

## Incidence Of Wound infection after cholecystectomy with or without appendicectomy

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### Abstract

From the 1st of September 1978 to the end of August 1979 one hundred and one patients underwent laparotomy for gall-stones and gall-bladder diseases in the Department of Surgery, Bir Hospital, All operations were performed by one team. Among them - seventeen were males (16.8%) and eighty four females (83.2%). Cholecystectomy alone was performed in thirty four cases, whereas this procedure was done in another twenty cases along with exploration of the common bile duct. Cholecystectomy and appendicectomy were performed in fortyseven patients, among them nine patients underwent choledochotomy as well. Postoperative wound infection after cholecystectomy, cholecystectomy with Choledochotomy and removal of the gall bladder with appendicectomy was 5.9, 10 and 10.6 percent respectively. Despite high incidence of wound sepsis after biliary surgery with appendicectomy the later procedure is advocated during routine cholecystectomy, because there are very few hospitals in Nepal where

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facilities for laparotomy exist, and review of English literature has revealed a number of references to concomitant cholecystic - appendiceal disease. These reports refer to the high incidence of unsuspected pathological process within the appendix as an indication for its removal at the time of elective cholecystectomy.

## Introduction

There have been some changes in our routine surgical work now a days. Removal of the gall - bladder has become most frequent elective procedure in our surgical practice. If in the beginning of the establishment of modern surgery in our country, in the early sixties, gastric and duodenal ulcers were number one problem, it is the diseases of the gall - bladder now.

In our emergency surgical practice too there are big changes now. Previously our main problems were peptic ulcer and enteric perforations and acute intestinal obstruction. Now we face many more patients with acute appendicitis and of course with severe road traffic accidents. Since the incidence of gall - stones and gall - bladder diseases and acute appendicitis have increased substantially, we decided to study post-operative wound infection among the patients undergoing routine cholecystectomy and compare the results with the rate of wound infection among the patients undergoing cholecystectomy and appendicectomy.

## Material and Method

From the 1st of september 1971 through the end of August 1979 one hundred and one patients underwent laparotomy for gall - bladder diseases and gall - stones by one of the Surgical teams of the Department of Surgery Bir Hospital, Kathmandu, Nepal. The group included seventeen men ( 16.8% ) and eighty four women (83.2%). Age and sex distribution is shown in Table 1. All patients underwent cholecystectomy. In twenty - nine patients (28.7%) in addition, explotation of the common bile duct was done. Among these patients nine had appendicectomy as well. Beside cholecystectomy thirty eight patients underwent appendicectomy. In all forty seven patients ( 46.5% ) appendix was normal clinically. Age and operative procedure is shown in Table 2.

**Table 1: Age and Sex distribution in 101 cases:**

<u>Age in Years</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
0 - 10	—	1	1
11 - 20	—	1	1
21 - 30	5	23	28
31 - 40	6	28	34
41 - 50	4	22	26
51 - 60	2	9	11
Total:-	17	84	101

### Operation

**Table 2: Age and operative procedure distribution in 101 cases:-**

<u>Age in Years</u>	<u>Total</u>	<u>Cholecystectomy</u>	<u>Cholecystect- omy Chole- dochotomy</u>	<u>Choleystectomy + appendicectomy</u>	<u>Colecystectomy + appendicectomy + Choledochotomy</u>
0-10	1	—	—	1	—
11-20	1	—	1	—	—
21-30	28	10	5	12	1
31-40	34	13	5	12	4
41-50	26	8	7	9	2
51-60	11	3	2	4	2
Total:-		101	20	38	9

In thin patients we used right paramedian laparotomy, whereas in obese subjects; Kocher's incision was utilized. After careful examination of the biliary tract, liver duodenum, stomach and other abdominal organs, gall - bladder was freed from adhesions. We always used neck to funds (retrograde) method of cholecystectomy. By using

this method cystic artery and duct can be clearly identified before division. Thus risks of injury to the common bile duct or the right hepatic artery are greatly reduced. It has been our principle to ligate the cystic vessels first and we have never failed in this. After the dissection, ligation and division of the cystic vessels we dissected the cystic duct. It was always ligated close to the common bile duct. Thread was always used for ligation of these structures. After this the gall-bladder was removed with blunt and acute dissection always followed by closure of the gall-bladder bed with atraumatic 20 chromic catgut. After hemostasis prophylactic corrugated drain was always put in the subhepatic space. Abdominal wall was closed in layers using chromic catgut suture for the peritoneum and rectus sheath and thread for skin suture. Whenever we performed other operative procedure, other than cholecystectomy, classical methods were used. Thus supraduodenal method was used to explore the common bile duct. In all case of choledochotomy T-tube was inserted into the common bile duct. For appendicectomy too we used classical method. Extra incision was never made for appendicular approach. During the operation we took bile from the gall-bladder and swab from the appendicular stump for cultures and sensitivity studies.

### Postoperative Care

All patients were treated by intravenous fluids and nasogastric suction for about 72 hours after operation. All of them received a course of ampicillin for atleast one week after operation. If soakage was absent corrugated drainage tube was removed after 48 hours. Stitches were removed usually on the 7th and T-tube was take out on 9th post-operative day after performing T-tube cholangiogram.

