



# Promoting a Culture of Safety in Cholecystectomy (COSIC) over a decade at a Philippine public regional hospital after the SAGES International Proctoring Course in Laparoscopic Cholecystectomy Course

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## Abstract

**Background** The SAGES International Proctoring Course for Laparoscopic Cholecystectomy accepts applications from low to middle-income countries for SAGES faculty to train local surgeons. A regional public hospital in the 10th most populous city in the Philippines was one of the chosen sites for the 1-week course in 2010. Two SAGES surgeons and one nurse trained two local surgeons and four nurses identified by the hospital director.

**Methods** All patients seen in the out-patient clinic at the Zamboanga City Medical Center in the Philippines and scheduled for elective laparoscopic cholecystectomy from the first day of the course in August 2010 until December 2018 were entered into a prospectively collected database including demographics, pre-op diagnosis, operative findings, histopathologic diagnosis, conversion rates and 30-day complications including re-operations.

**Results** 521 patients underwent laparoscopic cholecystectomy. Majority were female (63.7%) with a mean age of 45.9 years. Most procedures were completed laparoscopically with an open conversion rate of 3.3%. Three patients underwent laparoscopic subtotal cholecystectomy. Reported complications requiring reoperation included one stump necrosis, two incisional hernias and one retained stone. One serosal injury and one surgical site infection were also reported for an overall morbidity rate of 4.6%. Pathology showed chronic calculous cholecystitis in 92.8% of specimens. No 30-day mortality was recorded.

**Conclusion** The SAGES International Proctoring Course for Laparoscopic Cholecystectomy has been shown to be a successful method for global surgery training. A focused 1-week direct proctoring model in the Philippines showed a sustained culture of safety in cholecystectomy with low 30-day morbidity, complication and conversion rates over a decade following participation in this program.

**Keywords** Biliary · Global surgery · Laparoscopic surgery

The development and growth of laparoscopy and endoscopic surgery has revolutionized the delivery of surgical care. For example, the benefits of laparoscopic cholecystectomy over open cholecystectomy established it as the standard of care for the treatment gallstone disease in the USA in 1993, only

8 years after its introduction in 1985 [1]. The advantages of laparoscopic cholecystectomy include early return of bowel function, decreased post-operative pain, and shorter hospital stay [2]. Despite its acceptance as the standard of care, its utilization in developing countries, such as the Philippines, has been slow and many cholecystectomies are still performed open [3]. Several studies have argued for the introduction of laparoscopic techniques to developing nations [4, 5]. However, detractors have sighted the lack of supportive services and equipment as hurdles. Moreover, a frequently mentioned barrier to adoption of laparoscopy is the lack of effective training in laparoscopic techniques for surgeons in developing nations [6].

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It was within this context that the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) International proctoring course for laparoscopic cholecystectomy was developed. The primary goal of this course is to help disseminate to surgeons across the globe the knowledge of safe laparoscopic technique for cholecystectomy.

Here we report the decade long experience, and clinical outcomes, of patients in the Philippines who underwent laparoscopic cholecystectomy by local Philippines surgeons trained via the 1-week SAGES International Proctoring Course for Laparoscopic Cholecystectomy in 2010. At the time of the course in the Philippines, basic laparoscopic surgery procedures were not a requirement for successful general surgery training. As such the learners in this program had never performed a laparoscopic cholecystectomy prior to this training.

## Methods

All patients seen in the out-patient clinic at the Zamboanga City Medical Center in the Philippines and scheduled for elective laparoscopic cholecystectomy from the first day of the SAGES course in August 2010 until December 2018 were entered into a prospectively collected database. Data collected included demographics, pre-operative diagnosis, operative findings, histopathologic diagnosis, conversion rates to open surgery and 30-day complications (including re-operations). Written informed consent was obtained prior to surgery. All surgeries were performed by one of two local surgeons with the assistance of four nurses who were trained by two SAGES surgeons (one junior and one senior member) and one nurse during the 1-week course in 2010.

