

## CLINICAL STUDY

## Conversions in laparoscopic cholecystectomy

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**Abstract:** Authors in this article emphasize the wide use of laparoscopic cholecystectomy in gall bladder surgery. Indications for laparoscopic operations are increasing. In spite of increasing practical experience of surgeons, availability of new instruments, advances of techniques, this problem of conversion is always actual. The question of conversion may depend on subjective and objective causes. It the decision of the surgeon whether a conversion is necessary taking into account uncomplicated operation and postoperative state of the patient. In the Surgery clinic of FN Nitra 2078 cholecystectomies were performed in the period from 1.1.2002 to 31.1. 2007. Out of this number, there were 1535 (74 %) laparoscopic operations and 543 (26 %) classic operations. From the group of 1535 laparoscopic operations conversion was necessary in 89 patients (5.7 %) (Tab. 4, Ref. 9). Full Text (Free, PDF) [www.bmj.sk](http://www.bmj.sk).

Key words: laparoscopic cholecystectomy, conversion, complications.

Cholecystectomy is one of the most common operations in surgery. From 1892, when the first cholecystectomy was done by Langenbuch, it has practically nothing changed in the operative methods. The change came after 100 years, when in 1987 prof. Mouret from France, started with a new operative method – laparoscopic cholecystectomy. Today, this method is considered a new golden standard in the treatment of cholelithiasis. With increasing practices and abilities, the criteria for laparoscopic cholecystectomy are broadening. Many of the previous criteria as obesity, acute inflammation, adhesions, are currently not an absolute contraindications.

Conversion from laparoscopic cholecystectomy to classic method is in case of a complicated operation always indicated. Generally, it has been certified, that untransparency in operative field, unclear anatomical proportion are the most frequent causes of conversions and possible peroperative complications.

**Material and results**

The first laparoscopic cholecystectomy was performed at the Surgery clinic in Nitra in November of 1989. After establishing the method, we strictly respected indication criteria and we selected appropriated patients, no complicated states and the number of classic operations progressively decreased. Today, we indicate laparoscopic cholecystectomy in every case except reasonable contraindications. We perform classic cholecystectomy only in these cases: severe cholecystitis, perforation with consequent peritonitis, tumour of cholecyst in USG image, possibly on patient's request.

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The age and obesity are not limits for laparoscopic cholecystectomy.

Laparoscopic cholecystectomy is a standard method in the treatment of cholelithiasis in our clinic. 12 surgeons out of 15 know this method. The average time of laparoscopic cholecystectomy in our clinic ranges from 35 to 60 minutes.

We decided to evaluate the group of patients from 2002 to 2007, because in this time we managed – with sufficient number of surgeons – laparoscopic method and significantly broadened indicative criteria. At the Surgery clinic of FN Nitra 2078 cholecystectomies in the period from January 1, 2002 to January 31, 2007 were performed. From this number, there were 1535 (74 %) laparoscopic operations and 543 (26%) classic operations. The number of men was 588 and of women 1490. The average age of patients was 53 years (23–85 years).

We indicated laparoscopic cholecystectomy – elective 1053 and acute 482.

From the group of 1535 laparoscopic operations we had to convert in 89 patients (5.7 %) (Tabs 1 and 2).

From perspective of time factor conversion was started in the range of 10–40 minutes. In some cases, conversion was applied immediately at the beginning of the operation after the visual revision of abdominal cavity. In another cases the decision is made on the basis of local finding and the course of operation. The most consequential complication, which requires conversion, is except for haemorrhage injury of biliary tract. These complications are dangerous because of complicated course of operation and postoperative consequences. In our group of patients, we were forced to conversion because of complications in biliary tract in 5 patients (0.32 %). These were iatrogenic injuries of external biliary tract – d. hepaticus communis 4x, ductus choledochus 1x.

The injury of biliary tract was most frequently caused by unclear anatomical proportion in triangle Callot's and fibrotic

**Tab. 1. Operative finding by laparoscopic cholecystectomy.**

Cholelithiasis simplex	839
Pericholecystitis adhaesiva	367
Cholecystitis phlegmonosa	162
Empyema cholecystae	94
Gangrenous cholecystitis	41
Perforative cholecystitis	19
Ca cholecystae	13

**Tab. 2. Causes of conversion.**

Unclear anatomical proportion in triangle Callot's	32
Adhesions after previous operations	16
Haemorrhage from a. cystica – non treat	7
Injury of biliary tract	5
Choledocholithiasis	18
Duodenobiliary fistula	2
Ca	3
Grave incidental finding	2
Peroperative technical problems	2
Time factor	2

**Tab. 3. Postoperative complications and causes of reoperations.**

Cholascos, biliary peritonitis	12x
Subhepatic abscess	9x
Haemorrhage	2x
Injury of bowel – duodenum	2x

changes in area of cholecyst. The causes of lesions were thermic damage 2x, straight transection and partial lesion.

We have presented similar group of patients with injury of biliary tract after the classic operation before the era of laparoscopic cholecystectomy (1980–1985). At that time we performed 1430 classic cholecystectomies. We achieved and operated 4 injury of biliary tract (0.28 %).

