



GALL BLADDER WALL THICKNESS AS PREDICTOR OF INTRAOPERATIVE DIFFICULTIES AND POST OPERATIVE EVENTS

General Surgery

Dr Ashna Jaggi	PG Resident, Department Of General Surgery, Mahatma Gandhi Medical College And Hospital, jaipur
Dr Rajkamal Kanojiya	Professor And Unit Head, Department Of General Surgery, Mahatma Gandhi Medical College And Hospital, jaipur
Dr Rekha Chaudhary*	PG Resident, Department Of General Surgery, mahatma Gandhi Medical College And Hospital, jaipur *Corresponding Author

ABSTRACT

This study is designed to evaluate the association of gallbladder wall thickness with intra-operative events-(operative time, procedure conversion, need for drain placement, bile spillage, major bleeding and bile duct injuries). This study is designed to evaluate the association of gallbladder wall thickness with post-operative events-(time of drain removal, ambulation, initiation of oral feeds, early post-operative pain and complications like surgical site infections (SSI), organ-space infections, postoperative bleeding and bile leak along with mean duration of stay.)

KEYWORDS

Gall Bladder, Laparoscopic Surgery, Wall Thickness

INTRODUCTION

Gallbladder and its related diseases are now one of the commonest indications for elective and emergency surgery making laparoscopic cholecystectomy one of the most performed procedure by general surgeons in the world. (1) Biliary colic or acute cholecystitis account for > 70% of cases for which a cholecystectomy is being done.

A 3.6-13.9% conversion rates is prevalent and in a number of studies, gall bladder wall thickness of more than 3mm on pre-operative ultrasound has been shown to have a positive relation.(2,3) Dinkel et al revealed the gallbladder wall thickening is the most sensitive indicator of technical difficulties during LC. (4)

Ultrasonography remains the modality of choice as it can measure wall thickness, pericholecystic fluid collection, intra hepatic biliary radicals and common bile duct status and can also raise pre-operative suspicion of an underlying malignancy based on wall thickening. (5)

Thickness of the gallbladder wall being a surrogate of inflammation and/or fibrosis will have a direct association with the complexity of laparoscopic cholecystectomy and hence its associated complications post-operatively.

Methodology

All patients attending General Surgery Emergency or OPD of Mahatma Gandhi Medical College and Hospital will undergo-

- Documentation of a detailed medical history.
- Complete clinical examination.
- Investigations-

A. Routine investigations:

1. Complete Blood counts (CBC) with Erythrocyte sedimentation rate (ESR)
2. Urine for routine examination and microscopy
3. Random blood sugar (RBS)
4. HIV and HBsAg screening test
5. Prothrombin time (PT)/INR
6. Serum Electrolytes
7. Liver function tests (LFT)
8. Renal Function tests (RFT)

A. Specific investigations:

- Ultrasonography-whole abdomen and pelvis
- Chest X-ray P/A view

Electrocardiogram

Inclusion criteria:

- All adults of age >18 years belonging to either of the sex group who underwent laparoscopic cholecystectomy for any of the following indications-
- 1. Symptomatic cholelithiasis
- 2. Empyema gall bladder

3. Mucocoele gall bladder
4. Gall bladder polyp
5. Biliary pancreatitis
- Diagnosis was made on the presence of history, clinical examination and a pre-operative ultrasonography.

Exclusion criteria:

- All the patients having risk factors influencing wound healing including-
- 1. Patients <18 years of age.
- 2. History of previous abdominal surgery.
- 3. Patients with common bile duct calculus
- 4. Patient with suspicion of ca gall bladder
- 5. Features of obstructive jaundice
- 6. Cholelithiasis during pregnancy
- 7. Absolute contraindications to laparoscopic surgery like cardiovascular, pulmonary disease, coagulopathies and end stage liver disease.

