Exploring the Critical View of Safety in Laparoscopic Cholecystectomy: Insights from a Prospective Study with Need for Early Adoption and Propagation of Safety Culture

Lovenish Bains, Aman Agrawal, Pawan Lal, Palak Bhatnagar, Uday Kumar, Manish Siddharth

Department of Surgery, Maulana Azad Medical College, New Delhi, India

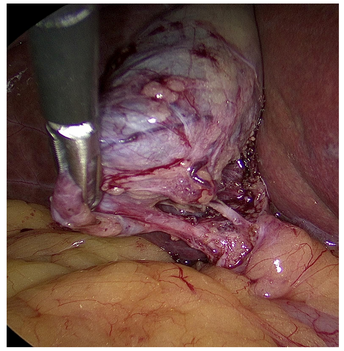
Key words: Laparoscopic Cholecystectomy, Critical view of safety (CVS), training, learning curve, Bile duct injury (BDI)

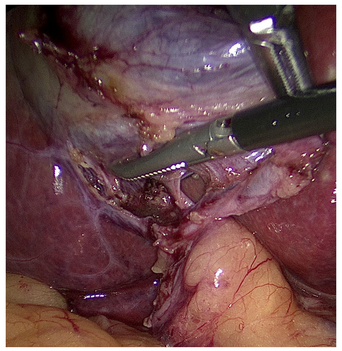
Background

- Laparoscopic cholecystectomy- **Gold standard** procedure for gall bladder disorders.
- Critical view of safety (Strasberg) to reduce the risk of bile duct injuries.[1]
- Before CVS- Complication rate 1-2.2% [2]
- After adoption of CVS, complications reduced to 0.3-0.8% [3]

Methodology

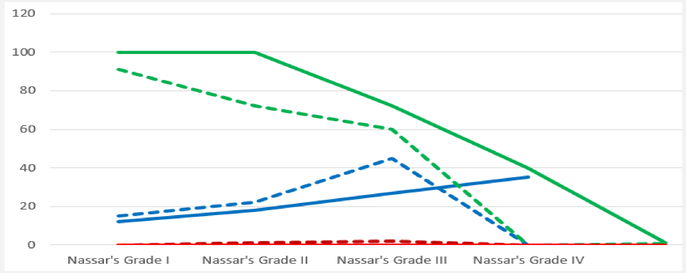
- **What:** Prospective observational study
- **Who:** Patients (18-60 yrs) undergoing laparoscopic cholecystectomy
- **Where:** Dept of Surgery, MAMC
- **By Whom:** Consultants & Registrars
- **Why:** Assess achievement of CVS, time taken & complication rates
- **When:** Over 1 year
- **How:** Videos & images reviewed by experienced surgeons (10 yrs & > 500 cases)
- Case difficulty grading by Nassar's Criteria





Results

- **225** cases- M:F (45:180), Mean age 38.5 yrs
- Nassar's grade I (n=160), II (n=33), III (n=18), IV (n=14)
- **CVS Achievement:**
  - **Consultants 92.74%** (n=124) overall
  - Grade I = 100%, II=100%, III =72%, IV =40%
  - **Registrars 83%** (n=101) overall
  - Grade I = 91%, II = 72%, III = 60%, IV = CVS not achieved
- **Time to achieve:**
  - **Consultants** Grade I- 12 min (5-18 min), II- 18 min (15-30 min), III- 27 min (25-30 min)
  - **Registrars** Grade I- 15 min (10-22 min), II- 22 min (20-28 min), III- 45 min



Complications:

Clavien Dindo Grade I=30, II=14, III = 4, IV=3, V = 0

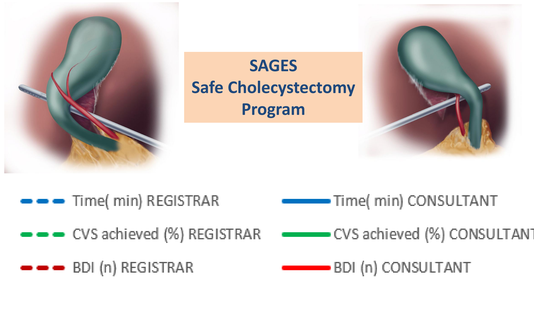
Bile Duct Injuries: Consultants (0), Registrars (n=3, 2.97%)

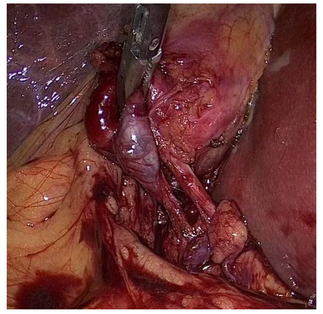
Bail-out Procedures: CVS was not defined in Grade IV in 62% (n=14)

- Subtotal cholecystectomy (n=5)
- Conversion to open (n=4)
- Retrograde approach (n=5)

Discussion

- Critical view of safety (CVS) - **Essential** for minimizing bile duct injuries
- Enhances visualization of cystic structures & significantly reduces injury rates from 0.5-0.8% to under 0.3%[4]
- Our study reveals that achieving CVS takes about **24 minutes for consultants** (**92.7% cases)** and **38 minutes for registrars (83.1% cases)** with BDI rates of 0 % and 2.97 % respectively.
- As Nassar's grade increases, Achievement of CVS decreases.
- Satisfactory CVS - 354 (23.1%) & unsatisfactory in 823 (53.7%), ***Lowest BDI in satisfactory as compared with unsatisfactory CVS (0.3% vs 1.0%).***[5]
- 1046 LC patients and ***no major BDI*** in the 998 (95.4%) cases where ***CVS was used***.[6]





Take Home Message

- **Emphasizing CVS** during residency/early career surgeon is crucial for reducing complications.
- **Regular training programs** for safe laparoscopic cholecystectomy with safe CVS curriculum and bailout procedures.
- CVS should be a **global standard practice** – to further mitigate risks & enhance the success of laparoscopic cholecystectomy.

References:

1. Strasberg SM. Rationale and use of the critical view of safety in laparoscopic cholecystectomy. J Am Coll Surg. 2010

2. Thapar VB et al. Evaluation of 30-day morbidity and mortality of laparoscopic cholecystectomy. 2023

3. Barrett M et al. Bile duct injury and morbidity following cholecystectomy: a need for improvement. Surg Endoscopy 2018

4. Manatakis et al. Critical View of Safety in Laparoscopic Cholecystectomy: A Systematic Review. World J Surg. 2023

5. Terho P et al. The critical view of safety and bile duct injuries in laparoscopic cholecystectomy: HPB (Oxford). 2021

6. Avgerinos et al. 1000 lap cholecystectomies in a single surgical unit using the "critical view of safety" technique. J Gastrointest Surg. 2009

Dr Lovenish Bains
lovenishbains@gmail.com