In 3 patients with peroperatively verified choledocholithiasis peroperative laparoscopic choledochoscopy with extraction of concrements was performed, in 5 peroperative ERCP was done, in other patients we made conversion on classic cholecystectomy with choledochotomy and extraction of concrements or we decided not to remove the concrements with subsequent ERCP after operation.

25 cases – 1.6 % of postoperative complications after laparoscopic cholecystectomy were observed that were re-operated (Tab. 3).

## Discussion

Advantages and the benefits of laparoscopic cholecystectomy in the treatment of cholelithiasis are obvious. Also in acute, complicated operative findings laparoscopy represents benefit for the patient because of better postoperative state. Possibility of

**Tab. 4. Comparison of national studies (Dostalík, 1994).**

Study	Group	Conversion	Lesion of biliary tract
Dutch	6076	6.8 %	0.86 %
Swiss	3722	7.0 %	1.10 %
French	6091	5.2 %	0.41 %
American	77604	0.46 %	
Czech	9439	4.9 %	0.46 %
Owncomposition	1535	5.7 %	0.32 %

unexpected operative finding and complicated peroperative course in some cases induces necessity of conversion.

According to information from literature laparoscopic conversion has been converted to classic by complicated operative course in 2–19 % (1), 0.8 to 7.12 % (2). In multicentric national analysis is the incidence of conversions 4.1 to 8.2 % (3). Generally, the objective and subjective causes are known.

As shown, the number of conversions is increasing, because of broadened indicative range of laparoscopic cholecystectomy. The number of more complicated operations is increasing.

The most frequent causes of conversions are problems with differentiation of anatomical proportions, unclear operative field, peroperative complications, strong haemorrhage and injury of biliary tract (4).

Unclear operative field during laparoscopic cholecystectomy carries also danger of subsequent postoperative complications.

Northwestern study presents incidence of combined arterial and biliary injuries by classic method of 27 %. It stressed on the association of incidence of arterial and biliary injury classified by Bismuth. By Bismuth V is incidence of arterial injury 75 %, Bismuth IV 63 % and Bismuth III 8 %. The most frequently come up to transection of arteria hepatica dextra (77 %) (5).

Incidence of biliary lesions after laparoscopic cholecystectomy is about 0.29 % (6).

Biliary leak from ductus cysticus and from liver after cholecystectomy can be treated conservatively with drainage. Resorption of collection which is more than 4 cm is not presumable. The collection, which isn't drained increases morbidity, mortality and protracts the treatment of patient. It is necessary to drain the collection and endoscopic stent of biliary tract. Another injury of biliary tract is necessary to be operated. The combined arterial-biliary injury is associated with significantly higher number of necroses and abscesses of liver, strictures of bilioenteral anastomosis, secondarily cirrhosis of liver, mortality and morbidity (6) (Tab. 4).

Very discussed is the question of perioperatively diagnosed choledocholithiasis, which is important for conversions. Possibilities of another steps are contingent by technical equipment of clinic, accessibility of ERCP, erudition of the surgeon. It depends on those factors, if the choledoscopy is realised with use of laparoscopy and with extraction of concrements, peroperative or postoperative ERCP. The most frequent indication for conversion at our is.

Except for objective factors are some subjective moments very important for decision making.

Practise is the most significant factor, which is very important for conversion. Reduction of the number of conversions decrease proportionally almost by half thanks to increase of practises. In the first year after the start of this method, we had 30% of iatrogenic injury of cholecyst by preparation. For every surgeon, it is a very important number of operations, assistances, knowledges of topographical anatomy and possible anomalies.

What is very important, is to consider one's own ability and not overestimate oneself. Surgeon must accept comments and degree of risk. If the peroperative situation requires conversion, it is necessary to do it without delay (8).

And the question of time factor? It mustn't be the aim of surgeon to reach short operative times at all costs. Always we must think about that operation must be done safely and responsibly. Surgeon has to convert if the time of preparation in Callot's triangle or cholecyst doesn't produce progress in 15–30 minutes. There are some opinions for longer time factor of laparoscopic cholecystectomy because of pooperative benefit for patient. Conversion on the basis of peroperative finding and ability of surgeon, is never fals, on the contrary, it is well considered decision of the operator and appropriate decision for patient's well being. There is no need to underrate its incidence, previously revised from educational perspective and higher morbidity. For reasons of other practising, and also rating of clinic, it is important to very carefully analyse and make every effort for elimination of causes of conversion (9).

## Conclusion

Existing practices show that today laparoscopic cholecystectomy is method of the first choice in the treatment of cholecystolithiasis. In the phase of introducing laparoscopic method,

is appropriate selection of patients and also selection of skilled surgeons very important.

We can expect that the number of conversions, complications, reoperations will be increasing because of better practices, higher number of operations, better technical equipment. The benefits of this operative method are confirmed worldwide by the results reached from the begging of its introduction in 1987. There are only few operative methods, which find for that short period of time so extensive use in so many workplaces.

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