Postcholecystectomy syndrome (PCS)

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ABSTRACT

The term postcholecystectomy syndrome (PCS) comprises a heterogeneous group of symptoms and findings in patients who have previously undergone cholecystectomy. Although rare, these patients may present with abdominal pain, jaundice or dyspeptic symptoms. Many of these complaints can be attributed to complications including bile duct injury, biliary leak, biliary fistula and retained bile duct stones. Late sequelae include recurrent bile duct stones and bile duct strictures. With the number of cholecystectomies being performed increasing in the laparoscopic era the number of patients presenting with PCS is also likely to increase. We briefly explore the syndrome and its main aetiological theories.

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1. Introduction

Since its introduction by Muhe in 1986, laparoscopic cholecystectomy has rapidly gained in popularity and is now considered the treatment of choice for symptomatic gallstones disease. The advantages over laparotomy including reduced hospitalisation, pain, morbidity, better cosmesis and financial savings. There are over 50,000 performed annually in the UK and Ireland1 and more than half a million annually in the USA.2 Overall, cholecystectomy is an established successful operation which provides total relief of preoperative symptoms in more than 90% of patients.

2. Postcholecystectomy syndrome (PCS)

2.1. Definition

Post-cholecystectomy syndrome is defined as the recurrence of symptoms similar to those experienced before the cholecystectomy. This usually takes the form of upper abdominal pain (mainly right upper quadrant) and dyspepsia, with or without jaundice.

2.2. Incidence

The incidence of postcholecystectomy syndrome has been reported to be as high as 40% in one study, and the onset of symptoms may range from 2 days to 25 years.3,4 There may also be gender-specific risk factors for developing symptoms after cholecystectomy. In one study, the incidence of recurrent symptoms among female patients was 43%, compared to 28% among male patients.5

2.3. Aetiological theories

The most common cause of postcholecystectomy syndrome is an overlooked extrabiliary disorder such as reflux oesophagitis, peptic ulceration, irritable bowel syndrome or chronic pancreatitis.6 The biliary aetiologies include:

1. Biliary strictures
2. Bile leakage
3. Retained calculi
4. Dropped calculi
5. Chronic biloma or abscess
6. Long cystic duct remnant
7. Stenosis or dyskinesia of the sphincter of Oddi
8. Bile salt-induced diarrhoea or gastritis

Bile duct injuries are the most serious complications associated with laparoscopic cholecystectomy, with a rate of occurrence as low as 0.2% but usually ranging from 0.4% to 4% for most surgeons.7 Many injuries may go unrecognized until the patient gets referred with symptoms of abdominal pain, sepsis or jaundice soon after...
cholecystectomy. Bile duct injuries may manifest in one of two ways: biliary duct obstruction or bile leakage.

Acute biliary obstruction and bile duct injury is twice as common with laparoscopic cholecystectomy as with open cholecystectomy. The classic injury occurs when the surgeon mistakes the common hepatic duct for the cystic duct. In these patients, radiological studies usually show diffuse or segmental intrahepatic duct dilatation and surgical clips at the point of obstruction.

The incidence of late strictures of extrahepatic ducts has substantially increased, perhaps as a result of the widespread use of laparoscopic cholecystectomy. Thermal injury may result in acute bile duct necrosis and bile leakage, but mild injury may result in fibrosis. Furthermore, the clips themselves may rarely induce fibrosis or inflammatory changes around the extrahepatic ducts that might cause a stricture.

There is little information on the natural history of common bile duct stones (CBD), however, the incidence of retained/recurrent calculi ranges from 1.2% to 14% with only approximately 0.3% ever causing symptoms. Although MRCP is valuable in the preoperative evaluation of CBD stones, it is not routinely carried out because of cost-benefit concerns. CBD exploration and/or on-table cholangiography (OTC) can be performed during laparoscopic cholecystectomy but are not done so routinely unless there is a clear indication. If an OTC demonstrates stones in the CBD then either the surgeon can proceed to CBD exploration or post-operative ERCP. Rarely, small calculi may migrate into the CBD in patients with a patulous cystic duct when the gallbladder is pulled cephalad during dissection. Endoscopic retrograde cholangiopancreatography (ERCP) is effective in diagnosing such cases and can offer therapeutic options as well.

