Robotic Transcystic Common Bile Duct Explorations: A Case Series

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ABSTRACT

BACKGROUND

Adoption rates for robotic cholecystectomy have increased over the last several years. While laparoscopic transcytic common bile duct explorations (LCBDE) have been described and performed for over 20 years, robotic transcystic common bile duct explorations (RCBDE) are relatively new given the recent adoption of the robotic approach for cholecystectomy. The robotic platform can help overcome some of the ergonomic and technical challenges that come from LCBDE. This study describes our experience performing robotic transcystic common bile duct explorations.

METHODS

This is a retrospective review of a prospectively maintained database from a single surgeon at an academic medical center from October 2022 to August 2023. Patient demographics, pre- and post-operative laboratory and imaging studies as well as outcomes were recorded. Success was defined as complete clearance of common bile duct (CBD) stones.

RESULTS

A total of 13 patients underwent RCBDE between October 2022 and August 2023. Mean age of patients was 62.69±16.59 years. Successful clearance of the CBD was 92.31% (12/13). 1 patient required a post-operative ERCP (7.69%). Postoperative complications included 1 patient who developed a DVT (7.69%). Average operative time was 228.07±91.64 minutes. Average length of stay was 5.08±3.82 days. Techniques for CBE stone clearance included balloon dilation, lithotripsy, flushing, basket retrieval, Spyglass, and choledochoscope. 53.85% (7/13) used balloon dilation, 38.46% (5/13) cases used lithotripsy , 61.54% (8/13) used flushing, 15.38% (2/13) used basket retrieval, 15.38% (2/13) used Spyglass, and 84.62% (11/13) cases used a choledochoscope. A combination of these techniques was used in 76.92% (10/13) cases.

CONCLUSIONS

RCBDE is a safe alternative to LCBDE for removal of common bile duct stones with a success rate of 92.31%. RCBDE may provide an alternative to LCBDE due to improved visualization, use of the picture in picture function, and ability to maintain retraction on the gallbladder and cystic duct. Future studies should focus on comparing outcomes between robotic and laparoscopic CBDE and whether RCBDE improves success of CBD clearance while maintaining low complication rates.

OBJECTIVES

Our primary objective was to determine success rate of common bile duct clearance in our early experience of RCBDE.

Our secondary outcomes included postoperative complications, average operative time, average length of stay, and techniques for common bile duct stone clearance.

INTRODUCTION

Symptomatic cholelithiasis is a common pathology that leads to surgical intervention. Of the patients who undergo cholecystectomy, 5 to 15% have choledocholithiasis (1).

Laparoscopic common bile duct explorations techniques are sometimes utilized for common duct clearance when choledocholithiasis is found at the time of cholecystectomy. However, utilization of these techniques is low.

The robotic platform allows for improved visualization, ergonomics, and dexterity. These factors could increase utilization of minimally invasive common bile duct exploration techniques.

METHODS

A retrospective review was performed of a prospectively maintained database at a single institution from all patients who underwent RCBDE between October 2022 to August 2023.

Patient demographics were collected including age, sex, and race. All patients during the study period who underwent cholecystectomy were consented for intraoperative cholangiogram and possible exploration based on cholangiogram findings.

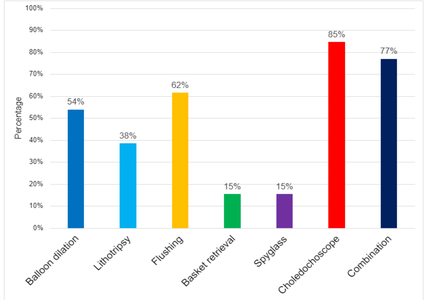
RESULTS

- Mean patient age was 62.69±16.59 years
- 7/13 (53.85%) patients were female, 6/13 (46.15%) were male
- Common bile duct stone clearance was achieved in 12/13 patients (92.31%)
- Average operative time was 228.07±91.64 minutes
- Average length of stay was 5.08±3.82 days

CONCLUSIONS

- RCBDE is a safe and effective technique for common bile duct stone clearance
- RBCDE allows for improved visualization and ergonomics that could lead to increased utilization of minimally invasive common bile duct explorations

FIGURE 1: Techniques for common bile duct stone clearance



REFERENCES

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