

BILIARY SURGICAL PATHOLOGY

Part I

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Abstract: The „post biliary surgery syndrome” combines the signs and symptoms which appear after surgery, involving the gall bladder and/or the biliary ducts for biliary lithiasis. They occur after various periods of time after surgery and have multiple causes.

Keywords: postcholecystectomy syndrome, residual lithiasis, recurrent lithiasis

Rezumat: „Sindromul biliarelor operați” reunește semnele și simptomele care apar în urma intervenției chirurgicale pe vezicula și/sau căile biliare pentru litiază. Acestea se manifestă la intervale variabile de timp de actul operator și au cauze multiple.

Cuvinte cheie: sindrom postcolecistectomie, litiază reziduală, litiază recidivată.

dependent of the surgical intervention and by factors that occur only in late post-surgical period of time.

The persistence of certain factors pre-existing the surgery aims firstly at the incorrect pre and intrasurgical diagnosis with the overassessment of gall bladder lesions and which does not establish the level of permeability and evacuation of the main biliary ducts (large frequency of residual choledocian lithiasis, of residual oddian stenosis, the unidentification and the persistence of intrahepatic calculi). Unidentified sclerous cholangitis may maintain the suffering even after the surgery.

Surgery timing may incur affections of pancreas and liver (chronic pancreatitis, secondary biliary cirrhosis) that evolve independently and remain even after the removal of the biliary lithiasis. The diagnosis errors that bring about wrong surgical indication. Pseudobiliary symptomatology produced by gastroduodenal, hepatic, renal and intestinal affections require surgical intervention on the bladder, biliary ducts, lithiasis being falsely asymptomatic (5).

- Suffering reasons due to the surgical act aim at the surgical technique mistakes (strictures of the main biliary duct as a result of iatrogenic lesions and long cystic stump). Post-surgical suffering may have a functional sublevel represented by the oddien dyskinesia that occurs as a result of gall bladder removal (21). Another cause is represented by non specific post-surgical sequelae, such as subhepatic perivisceritis.

- Suffering due to certain causes occurring during the post-surgical period of time.

After the surgery, suffering is caused by the recurrent lithiasis that usually occurs two years after the cholecystectomy. Papilo-oddites are also responsible for these pains and regarding stenoses, these occur within an interval of 3 up to 20 years after surgery (17).

After cholecystectomy, due to hormonal alterations, perturbations of pylorus-duodenal motricity occur that favour the production of the duodenogastrical reflux, the consequence being the biliary gastritis. Due to the increased contents of biliary acids and salts, the alkaline reflux may lead to: the increase of the retrodiffusion of hydrogen ions through the gastric mucous (erosions occurrence), the increase of the plasmatic-endoluminal flux of sodium ions, alteration of the gastric mucous

1. Generalities

„Post biliary surgery syndrome” was initially called post-cholecystectomy syndrome. The term of post-cholecystectomy syndrome is disputable because the removal of the organ is not responsible for symptoms occurrence. The only changes that occur as a result of the surgery aim at the flux and composition of the bile in duodenum, without being followed by digestion disorders and food absorption or by other specific suffering (3).

The term of „post biliary surgery syndrome” (biliary surgical suffering) gathers the post surgery adaptation disorders, disorders related to surgery, recurrence of biliary lithiasis and disorders due to the incomplete remedy of the biliary lesions on the occasion of the primary surgery or due to certain mistakes in the surgical technique after cholecystectomy and/or interventions in the main biliary ducts for lithiasis (5,22).

These post-surgical sequelae are responsible for the signs and symptoms that are not considered a consequence of cholecystectomy as “a method” but in terms of the deficiencies of the surgical act (18).

The results of the biliary surgery depend on: a complete pre and especially intrasurgical diagnosis, on a correct surgical technique and on a surgical tactics as adequate as possible for the case.

Failure to comply with these desiderata makes that post-surgical suffering be maintained by the persistence of certain factors pre-existing the surgery, by reasons

quality, of phospholipase A2 activity, lysolecithin production, stimulation of gastrin secretion (6).

In the cases in which the removal of the gall bladder is associated with oddian incompetence or in cases of biliodigestive anastomosis with the short circuiting of the Oddi sphincter, a large quantity of biliary acids and salts occur at the level of the intestine. The biliary acids strongly stimulate the sodium and chlorine secretion by the activation of the adenylate cyclase at the level of colonocytes, causing choleric diarrhoea (secretory diarrhoea). Once arrived in a large quantity in the intestine, the biliary acids are deconjugated in the presence of the anaerobic bacterial flora and through 7-alpha-dehydroxylation, they are turned into secondary biliary acids (deoxycholic and lithocholic acid). They produce lesions of the colonic mucous that have as a result the activation of certain enzymes involved in the stimulation of cell proliferation (ornithine- decarboxylase, protein kinase C) and increase the risk for colon cancer. (14).

