NASOGASTRIC DECOMPRESSION IN CHOLECYSTECTOMY, IS IT NECESSARY?

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ABSTRACT

Nasogastric decompression seems to be widely employed in cholecystectomies despite evidence to the contrary. Based on a questionnaire given to 100 surgeons routinely doing cholecystectomies we found decompression being employed by the majority. 43% were unwilling to change their protocol. Our prospective randomised controlled trial of 162 cholecystectomies was done to assess intubation morbidity, related complications and influence on recovery. The objective was to determine if nasogastric decompression was scientifically based or conjectural. 130 patients underwent elective surgery and 32 required surgery for acute cholecystitis or associated common bile duct exploration. Both groups were randomised into tube and no-tube groups. The incidence of nausea, vomiting, distension and respiratory complications were noted and revealed no statistically significant group differences. No tube groups had earlier return of bowel motility, required lesser parenteral support and were discharged earlier compared to intubated patients. Out of 81 patients without decompression, only 7(8.6%) needed intubation due to vomiting whereas 2(3%) intubated cases required reinsertion of the tube due to ileus. Detailed analysis of these patients did not reveal any predictive criteria for selective intubation. We conclude that nasogastric decompression is used indiscriminately without scientific reasoning. Our prospective randomised trial does not favour intubation in elective or emergency setting for cholecystectomies. Intubation is needless in 92% cases and delays recovery. No criteria could be identified to preselect patients for intubation.

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KEY WORDS : Cholecystectomy, Nasogastric decompression.

Introduction

Peri operative nasogastric decompression was popularised after Wangansteen used it in small gut obstruction in 1932 [1]. Based on the belief that it prevents ileus with its attendant complications, it became virtually mandatory to use it following any major abdominal surgery [2,3]. This concept has been questioned time and again. Studies have demonstrated satisfactory result without routine use in upper and lower abdominal operations [4,5]. Prophylactic intubation can not only cause complications but may even promote ileus [6]. However, despite lack of a rational basis, nasogastric intubation is commonly practised in abdominal surgery. We undertook a prospective trial to assess intubation morbidity, related complications and influence on recovery. The study was tailored to determine if selective use was scientifically based or conjectural. An attempt was made to define a subset of patients who would need intubation.

Methods

A questionnaire was given to 100 surgeons in a large city who routinely perform gall bladder surgery. They were asked the mode of performing cholecystectomy and reasons for routine selective or non use of nasogastric decompression. 63 surgeons replied to the questionnaire. Their answers were critically analysed and have been summarised as per Table 1.

TABLE 1

Results of questionnaire (n=63)

Surgical methods*	Open 54 (92) ⁺	Minilap 12 (15)	Laparoscopic 9 (14.3)
Nasogastric tube Use	Routine 27 (42.8)	Selective 24 (38.1)	Therapeutic 12 (19)
Willing to change	Yes 30 (47.6)	No 27 (42.8)	Uncertain 6 (9.5)

* Some surgeon use multiple methods; ⁺Figures in parenthesis indicate percentage

130 patients undergoing elective cholecystectomies for chronic cholecystitis between May 93 and Aug 96 were prospectively randomised by closed envelope system into two groups. Group A comprised of 65 cases who were intubated pre or intra operatively with No 16 Fr Levine's tube. This was left on free drainage with 2 hourly aspiration post operatively. It was removed after return of bowel function as judged by propulsive intestinal sounds or passage of flatus. All patients were asked their impression of the tube. The response was graded from 1 to 5 according to increasing levels of distress. Those who found the tube intolerable and removed it were graded as 5. No nasogastric decompression was employed in the 65 cases in group B. In this group a single vomitus in patients was ignored whereas Inj Metoclopramide 10 mg was given intravenously if patient vomited twice. In patients with more than 2 bouts of vomiting or those developing distension, a Levine's tube was passed and cases managed as in group A.