RESULTS

Table 8: Association between gall bladder wall thickness and incidence of conversion to open

GB wall thickness		Conversion to open (mm)		Total
		No	Yes	
Normal (<3mm)	Count	39	7	46
	% of Total	32.5%	5.8%	38.3%
Moderately thickened (3-5mm)	Count	33	3	36
	% of Total	27.5%	2.5%	30.0%
Severely thickened (5-7mm)	Count	8	30	38
	% of Total	6.7%	25.0%	31.7%
Total	Count	80	40	120
	% of Total	66.7%	33.3%	100.0%

Maximum incidence of conversions seen in severely thickened group (25%) followed by 5.8% in normal wall thickness group and 2.5% in the moderately thickened group. This association between increasing wall thickness and increased incidence of conversion to open was found to be statistically highly significant ($p < 0.05$; $p = 0.000$).

Maximum drain placement (27.5%), bile spillage (23.3%) and bleeding (20%) was seen in severely thickened group. This association between increasing wall thickness and all the intraoperative complications was found to be statistically significant ($p < 0.05$).

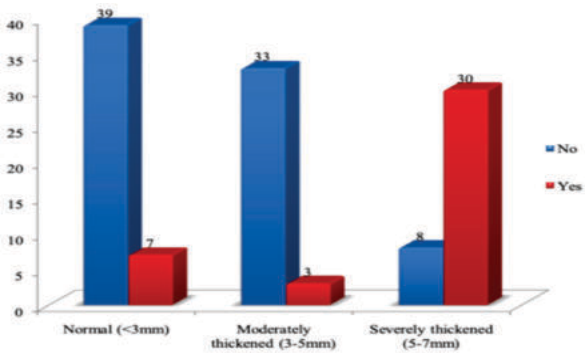
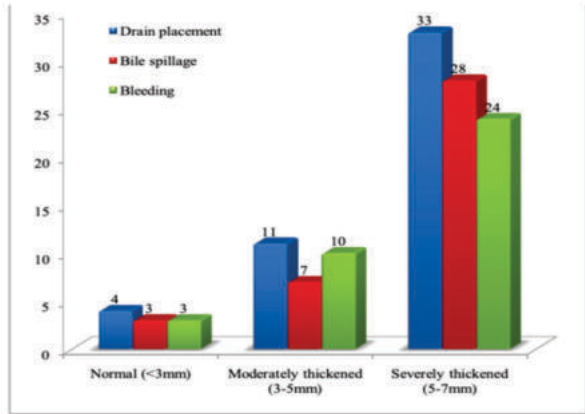


Table 9: Association between gall bladder wall thickness and intraoperative complications

		Group			Total	P value
		Normal (<3mm)	Moderately thickened (3-5mm)	Severely thickened (5-7mm)		
Drain placement	Count	4	11	33	48	0.000 (S)
	% of Total	3.3%	9.2%	27.5%	40.0%	
Bile spillage	Count	3	7	28	38	0.000 (S)
	% of Total	2.5%	5.8%	23.3%	31.7%	
Bleeding	Count	3	10	24	37	0.004 (S)
	% of Total	2.5%	8.3%	20.0%	30.8%	



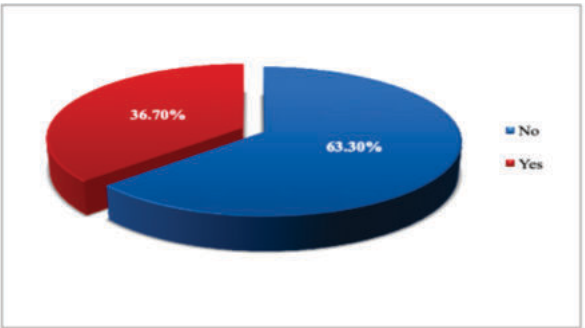
Graph 9: Association between gall bladder wall thickness and intraoperative complications

Table 10: Postoperative pain

Pain	No. of Cases	%
No	76	63.3%
Yes	44	36.7%
Total	120	100.0

Postoperative pain was found in 44 (36.7%) patients and rest 63.3% patients no pain were found.