2. Main post-surgical sequelae

2.1. Post-surgical choledocian lithiasis

2.1.1. Residual lithiasis

2.1.2. Recurrent lithiasis

2.2. Iatrogenic stenoses of the main biliary ducts

2.3. Long cystic stump

2.3.1 Long cystic stump associated to a residual choledocian suffering

2.3.2 Cystic stump neuroma

2.3.3 Lithiasic cystic stump

2.3.4 Cystico-pileic stump

2.3.5 Cystic stump associated to oddian dyskinesia

2.4. Residual oddian stenosis

2.5. Oddian dyskinesia

2.6. Non functional bilio-digestive anastomoses

2.6.1 Non functionality of choledoco-duodenal anastomoses

2.6.2 Non functionality of bilio-jejunal anastomoses

2.1 Post-surgery choledocian lithiasis

Post-surgery choledocian lithiasis is defined as a pathological state manifested by the presence of calculi in the main biliary ducts after the surgical intervention for the extrahepatic biliary ducts lithiasis (including after cholecystectomy).

The studies made showed that the incidence of the post-surgery lithiasis of the main biliary ducts is of 3%.

Post-surgery lithiasis includes two forms: residual lithiasis and recurrent lithiasis.

2.1.1. Residual lithiasis

Residual lithiasis is the form in which calculi were present in the main biliary duct even in the moment of the primary surgery.

The migration of the calculi of the cholecyst (or of the cystic channel) in the main biliary duct during the cholecystectomy is extraordinary. In the majority of

cases, the calculi are present in the hepato-choledoc duct and they remain there either due to the fact that no one recognizes their presence or due to an incomplete extraction or as a result of improper surgeries (5). That is why there are three categories of residual calculi.

a) Unrecognized calculi are the calculi unidentified on the occasion of cholecystectomy. They are not recognized because of many reasons: overassessment of vesicular lesions weight, technical impossibility for exploiting the biliary duct, presence of microlithiasis with the hepatocholedoc duct undilated and without any suggestive clinical episode regarding the antecedents (icterus), in case of acute cholecystitis in which the exploitation of the main biliary ducts is difficult to accomplish because of pediculitis (9).

b) Undiscovered calculi are the calculi that still remain after choledoctomy. Such cases are due to an improper exploitation on first intervention or in case of multiple lithiasis of the main biliary duct. Another case may be represented by the unrecognized calculi from the intrahepatic ducts which descend in the main biliary duct. Residual calculi after the bilio-digestive anastomoses have similar causes with the previous ones and regarding those after sphincterotomy, they generally come from the intrahepatic area (9).

c) Voluntarily abandoned calculi are encountered in the severe cases, when the patient's health state or the local and regional changes do not allow a complete surgery (5). In cases of serious angiocholitis, the emergency drainage of the main biliary duct holds primacy and only the accessible calculi are extracted, the patient's health state not allowing the complete exploitation of the main biliary duct (9).

Causes of the residual lithiasis

- Insufficient exploitation of the main biliary duct during cholecystectomy. This is due to the irrelevant anamnestic data (lack of angiocholitis), pre-surgical paraclinical investigations that do not detect the choledocian and intrahepatic calculi; insufficient and inconcludent intrasurgical exploitation of the biliary duct: altered general health, difficult local conditions in approaching the hepatic pedicle (obese people, acute inflammatory process – pericholedocitis), wrong appreciation of calculi sizes, exploitation based exclusively on the main biliary duct palpation; omission of the exploitation through intrasurgical cholangiography (5).

- Incomplete extraction of calculi is due to the viscous environment of the intrahepatic biliary ducts; dilatation of the main biliary ducts; abnormal locations of calculi (intrahepatic lithiasis in the cystic stump, in the juxtavaterian diverticulum); difficult exploitation of the main biliary ducts (obese people, acute inflammatory processes, intrasurgical incidents, bleedings).

- Improper surgeries: cholecyst remaining after cholecystectomy (short term safety is good, but the mucous of the remaining gall bladder might produce new calculi that might migrate (8,16)); cystico-pielic stump after incomplete cholecystectomy; long cystic stump

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provided with Heister's strong valves that favour the recurrence of the calculi subsequently migrating in the main biliary duct.