Prior to the 1-week training program, the two local surgeons had undergone laparoscopic cholecystectomy dissection course using fresh cadavers in Taipei, Taiwan. They

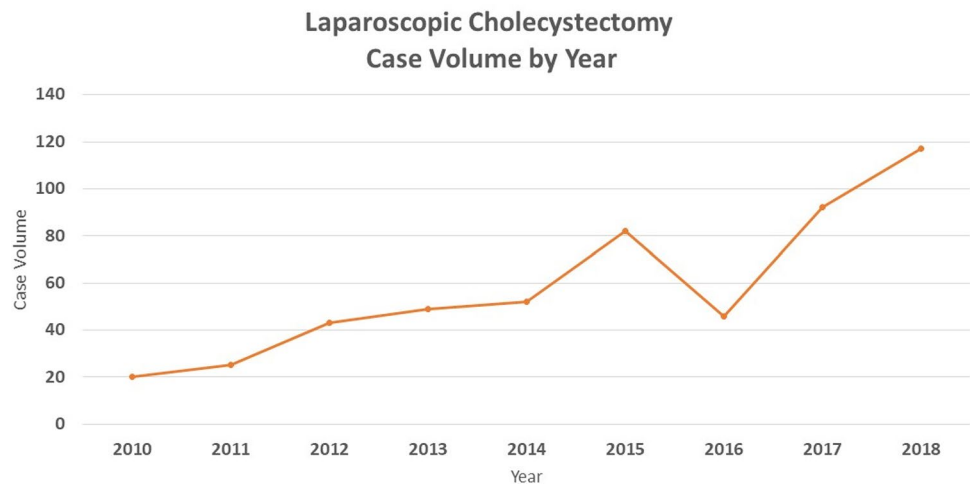
also underwent an introduction to laparoscopic surgery course put on by the Philippine Association of Laparoscopic and Endoscopic Surgeons (PALES) immediately prior to the SAGES visit. At the time of the 1-week SAGES visit, the two local surgeons had not performed a laparoscopic cholecystectomy.

The 1-week SAGES course included two days with morning didactic teaching in the classroom followed by proctor-scrubbed surgeries in the afternoon. During the didactic portion of the course, learners were taught the “critical view of safety” approach to laparoscopic cholecystectomy as espoused by Strasberg et al. [7]. This entails blunt dissection of the upper part of Calot’s space and dissecting the infundibulum off the liver bed on both its dorsal and ventral aspects until the lower one third of the gallbladder is freed from the liver bed. Clipping of structures should only ensue when two and only two structures are seen entering the gallbladder. Learners were also given instruction to convert to an open approach should they not be able to achieve the “critical view of safety.” For the following five days, the local surgeons performed laparoscopic cholecystectomies independently with the proctors in the room for observation and verbal support, but not scrubbed-in to the operations.

**Table 1** 30-Day morbidity data

	Rate (%)
Overall complication	4.6
Re-operation	0.30
Open conversion	3.2
Subtotal cholecystectomy	0.19
Post-discharge bile duct injury	0.19
Surgical site infection	0.19

**Fig. 1** Laparoscopic cholecystectomy case volume



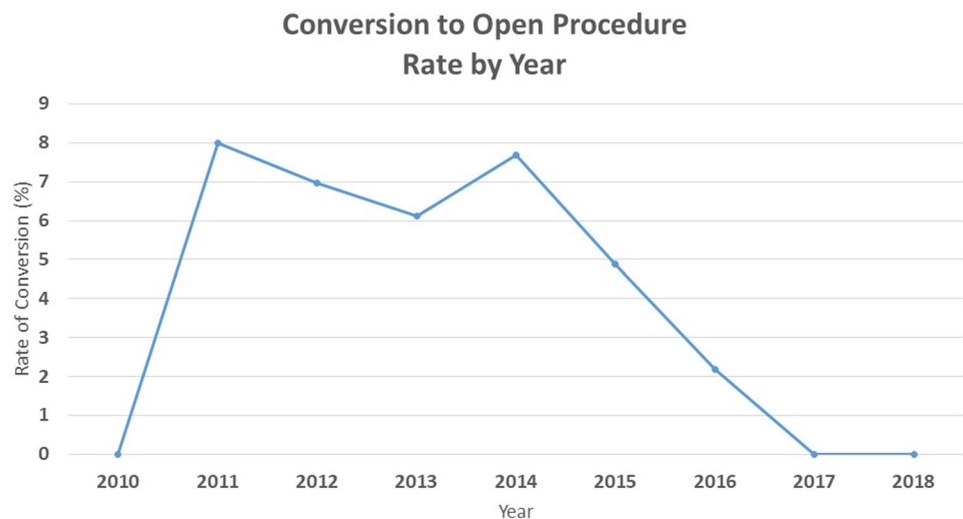
## Results

There were 521 patients who underwent laparoscopic cholecystectomy from August 2010 to December 2018. Of these, 332 (63.7%) were female and 189 (36.3%) were male with an average age of  $45.9 \pm 1.2$  years. Chronic cholecystitis was the most common indication for operation (501 cases, 92.8%), followed in frequency by acute cholecystitis (3.6%),

acute on chronic cholecystitis (92.8%), and cholesterolosis (1.0%). A sample of the data collected is presented (Table 1). Case volumes steadily increased from 2010 to 2019 (Fig. 1), and during that time there was a decrease in the rate of conversion to an open procedure (Fig. 2).

