

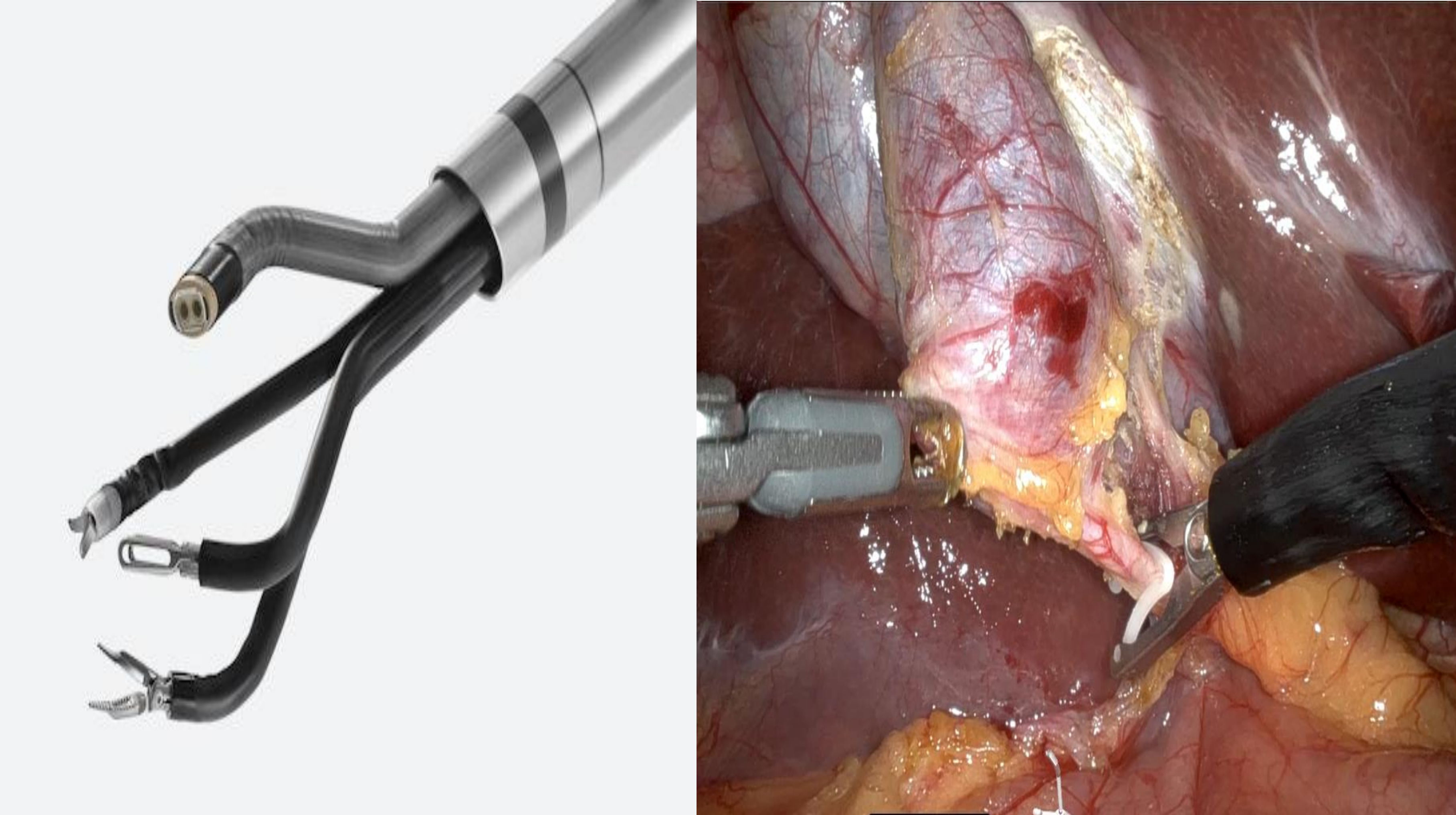
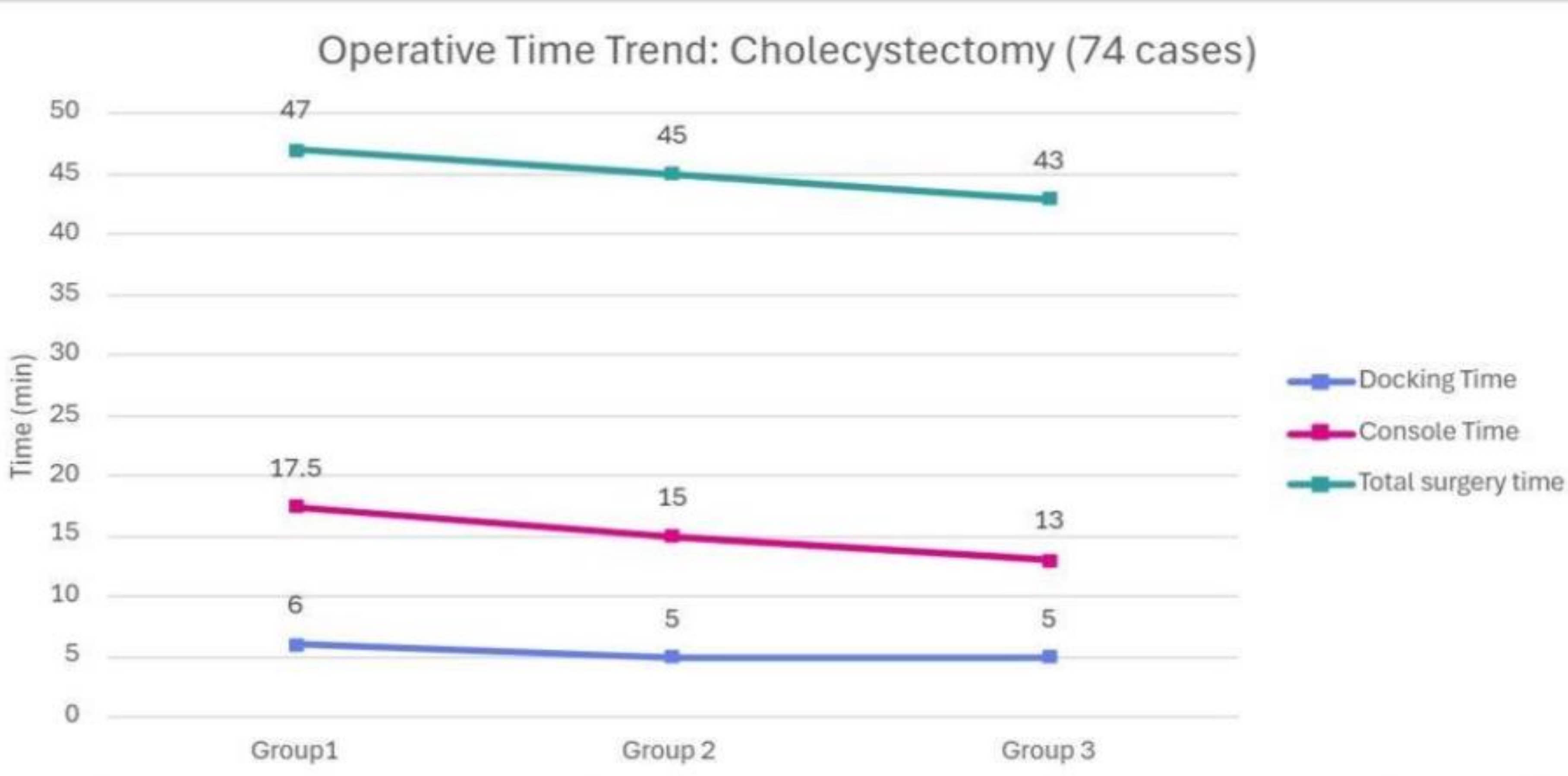
# The Emerging Role of Robotic Single Port Cholecystectomy: A Review of Early Experience Outcomes

