

CONVERSION FROM LAPAROSCOPIC TO OPEN CHOLECYSTECTOMY. RISK FACTOR ANALYSIS BASED ON CLINICAL, LABORATORY AND ULTRASOUND PARAMETERS.

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BACKGROUND:

The current standard of treatment for gallbladder diseases is laparoscopic cholecystectomy(LC); Conversion from LC to open surgery has been associated with increased morbidity and results from technical difficulties secondary to peritoneal adhesions causing difficult dissection and bleeding; Risk factors for conversion in the context of acute cholecystitis (AC) have been barely studied before.

METHODS:

Retrospective case-controlled study including all patients admitted to a third level University-based center from January 1996 to January 2017 with the diagnosis of AC following Tokio Guidelines 2018; Analyzed variables were grouped by category as follows: Clinical, Laboratory and Ultrasound parameters; A logistic regression model was performed to identify risk factors for conversion; Variables that showed significance in the univariate analysis were included in a multivariate model by variable category. We then performed an exploratory analysis to identify the risk factor summation pathway with the highest sensitivity for conversion.

RESULTS:

Three hundred twenty-one patients with AC subjected to LC were included; In the univariate analysis, the variables age, male gender, gallbladder wall thickness, and pericholecystic fluid presented a statistically significant correlation with conversion;

Variable	Converted to open n:39	Lap Cholecystectomy n:282	Univariate OR(95% CI)	Multivariate OR (95% CI)
Age	55 (37-73)	48 (32-64)	1.03 (1.01-1.05) p=0.016	1.02 (1.01-1.04) p=0.025
Male Gender	21 (54%)	91 (32%)	2.45 (1.24-4.82) p=0.010	2.35 (1.19-4.65) p=0.014
Diabetes Mellitus	11 (28%)	50 (18%)	1.82 (0.85-3.90) p=0.12	
BMI (Kg/m2)	28.2 (23.2-33.2)	28.1 (22.1-34.1)	1.0 (0.95-1.07) p=0.88	
Prior Abdominal surgery	7 (18%)	33 (12%)	1.64 (0.67-4.01) p=0.27	
Albumin(mg/dl)	3.6 (3-4.2)	4.0 (0.8-7.2)	0.86 (0.5-1.38) p=0.52	
Leukocyte count (c/mm3)	12.6 (7.6-17.6)	15.1 (9.1-21.1)	1.01 (0.97-1.0) p=0.56	
(+) Pericholecystic Fluid	6 (15%)	17 (6%)	2.84 (1.04-7.69) p=0.041	1.05 (0.11-9.70) p=0.96
GB Wall thickness (mm)	5.8 (3-8.6)	4.5 (2.7-6.3)	1.34 (1.03-1.74) p=0.031	1.35 (1.03-1.76) p=0.03

				% added by Risk Factor (n)	Summative Risk for Conversion (n)
Male				53.8% (21)	53.8% (21)
Male	Age >50			23.1% (9)	76.9% (30)
Male	Age >50	GB Wall > 4mm		5.1% (2)	82% (32)
Male	Age >50	GB Wall > 4mm	(+) PCh Fluid	2.5% (1)	84% (33)

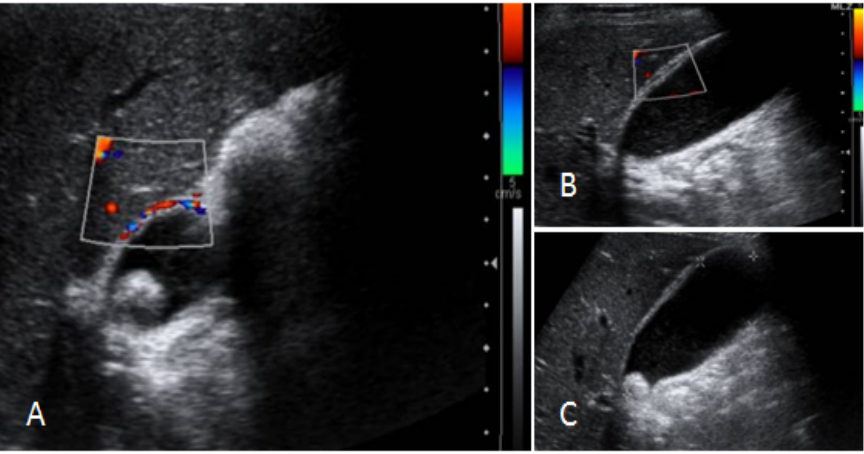
Table 1: Categorical variables are expressed as frequencies (Percentages). Quantitative variables as Means +/- STD. p<0.05 considered significant. BMI:Body Mass Index, GB Gallbladder.
Table 2: GB Gallbladder, PCh: Peri cholecystic fluid

In the multivariate analysis (+) pericholecystic fluid was the only of the former that didn't maintain significant correlation. **(Table 1)**

The risk factor summation pathway with the highest sensitivity identified 84% of cases converted to open surgery. **(Table 2)**

CONCLUSION:

Routine clinical data can be used to recognize patients with a higher risk of conversion to open surgery. Surgeons must be able to identify risk factors to be prepared for a particularly complex procedure in order to improve patient outcomes.



Ultrasonographic signs of acute cholecystitis according to Tokyo Guidelines 2018. A) Augmented gallbladder vascularity, B,) Increased wall thickness >4mm C) Cholelithiasis