From the morphological point of view, residual calculi resemble to those existing in the gall bladder but may be surrounded by subsequent pigmentary precipitations and may coexist with the secondary lithiasis (recurrent) produced by the stasis from the main biliary duct.

2.1.2. Recurrent lithiasis (secondary autochthon)

Recurrent lithiasis represents the new calculi formed in the hepatocholedoc duct in a variable period of time, after the primary surgery.

The causes for the recurrent lithiasis may be general and local. Out of the general causes, the most important part is played by the metabolic disorders together with other numerous pathological conditions, previously mentioned, in the first part of the paper.

The main local cause of the secondary lithiasis is the lesion, unknown on the first surgery that causes the stasis. Biliary stasis favours the precipitation of the biliary components (pigments, cholesterol). Out of the lesions that may disturb the biliary flux, we mention: segmentary stenosis of the main biliary duct after cholecystectomy, vaterian obstacle, sphincterial sclerosis after sphincterotomy, odditis; lithiasic precipitation at the level of Kehr's tube; chronic cephalic pancreatitis that causes the compression of the retroduodenopancreatic segment of the main biliary duct; residual calculi; parasitary infestation (ascaris, clonorchis). Secondary lithiasis also occurs in the absence of any obstacle in the patients "with isolate dilatation of the choledoch" (9).

The studies made on the old patients that were surgically treated for choledochian lithiasis showed the larger recurrence of the choledocian calculi in those with choledochotomy and drainage but also in those with choledocojejunostomy, in comparison with those with choledoco-duodenostomy (2,10).

In the composition of the recurrent calculi, calcium bilirubinate is predominant, an important part being played by beta-glucuronidase contained in the cells of the choledocian mucous, as well as in that of bacterial origin (3).

Clinic manifestations in post-surgical lithiasis

Two clinical forms of post-surgical lithiasis are known:

- "Open" post-surgical lithiasis in which the main biliary duct was drained transchystically or through the Kher's tube, the presence of the choledocian obstacle being translated through an exaggerated drainage (700 - 1000ml bile/24 hours); presence of pains, subicterus and biliragia around the tube as a result of the drainage tube clipping. The drainage below 300 ml/24 hours accompanied by subicterus suggests the obstruction over the Kher's tube. Certain calculi remain asymptomatic, being detected on cholangiography 9 days after the surgery (9,13).

- "Closed" post-surgical lithiasis is characterised by a suffering that occurs in a free interval after the surgery. The free interval is of months up to one year in

case of residual lithiasis (7) and of more than two years in case of recurrent lithiasis.

Three clinical groups are identified:

- Patients who present only dyspeptic disorders with diffuse pains in the right hypocondrium;

- Patients who present biliary colic identical with the pre-surgery one. Certain studies have shown that the recurrent biliary pain may occur independently of the alteration of the biliary flux in the patients who underwent a cholecystectomy (15,20);

Patients with choledocian syndrome with repeated syndromes of cholangitis (icterus, fever, pain (1,9,12).

Paraclinical investigations used in the diagnosis of post-surgery choledocian lithiasis.

- Intravenous cholangiography may be made outside the icteric episodes. Colangiography associated to tomography emphasizes the existence of lithiasis in a percentage of 30%, allowing the diagnosis of stasis generating reason.

- Endoscopic Retrograde Cholangiography establishes with large accuracy the existence of choledocian lithiasis, as well as the reason that brought about the stasis.

- Post-surgery cholangiography on a transcystic tube establishes the post-surgery lithiasis.

- Gastro-duodenal radiography is indicated in the case of choledoco-duodenal anastomoses, through barium reflux, suggesting the presence of calculi or a possible partial stenosis of the anastomose mouth.

- Releasing scintigram 99mTc - IDA through the delaying of the tracer release 60' after injection indicates the existence of an obstacle.

- Fistulography consists in injecting the contrast substance through the biliary fistula.

Echography and the hepatic functional tests are not first line tests. When the main biliary duct has a diameter larger than 10 mm, without identifying the cause, cholangiopancreatography associated to the magnetic resonance is absolutely necessary (4,19).

Treatment of post-surgery choledocian lithiasis

Post surgery choledocian lithiasis benefits from local medical treatment, in case of open remaining lithiasis, by the insertion on the derange tube of a mixture made up of ether, alcohol, heparin, sodium dehydrocholate or monoctanoid for dissolving the calculi.

Transluminal calculi extraction can be made on the trajectory of Kehr's tube or through the biliary fistula after it has been installed.

Calculi removal with the help of the endoscope that uses the balloon sound is a method less noxious than the surgery, being practiced on a large scale (11,15,23).

Post-surgery choledocian lithiasis also benefits from surgical treatment.

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