During the study period there were 32 patients who required surgery for acute cholecystitis, common bile duct exploration or associated abdominal procedures. With a view to define criteria for 'selective' nasogastric intubation this subset of cases was divided into tube (Group C) and no tube groups (group D). The same

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TABLE 2

Group composition and patient profile

	A (tube)	B (no tube)	C (tube)	D (no tube)
Number of patients	65	65	16	16
Type of surgery	Classical cholecystectomy		Emergency cholecystectomy CBD exploration Choledochoduodenostomy Associated Surgery	6 6 2 02 (appendicectomy)
Age	43 (21-73)	40.7 (23-68)	42.3 (26-60)	46.3 (28-87)
M:F	1:4.9	1:4.4	1:4.3	1:3

protocol as defined above was adhered to. All groups were essentially similar in patient profile except a higher age and higher male/female ratio in group D. Table 2 depicts the group composition and patient profile. In all groups incidence of nausea, vomiting, distension along with associated respiratory and wound complications were noted. Insertion of tube in the group not decompressed or reinsertion in intubated patients were recorded as failures. Recovery parameters like return of bowel motility with oral intake, IV requirements and hospital stay were also compared.

Results

A total of 63 surgeons replied to the questionnaire and the results are depicted in Table 1.

The age group of the patients ranged from 21 to 87 years with a mean ranging from 40.7 yrs in group B to 46.3 yrs in group D. There were predominantly female patients in all groups (Table 2). Of all intubated cases (n=81) only 2 patients (2.5%) found the tube comfortable. 17 (21%) had mild, 34 (42%) moderate and 28 (34.5%) felt severe distress. Given a choice nearly 92% patients opted not to be intubated in future.

Post operative distension, nausea and vomiting were recorded from examination of the case records or by direct enquiry from the patients. There were minimal differences between groups and the data was statistically not significant. Though vomiting was more in tubeless groups compared to intubated patients for routine cholecystectomies this too was statistically not significant ($P>0.05$) (Table 3). Reintubation was required in 2 cases (3%) in group A and none in group C. One was in a patient who developed biliary peritonitis, the other being due to prolonged ileus. Out of 81 patients without decompression, only 7 (8.6%) needed intubation. Of the six patients in group B, four required the tube due to persistent vomiting in the post operative evening. Two patients had distension on the first post operative day, of which one was an old case of abdominal Koch's who had prolonged surgery. One patient in group D suffered an upper gastrointestinal bleed on the third day after surgery and required intubation.

Respiratory complications were overall more in intubated groups. Statistical analysis did not reveal significant differences (Table-4).

Though not directly related to Levine's tube use, there was 1 mortality in group A due to biliary peritonitis and another in group D in a patient of obstructive jaundice who had an upper GI bleed. No cases of wound dehiscence took place nor did the incidence of infection reveal differences between various groups.

Comparison of return of bowel motility showed uniformly earlier return of function in the tubeless group versus the corresponding intubated ones with statistically high significant group differences. Intubated cases required longer and more parenteral support and also had longer hospital stay (Table-5).

TABLE 3

Morbidity

Group	A (tube)	B (no tube)	p value	C (tube)	D (no tube)	p value
Number of patients	65	65		16	16	
Distension	10 (15.4)*	7 (10.8)	NS	2 (12.5)	3 (18.8)	NS
Nausea	18 (27.7)	15 (23.1)	NS	4 (25)	2 (12.5)	NS
Vomiting	16 (24.6)	22 (33.8)	NS	2 (12.5)	3 (18.8)	NS
Reintubation	2 (3)	6 (9.2)	NS	0	1 (6.25)	NS

Figures in parenthesis indicate percentage, NS - Not Significant

TABLE 4

Complication and Mortality

Group	A	B	p value	C	D	p value
Number of patients	65	65		16	16	
Respiratory	15 (23.1)	11 (16.9)	NS	2 (12.5)	3 (18.8)	NS
Wound infection	5 (7.6)	4 (6.1)	NS	1 (6.3)	1 (6.3)	NS
Mortality	1 (1.5)	0	NS	0	1 (6.3)	NS

Figures in parenthesis indicate percentage; NS - Not Significant

TABLE 5

Parameters of Recovery

Group	A	B	p value	C	D	p value
Number of patients	65	65		16	16	
First flatus (hours)	46.7	41.7	< 0.1	54	52.2	< 0.01
First stool (hours)	77.3	61.4	< 0.1	84	71.7	< 0.01
IV fluid (ml)						
Per patient	7263	5888		8512	6987	
Per kg wt	127	113		140	142	
Hospital stay (days)	7.5	5.4		12.5	11.25	

The total parenteral fluid requirement of patients in group C and D is apparently less than those in the elective surgery group A and B. When the patients body weight is taken into consideration for calculating the parenteral support, the volumes are evidently more in group C and D (Table-5). It is hence noteworthy that cases having complications like common bile duct stones are thin-

ner and weigh less than their counterparts undergoing elective cholecystectomy for uncomplicated gallstone disease.

