ROBOTIC ASSISTED CHOLECYSTECTOMY IMPROVES PERI-OPERATIVE OUTCOMES WHEN COMPARED TO LAPAROSCOPIC CHOLECYSTECTOMY

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BACKGROUND

Robotic assisted cholecystectomy, though gaining popularity, remains controversial, particularly as an acute or unplanned procedure. Increased operative time is frequently sited as a limitation to adoption. With increasing institutional experience in robotic techniques, this paradigm may shift. We reassess perioperative characteristics of robotic assisted cholecystectomy in acute and elective settings.

METHODS

We performed a retrospective review of cholecystectomies at our institution between Jan 2017 and Dec 2019. These were subdivided into robotic vs laparoscopic and planned vs unplanned, with planned defined as case booking prior to patient arrival at the hospital. We assessed demographics, hospital readmission, conversion to open rate, hospital length of stay, cost, and operative timing characteristics.

References

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RESULTS

1362 cholecystectomies were identified (138 robotic assisted, 1224 laparoscopic). Patients who underwent robotic cholecystectomy were older and less likely to be smokers, otherwise similar demographically.

Overall, 30 day readmission rates were lower for robotic cholecystectomy than laparoscopic cholecystectomy (0% vs 5.5% p<0.005) as was conversion to open rate (0.7% vs 7.6%, p<0.005). The average cost was similar between groups.

Subgroup analysis controlled for planned versus unplanned cases, and there were no significant differences within groups except cost, which was higher for the robotic group.

Table 1. **Patient characteristics for planned cholecystectomy**

Characteristic	Robotic Cholecystectomy (N=130)	Laparoscopic Cholecystectomy (N=433)
Age – yr.	46.8	42.9
Diabetes – no. (%)	16 (12.3)	53 (12.2)
Obesity – no. (%)	34 (26.2)	90 (20.8)
Coronary disease – no. (%)	11 (8.5)	38 (8.8)
Heart failure – no. (%)	2 (1.5)	7 (1.6)
Smoking – no. (%)	5 (3.8)	45 (10.4)

Table 2. **Perioperative measures and outcomes**

	Procedure Length (min.)	OR Room Time (min.)	Hospital Length of Stay (days)	Conversion to Open	30-day Readmissions
Robotic					
Total (N=138)	79.7	118	1.1	1 (0.8%)	0
Planned (N=130)	78.9	117.2	0.8	1 (0.7%)	0
Laparoscopic					
Total (N=1224)	90.9	134.6	3.5	93 (7.6%)	67 (5.5%)
Planned (N=433)	82.8	123.9	0.8	13 (3%)	4 (0.9%)

DISCUSSION

Overall short term outcomes were improved in robotic assisted cholecystectomy versus laparoscopy, however on subgroup analysis comparing planned cases, outcomes and operative characteristics were equivalent. One possible explanation for our findings of equal operative time is extensive staff and surgeon experience with robotic techniques and equipment. Major limitations are the disproportionate group sizes between approach, particularly for unplanned surgeries, as well as lack of data on specific complications.

CONCLUSIONS

• Overall improved outcomes for robotic approach, though equivalent on subgroup analysis

• No operative time difference between robotic and laparoscopic approach

• Robotic assisted cholecystectomy is a safe alternative to laparoscopy in planned and unplanned settings