Spillage of gallstones may occur during laparoscopic cholecystectomy, with a reported incidence of 0.1–20%. Fortunately, most of these stones are asymptomatic, although if spillage does occur every effort should be made to retrieve the stones in view of the small risk of developing significant complications. The common of which is abscess formation either in the abdominal wall or in the peritoneum. Spilled gallstones have also presented after erosion through the skin as a colovesical fistula and as the cause of an incarcerated hernia.

Dropped gallstones leading to abscess formation can occur after a period of months to years after surgery which can make the diagnosis difficult. Spilled gallstones appear as small hyperechoic lesions on ultrasound scanning that may be related to fluid collections and are found most often in the subdiaphragmatic or subhepatic spaces. If they are calcified, they may also be seen on CT as hyperdense areas or on T1-weighted MRI as a signal void.

Several reports have proposed that a cystic duct remnant >1 cm in length after cholecystectomy may be responsible, as least in part, for postcholecystectomy syndrome – “cystic duct stump syndrome”. There have been reports of a cystic duct remnant causing symptoms even after the duct calculus had been removed. These authors also reported examples of the presence of stones within both the cystic duct remnant and the CBD and suggested that stones could be formed within the cystic duct remnant. Pain in the right upper quadrant was found to be the outstanding symptom and jaundice the commonest sign. The estimated incidence of a retained stone within the cystic duct remnant is <2.5%. To date there does not appear to be an increased risk of cystic duct remnant calculi in patients who have undergone laparoscopic cholecystectomy compared to patients who have undergone open cholecystectomy.

Sphincter of Oddi dysfunction has been implicated in the aetiology of PCS. Such dysfunction can result from a true stenosis or secondary to spasm of the sphincter. In the majority of cases, the dysfunction continues to present problems both in terms of diagnosis as well as treatment. Although muscle spasm is thought to play a significant role in these cases, the response to smooth muscle relaxants such as nitrates and calcium channel antagonists has been disappointing. Spincterotomy is considered to be the most effective treatment. However, there are significant risks associated with this such as bleeding and pancreatitis. This makes it necessary for the endoscopist to conclusively establish the diagnosis prior to sphincterotomy. Currently, the only reliable method is by biliary manometry which unfortunately is both difficult to perform and associated with considerable discomfort to the patient. Furthermore, it carries its own risk of pancreatitis. In addition to this, even if manometric evidence of sphincter of Oddi dysfunction is obtained, it does not always prove that it is the cause of the patient’s symptoms. This is somewhat unsurprising given that sphincter of Oddi dysfunction may be associated with bowel dysmotility such as gastroparesis and oesophageal motility disorders.

It should be remembered that cholecystectomy is associated with several physiological changes in the upper gastrointestinal tract which may account for the persistence of symptoms or the development of new symptoms after gallbladder removal. The cholecystost sphincter of Oddi reflex, cholecysto-antral reflex, and cholecysto-oesophageal reflexes are all disrupted and a number of local upper gastrointestinal hormonal changes also occur after cholecystectomy. Thus, there is an increased incidence of gastritis, alkaline duodenogastric reflux and gastro-oesophageal reflux after cholecystectomy, all of which may be the basis for postcholecystectomy symptoms.

3. Conclusion

Overall, more than 90% of patients considered laparoscopic cholecystectomy to have been a resounding success on their preoperative symptoms. However, a significant number continue to experience symptoms (PCS) and thus patients should be thoroughly assessed and evaluated preoperatively. Furthermore, the presence of dyspepsia in a patient with gallstones does not automatically imply that the gallstones are the cause. Patients should be advised of both the risks of surgery and the risk of postoperative persistence of symptoms.

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References