### Results

An uneventful postoperative course occurred in ninety patients (89.7%), whereas eleven patients (10.9%) experienced different postoperative complications. Among them one patient died in the hospital (0.98%). Incidence of postoperative complications after different surgical procedures are shown in Table 3. Postoperative wound sepsis was diagnosed in nine patients (8.9%). Four out of fifty four patients undergoing biliary surgery alone had wound infection (7.4%); two patients after cholecystectomy

Table: 3, Incidence of postoperative Complication depending on the types of Surgical Procedures

Procedure	Complications				Total
	None	Wound infection	Reactionary hemorrhage	Acute Intestinal obstruction	
Cholecystectomy	31	2	1	—	34
Cholecystectomy					
Choledochotomy	18	2	—	—	20
Choledochotomy					
Cholecystectomy					
appendicectomy	7	2	—	—	9
Total	58	6	1	—	63

alone and another two after choledochotomy and choledochotomy. Among four tyseven patients under-going biliary surgery with appendicectomy five (10.6%) had wound sepsis. In this group, nine patients underwent exploration of the common bile duct as well. At the end of second week after operation the wound became clean in all case except for a 28 years old female who had undergone cholecystectomy with appendicectomy, who took almost two months for complete healing of the wound. In this case the cultures of bile and appendicular stump swab were negative.

A fifty six years old male who underwent cholecystectomy alone experienced reactionary bleeding in the early postoperative period. On exploration of the abdominal cavity no source of active bleeding could be found, the cause of blood loss was oozing from the gall-bladder bed.

A nine years old girl who underwent cholecystectomy with appendicectomy developed features of acute intestinal obstruction in the postoperative period. She was

re-operated and the adhesion of a loop of ileum with the gall-bladder bed was released. After the second operation the girl developed ileal fistula and succumbed to it. This was the only case of mortality in this series.

Gall-bladder bile culture was performed in 39 cases, whereas appendicular stump swab culture was done in 31 patients. The results of the bile and appendicular stump swab culture is shown on Table 4. As we can see from this Table in both cultures *E. coli* was the commonest organism isolated in our series; No anaerobic culture was done.

Table 4: Results of the bile and appendicular stump swab culture:—

	Total	No. growth	<i>E. coli</i>	<i>Str. Faecalis</i>	<i>Enterobacter</i> spp.	Others
Bils	39	11	8	6	3	11
App. Stump Swab	31	10	12	2	5	2
Total	70	21	8	8	8	13

## Discussion

Though Stone et al (1980) stated that routine cholecystectomy should be classified as clean or clean-contaminated case depending on the presence of organisms in the bile, it is a well known fact that cholecystectomy is a septic operation and the most common complication of it is postoperative wound infection. There are different data about wound infection after cholecystectomy in the literature. Fukunaga (1974) reported this complication in his series to be 5%, whereas Strachan (1977)<sup>3</sup> saw it in 16.9% case and Wolloch et al (1977)<sup>4</sup> diagnosed this in 18.5% patients, Keighley et al (1974)<sup>5</sup> reported sepsis in 21% cases. In our series among the 34 patients

under-going cholecystectomy alone the rate of postoperative wound infection was 5.9 percent. Wolloch et al reported the rate of wound infection among the patients undergoing cholecystectomy and choledochotomy being 37.8%, but in our series of 20 patients it was only 10 percent. They did not find any appreciable difference in the rate of wound infection where a routine appendicectomy was performed during biliary surgery, though Pollock and Evans (1977)<sup>6</sup> found this complication in 41.1% cases after biliary surgery. In our series of 47 patients who underwent biliary surgery with appendicectomy the rate of wound sepsis was almost double (10.6%). According to Kune and Schutz (1974)<sup>7</sup> and Robson et al (1970)<sup>8</sup> the vast majority of wound infection after biliary surgery are due to an organism found in the bile. Wolloch et al and Corlette et al (1977)<sup>9</sup> reported positive bile culture in 35 and 36 percent cases respectively, but in our series of 39 bile culture positive growth was seen in 28 patients (71.8%). Thus our results show quite different pattern than the results reported by them. Though the wound infection rate was as high as double among the patients undergoing biliary surgery with appendicectomy than among the patients undergoing biliary surgery alone, we would like to stress the importance of incidental appendicectomy in our country. There are very few hospitals in Nepal where a laparotomy can be performed and as we have stated that the incidence of appendicitis is becoming quite high here. Although according to Admirand and Small (1967), Thorbjarnarson and Lochr (1967) and Copeland and Long (1970) current concepts of the pathogenesis of acute cholecystitis and that of acute appendicitis are different, there appears to be a definite relationship between the simultaneous occurrence of the disease entities. Review of literature has revealed a number of references to concomitant cholecystic appendiceal disease. These reports usually refer to the high incidence of unsuspected pathologic processes within the appendix as an indication for its removal at the time of elective cholecystectomy. So in our opinion despite the high rate of wound infection, it is justified to perform appendicectomy during biliary surgery.

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