

In patients with acute cholecystitis (group 2), there was a significant increase in the conversion rate in males as in table 5. While the age shows no significant effect on the conversion rate as in table 6.

**Table 5. Relation between the sex and conversion**

Sex	Lapchole		Conversion	
	No.	%	No.	%
Male	18	36	11	64.7
Female	32	64	6	35.3
Total	50	100	19	100

P = 0.039

**Table 6. Relation between age and conversion**

Age	Lapchole		Conversion	
	No.	%	No.	%
≥ 40 years	31	62	7	41.2
< 40 years	19	38	10	58.8
Total	50	100	13	100

There was a significant increase in the conversion rate in relation to the time between the onset of symptoms to the time of operation while other clinical features did not have any significance in this respect (Table 7). An increase in the wall thickness of gall bladder was found also to be a significant risk factor for conversion from LC to OC as shown in table 8.

## Discussion

This study showed the conversion from laporoscopic cholecystectomy to open cholecystectomy in group1was 14.4% and 34% in group 2, while the study of Lim et al showed that the conversion rates in cases with acute cholecystitis were reported in the literature to reach up to 27.7%<sup>(15)</sup> and Fried et al who found that in acute cholecystitis, the conversion rate can be as high as 30%<sup>(16)</sup>, and the study of Habib et al who found that the rate of conversion to open surgery in cases of severe cholecystitis is 8.7-35%<sup>(17)</sup>.

In this study, the conversion rate was found to be highly related to male gender 69.2% in in

group 1 and 64.7% in group 2 with a statistically significant difference (P value 0.003 and 0.039 respectively). This coincides with the study of Volkan Genc *et al* who found that male gender was found to be the only statistically significant risk factor for conversion with a conversion rate of 2.5-fold in men than in women<sup>(18)</sup>. Ballal *et al* also found that the patient-related factors who were good predictors of conversion included male sex, emergency admission, old age, and complicated gallstone disease (P < 0.001)<sup>(19)</sup>. The study of Shamim *et al* showed that the conversion rate was higher in male patients (16.45% males vs. 5.09% female)<sup>(20)</sup>. This association may be due to the increased severity of gallstone disease in men<sup>(21)</sup>.

Regarding the age we found that the patients aged more than or equal to 40 years have higher conversion rate than those less than 40 years (61.5% versus 38.5%) in group 1 and (41.2% versus 58.8%) in group 2 with no statistically significant difference, and this goes with Fried et al study who found that advanced age may be associated with increased postoperative complications and high conversion rates<sup>(22)</sup>, while Shamim et al study found no risk of conversion was associated with increasing age(Age-wise conversion rates were: 2.31% in 20s, 8.06% in 30s, 7.49% in 40s, 7.98% in 50s, 4.21% in 60s, and 4% in 70s)<sup>(20)</sup>.

Concerning the clinical history and conversion rate, we found that there is no significant risk for conversion in group 1 regarding the pain, morphy's sign, temperature and onset of symptoms, while in group 2 the pain was present in all patients 100% and 70% of patients complained for more than 3 days converted to open cholecystectomy with highly significant p-value( 0.05) and this is similar to the study of Khan et al who found that conversion rate was significantly low (zero versus 32%: P = 0.01) if the procedure was performed within 48 hours from the onset of symptoms<sup>(23)</sup>.

Regarding preoperative ultrasounic findings, this study showed that 40% of patients with gallbladder wall thickness more than 3mm in group 1 are converted to open cholecystectomy