Detailed analysis of the 9 patients who needed intubation or reinsertion was done to define possible predictive criteria for nasogastric decompression. 4 of these had justifiable reasons, Two being biliary peritonitis, one UGI bleed and an old case of abdominal Koch's requiring prolonged surgery. In the other five we could not identify any systemic illness, operative factor or medications which could lead to ileus.

Discussion

Conventional cholecystectomy is performed by the majority of surgeons with a limited number doing minilaparotomy or laparoscopic surgery. 55% surgeons in USA as recorded in an earlier study and 20% in the UK regularly use a nasogastric tube after cholecystectomies [7]. The present study has revealed our surgical fraternity choosing the middle path with 43% routine users. 38% preferred to use it prophylactically in early/emergency cholecystectomy, associated abdominal procedures. 19% felt it had no role in gall bladder surgery. Justification or not, a large percentage were rigidly adhering to their protocol, either as a 'safe habit' or personal prejudice.

Post operative ileus occurs after nearly all major abdominal operations. Consequent to this physiological response gas and secretions accumulate in the bowel which distends and there is cessation of flatus and stool passage [8]. Levine introduced the nasogastric tube in 1921 and its use was popularised in the belief that it prevented ileus and its associated problems. Proximal gut decompression thereafter became a ritual and was used for all major abdominal operations [7]. Gerber in 1963 challenged routine use and highlighted its complications [9]. The extreme discomfort caused by the tube is not the least of its problems. Most of our patients found the tube distressing and many were constantly complaining against it. Even a gastrostomy is claimed to be associated with lesser discomfort and complications compared to routine intubation [10,11].

Apart from limitations in its supposed use tube decompression is itself responsible for complications like ulceration, haemorrhage perforation and increase in respiratory infections [12]. Two of our cases had pharyngeal trauma and bleeding during intubation. Similar incidence of distension was observed in intubated and tubeless groups but the former had more cases complaining of nausea. These could be attributed to mouth breathing and pharyngeal irritation. Vomiting was however uniformly more in the tubeless groups. No significant differences were noted as regards respiratory infections and no wound dehiscence occurred in any group. Recent trials demonstrate simi-

lar complication rates with omission of routine intubation [13,14]. A total of 7 intubations were required in the tubeless groups B and D compared to 2 reinsertions. It is noteworthy that 74 patients (91.4%) in these groups did not need tube decompression and avoided not only resulting discomfort but also possible complications. There were no additional complications or delay in recovery in the patients intubated later.

The duration of ileus depends on multiple factors like operation time. Peritoneal contamination, systemic ailments and electrolyte imbalances. Moreover neither is there substantial period of small gut paralysis after surgery nor does intubation effectively decompress it, on the other hand it may even promote ileus [6]. Moss demonstrated the ineffectiveness of gastric aspiration and recommended immediate post operative elemental feeding [15,16]. Our data revealed earlier return of bowel activity in the tubeless group, less parenteral support and earlier discharge. Subset analysis of patients undergoing early/emergency cholecystectomy or additional intervention showed similar incidence of complications compared to electively done simple cholecystectomies.

In both intubated and tubeless group C and D ileus duration and IV requirement were higher than the routine elective cases in group A and B respectively. This is likely to be a result of increased operative duration in the former as we analysed in an earlier study [17]. The above notwithstanding, it is not justification enough for using tube decompression in these cases. Analysis of these selected cases in group C and D show that even in them omission of intubation in group D resulted in lesser ileus and faster recovery than similar intubated cases in group C. Thus a case is made for not only omitting nasogastric tube use in routine cholecystectomies but also in emergency or additional surgery.

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