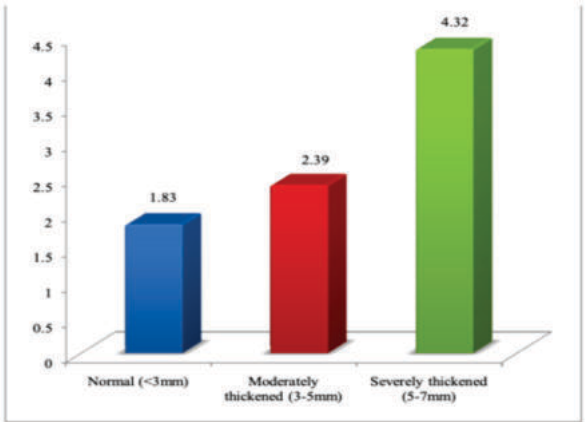
In the normal thickness group, mean postoperative length of hospital stay was found to be 1.83 days. In the moderately thickened group, mean postoperative length of stay was 2.39 days and in patients with severely thickened gall bladders, mean postoperative length of stay was 4.32 days. There is a positive association between preoperative GB wall thickness and postoperative length of stay in hospital. This



Graph 10: Postoperative pain

Table 11: Association between gall bladder wall thickness and postoperative length of hospital stay

Group	N	Mean	Std. Deviation	Minimum	Maximum	P value
Normal (<3mm)	46	1.83	1.913	1	8	0.001 (S)
Moderately thickened (3-5mm)	36	2.39	1.712	1	6	
Severely thickened (5-7mm)	38	4.32	1.947	1	8	
Total	120	2.78	2.139	1	8	

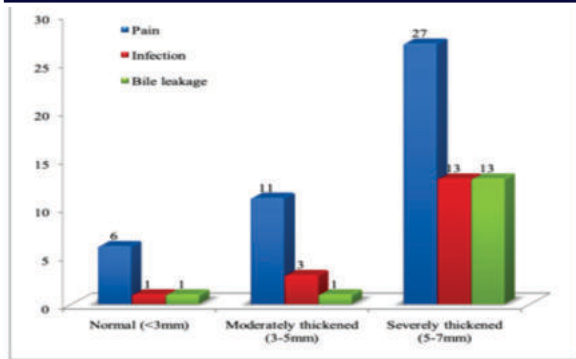


Graph 11: Association between gall bladder wall thickness and postoperative length of hospital stay

Table 12: Association between gall bladder wall thickness and postoperative complications

		Group			Total	P value
		Normal (<3mm)	Moderately thickened (3-5mm)	Severely thickened (5-7mm)		
Pain	Count	6	11	27	44	0.000 (S)
	% of Total	5.0%	9.2%	22.5%	36.7%	
Infection	Count	1	3	13	17	0.000 (S)
	% of Total	0.8%	2.5%	10.8%	14.2%	
Bile leakage	Count	1	1	13	15	0.000 (S)
	% of Total	0.8%	0.8%	10.8%	12.5%	

Maximum incidence seen in the severely thickened group. Pain complication after Lap. Cholecystectomy were encountered in 22.5% of patients in the severely thickened group. Around 63% patients had developed in all the postoperative complications. Only 10.8% patients in the severely thickness group had a infection complication after Lap cholecystectomy. This association between increasing wall thickness and all postoperative complication was found to be statistically highly significant (p<0.001).



Graph 12: Association between gall bladder wall thickness and postoperative complications

SUMMARY AND CONCLUSION

This study was carried out in the Department of General Surgery, Mahatma Gandhi Medical College & Hospital, Jaipur. Rationale behind this study was to correlate the degree with which preoperative ultrasonography can be used to predict intraoperative and postoperative difficulties during Laparoscopic Cholecystectomy.

At the conclusion of this study, it can be stated with confidence that preoperative ultrasonography is a good indicator of difficulties which may be faced intra operatively by the surgeon. Increase in gall bladder wall thickness, presence of impaction of stone at the neck of the gall bladder. It also helps us to plan out the surgery in advance and take consent and appraise the patient of the possible necessity for open cholecystectomy.

An increase in the thickness of the gall bladder wall leads to an increased risk of complications and conversions as well as an increased length of stay in hospital post operatively. Patients with thickened gall bladder walls accounted for only 33.3% of the study population but they experienced the maximum number of conversions to open (27.5%). Post-operative length of stay in the hospital was also found to be prolonged in patients with thickened gall bladder walls. This is also an important factor as expected length of stay in hospital is a commonly encountered query during preoperative patient counselling.

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