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**Introduction:** Minimally invasive approaches have been proven safe and effective across general surgery, particularly for cholecystectomy. They have since revolutionized surgical outcomes by reducing trauma and enhancing recovery, leading to shorter LOS, less bleeding, lower pain levels, and fewer complications.

The next major advancement is the Single Port (SP) robotic platform, which allows abdominal access via a single 25mm port that accommodates four articulated instruments, including a fully-wristed endoscope and three multijointed arms, pushing the boundaries of less invasive surgery. Due to the limited data on the safety and outcomes of SP cholecystectomy, we present our early experience to evaluate its performance.

**Methods:** We retrospectively reviewed 92 SP robotic cholecystectomies performed between April 1, 2024, and August 18, 2025. 18 cases involving additional procedures were excluded. The remaining 74 cases were analyzed for incision time, port placement, docking time, console time, and closure time. To assess progress, cases were grouped chronologically into three cohorts (first 24, middle 25, last 25). Fellow participation was noted in 7 cases (9.4%) and analyzed for its impact on operative metrics.



**Results:** In 74 SP cholecystectomies (10% acute cholecystitis), 86.5% were females. The average age was 52 and average BMI 26.8.

- The mean docking time decreased from 6 minutes (first group) to 5 minutes (second and third groups).
- Console time improved from 17.5 minutes (first group) to 15 minutes (second group) and 13 minutes (last group).
- Total operative time improved by 8.51%, from 47 minutes (first group) to 43 minutes (last group).

Fellow participation was associated with shorter docking time (4 vs. 5 minutes) but longer console time (20 vs. 14.5 minutes) and total operative time (48 vs. 44 minutes). No cases resulted in complications or required conversion.

**Conclusion:** Single port robotic cholecystectomy was safe and showed progressive efficiency over the initial 74 cases. Fellow involvement slightly increased operative times but remained safe. These findings support the safety, reproducibility, and potential for broader adoption of SP cholecystectomy. However, limited experience and platform availability remains a barrier. Continued study is needed to validate outcomes and support wider use in general surgery.