis.

### Repair of bile duct iatrogenies

Bile duct iatrogenia repair is a complex surgical procedure that requires careful planning and meticulous surgical technique. Direct repair of the lesion is the most used technique and consists of the repair of the bile duct through the placement of sutures, the application of biological glues or the use of biological patches.

Repair of biliary iatrogenies can also be performed by placing a biliary stent. Bile stents are commonly used to treat bile duct

obstructions and can be plastic or metal. Plastic stents are most commonly used in acute cases and are easier to place, but can become clogged more often. Metal stents are more resistant to obstruction and are commonly used in chronic cases.

### Long-term complications

Bile duct iatrogenies can have long-term complications, such as bile duct stenosis, biliary fistulas, cholestasis, and cholangitis. Bile duct stenosis is a common complication and occurs as a result of scarring of the lesion, which can lead to partial or complete obstruction of the bile duct. Biliary fistula is an abnormal communication between the bile duct and another structure, such as the duodenum or colon. Cholestasis occurs when there is a buildup of bile in the liver, which can lead to jaundice and other symptoms. Cholangitis is an infection of the bile duct and can be life-threatening.

Iatrogenic bile duct injury	Complications	Handling
Longitudinal cuts	Bile duct stenosis, biliary fistulas, cholestasis, cholangitis	Direct repair, biliary stenting, retrograde endoscopy
Cross-sections	Hemorrhage, biliary abscesses, perforation of the bile duct	Direct repair, biliary stenting, percutaneous drainage
Lacerations	Bile duct infiltration, bile duct obstruction, biliary fistulas	Direct repair, biliary stenting, percutaneous drainage
Drilling	Hemorrhage, biliary abscesses, peritonitis	Direct repair, biliary stenting, percutaneous drainage

## DISCUSSION

Despite advances in technology and in the experience of surgeons and endoscopists, bile duct iatrogenies continue to be a major problem in clinical practice. The prevention of these complications is essential and depends on the experience of the professional who performs the procedure, knowledge of the anatomy of the bile duct and the proper use of available technology.

In the case of laparoscopic cholecystectomy, careful dissection of the cystic artery and cystic duct is critical to avoid biliary injury. Proper visualization of the anatomy of the bile duct using intraoperative cholangiography can help reduce the incidence of iatrogenies. In the case of retrograde bile duct endoscopy, proper patient selection and endoscopist expertise are critical to reducing the incidence of biliary injury.

Proper repair of bile duct iatrogenies is critical to reducing long-term complications. Most of the time, surgical intervention is required to repair the injury, although in some selected cases retrograde endoscopy may be used for injury repair. Placement of an endoscopic biliary stent may allow resolution of the lesion in some selected cases. It is important that patients with bile duct iatrogenies be followed long-term for late complications, such as the formation of choledocholithiasis and bile duct stenosis.

## CONCLUSION

Bile duct iatrogenies are serious complications that can have a significant impact on a patient's quality of life. The prevention of these complications is essential and depends on the experience of the professional who performs the procedure, knowledge of the anatomy of the bile duct and the proper use of available technology. Proper repair of biliary lesions is critical to reducing long-term complications. Patients with bile duct iatrogenies should be followed long-term for late complications and appropriate treatment.

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