HYDRODISSECTION USE IN LAPAROSCOPIC GANGRENOUS CHOLECYSTECTOMY: EFFECT ON NEED TO CONVERT TO OPEN SURGERY AND TIME REQUIRED FOR RECOVERY

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Introduction

A gangrenous cholecystectomy (GC) represents a complicated case of laparoscopic cholecystectomies where inflammation and other tissues obstruct the critical view (i.e., cystic artery and duct). Poor visualization with standard blunt dissection can lead to surgical complications such as bleeding or bile duct injury. This can result in the need to convert from a laparoscopic to an open procedure and thus increase the postoperative length of stay (post-op LOS) and 30-day readmission rates. However, the use of hydrodissection (HD), normal saline jet-streams that clear purulent and necrotic debris, during laparoscopic GCs can better reveal the critical view and localize critical structures. In this retrospective study, we analyze the impact of HD on key surgical parameters: post-op LOS, conversion from laparoscopy to open surgery, and frequency of 30-day readmissions.

Method

After IRB approval, 386 laparoscopic cholecystectomy cases performed between 2018 and 2020, were analyzed in a retrospective study.

- Data Collection: patient demographics, medical comorbidities, surgical outcomes, complications, and operating time.
- Exclusion Criteria: (1) cases performed by a resident with <10 HD cases of experience, (2) cases requiring open cholecystectomy, (3) cases using robotic techniques, and (4) cases resulting in liver mass excision
- Categorization: outlined in Figure 2.
- Control Group Selection: age and sex.

Using Chi-square and unpaired t-testing, we evaluated the post-op LOS, rate of conversion to open surgery, and 30-day readmission rates.

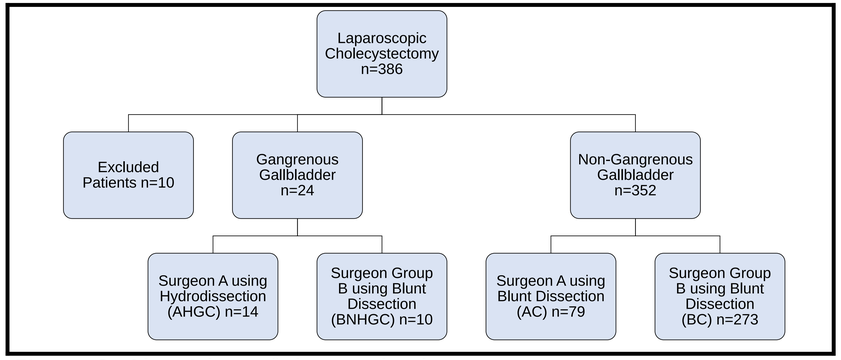


Figure 2: Algorithm of the method

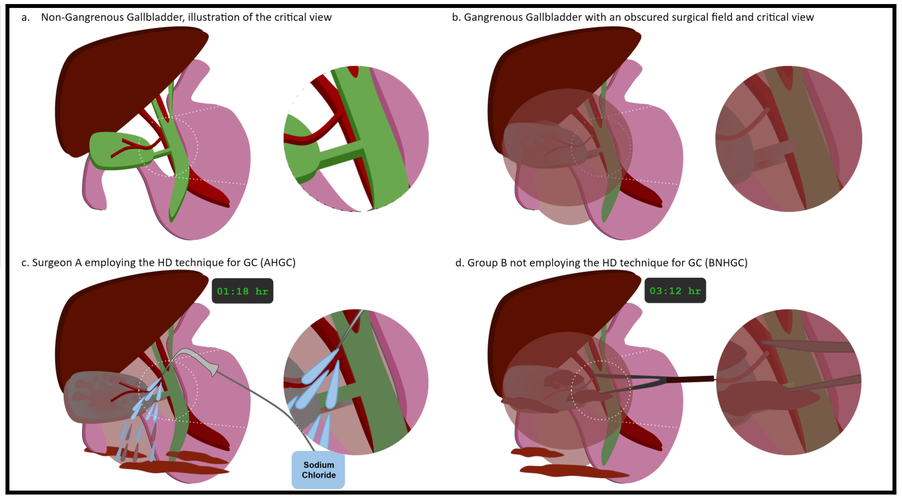


Figure 1: Image comparing HD (c) to blunt dissection (d)

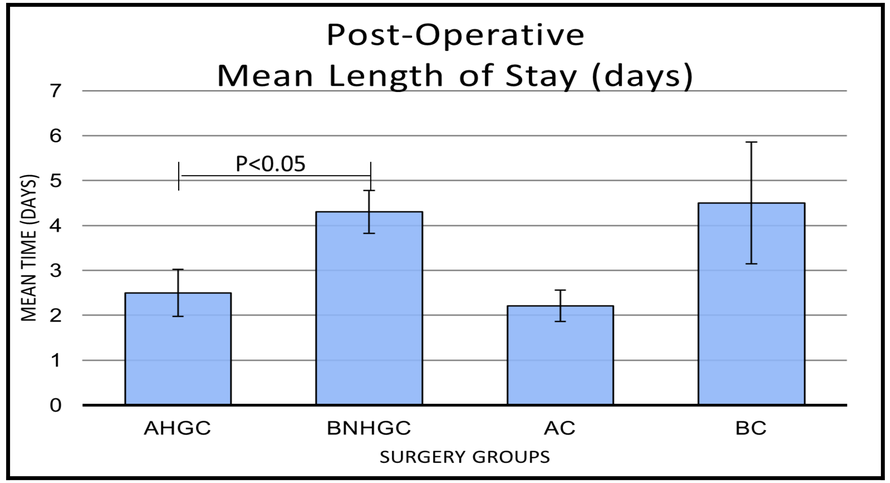


Figure 3: LOS is shorter for AHGC compared to BNHGC

Results

Post-Op LOS: Unpaired t-testing demonstrated a statistically significant decrease ($p<0.05$) in postoperative LOS for the AHGC group when compared to the BNHGC group.

Conversion to Open Procedure: Chi-square testing did not demonstrate statistically significant ($p>0.05$) increases in conversion to open surgery between the BNHGC group and the other three groups.

30-Day Readmission: Chi-square testing did not demonstrate statistically significant ($p>0.05$) increases in 30-day readmission rates between the BNHGC group and the other three groups.

Group	Post-Op LOS (mean±SE in days)	Conversion to Open Surgery	30-Day Readmission
AHGC (n=14)	2.50±0.522	0% (n=0)	7.1% (n=1)
BNHGC (n=10)	4.30±0.473	20.0% (n=2)	10.0% (n=1)
AC (n=14)	2.21±0.350	0% (n=0)	0% (n=0)
BC (n=10)	4.50±1.352	0% (n=0)	0% (n=0)

Figure 4: Decreased LOS and a zero-conversion rate seen in HD

Conclusion

HD during laparoscopic GCs may be more efficacious when compared to traditional blunt dissection due to improved visualization of the critical structures, resulting in fewer iatrogenic complications that require less time required for post-op recovery.