Most procedures were successfully completed laparoscopically with an overall open conversion rate of 3.3%. Two patients had open partial cholecystectomy and one patient

**Fig. 2** Cases converted to open cholecystectomy



**Table 2** Examples of laparoscopic cases performed

Patient number	Date of surgery, age, sex	Pre-op diagnosis	Post-op diagnosis	Procedure	Patient outcome
174	July 24, 2014 45/F	Chronic calculous cholecystitis	Chronic calculous cholecystitis	Laparoscopic cholecystectomy	Improved
175	July 25, 2014 45/F	Chronic calculous cholecystitis	Chronic calculous cholecystitis	Laparoscopic cholecystectomy	Improved
176	August 1, 2014 38/F	Chronic calculous cholecystitis	Chronic calculous cholecystitis	Laparoscopic cholecystectomy	Improved
177	August 11, 2014 56/F	Chronic calculous cholecystitis	Hydrops of the gallbladder with chronic calculous cholecystitis	Laparoscopic cholecystectomy converted to open cholecystectomy	Improved converted to open cholecystectomy
178	August 20, 2014 56/M	Chronic calculous cholecystitis	Chronic calculous cholecystitis	Laparoscopic cholecystectomy, intra-operative cholangiogram	Improved
179	August 22, 2014 54/F	Chronic calculous cholecystitis	Chronic calculous cholecystitis	Laparoscopic partial cholecystectomy, JP drain	Improved
180	September 1, 2014 50/M	Obstructive jaundice secondary to choledocholithiasis	Obstructive jaundice secondary to choledocholithiasis with acute on chronic calculous cholecystitis with empyema of the gallbladder	Laparoscopic cholecystectomy converted to open partial cholecystectomy with intra-operative cholangiogram; common bile duct exploration, choledocholithotomy, choledochoscopy, T-tube choledochostomy, JP drainage	Improved

had laparoscopic subtotal cholecystectomy, which occurred in 2014. Reported complications requiring reoperation included one stump necrosis, two incisional hernias and one retained gallstone (reoperation rate of 0.30%). Additional complications included one bile duct injury and one surgical site infection. Overall morbidity from all complications was 4.6% (Table 2).

## Discussion

In 2010 when this 1-week SAGES International Proctoring Course for Laparoscopic Cholecystectomy occurred, cholecystectomies were still routinely performed open in the Philippines. At the University of the Philippines Philippine General Hospital, the largest tertiary government medical center in the country in 2013, 55% of cholecystectomies were still being performed open [8]. The delay in adoption of the laparoscopic technique could be attributable to training concerns, equipment availability, or cost. There was a definite need for a proctoring or mentoring program to facilitate the adoption of laparoscopic cholecystectomy in a country like the Philippines.

The surgeons trained through this 1-week course had complication rates from laparoscopic cholecystectomy similar to those reported to be seen in the USA [9]. The incidence of bile duct injury was comparable to those seen in the USA as well (0.19% vs. 0.23%) [8]. Additionally, the steady increase in the total number of laparoscopic cholecystectomies from 19 in 2010 to 117 in 2018 indicates that the proctored surgeons increasingly developed confidence in utilizing laparoscopic cholecystectomy, and that this confidence was sustained over the years. The decrease in the rate of conversion to open surgery also correlated with increasing efficacy in their laparoscopic skills.

The experience of training surgeons naïve to laparoscopic cholecystectomy and monitoring their outcomes after a 1-week SAGES mentorship program presented a unique opportunity to see if such a program was an effective teaching model. This data reveal that the SAGES International Proctoring Course for Laparoscopic Cholecystectomy was successful in its mission of global surgery training. This focused 1-week direct proctoring model in the Philippines showed a sustained culture of safety in laparoscopic

cholecystectomy with low 30-day morbidity, complication rates, and conversion rates over a period of nine years following participation in this program. We are hopeful that similar programs can be utilized and adopted in other regions of the world to provide the best standard of care to patients globally.

## Declarations

**Disclosures** Drs. Yi, Perez, Rosen, Akalal, Hassan, and Soriano have no conflicts of interest or financial ties to disclose.

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