

# Technical Compensation for Hepatic Vein Injury during Robotic Single Site Cholecystectomy

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This video describes an event that could occur during any cholecystectomy. To the best of our knowledge, this video is the first description of the technical compensation for hepatic vein injury during robotic single-site cholecystectomy (RSSC). A 61-year-old male with a 1.6 cm gallbladder stone sought to go through with RSSC. During dissection of gallbladder from the liver bed, the hepatic vein was unexpectedly exposed and injured. Using the angulated robotic needle holder, the injured hepatic vein was repaired with 5-0 prolene monofilament suture. Although there is a lack of EndoWrist movement in RSSC, suturing was feasible. The patient was discharged on the second postoperative day without complications. Incidental hepatic vein injury could be safely managed using RSSC and prevent the need for conversion to a conventional laparoscopic or open approach.

**Keywords:** Robotic surgical procedure, Intraoperative complications, Cholecystectomy

**Supplementary video file:** This article contains supplementary material (<http://dx.doi.org/10.7602/jmis.2016.19.3.115>).

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## INTRODUCTION

Laparoscopic cholecystectomy has been a gold standard for symptomatic cholelithiasis.<sup>1</sup> With the improvement in laparoscopic techniques, single-incision laparoscopic cholecystectomy (SILC) has been introduced for a better cosmesis. However, SILC was not widely adopted because of instrument limitations, resulting in internal and external clashing of instruments and overall surgeon ergonomic discomfort.<sup>2</sup> With the advancement of technology, robotic single-site cholecystectomy (RSSC) was introduced to overcome shortcomings of SILC. Since then, feasibility and safety of RSSC has been studied extensively and the indications for RSSC are still growing. Surgeons are attracted by the superior vision of 3D,

curved cannulas with flexible robotic instruments, and intuitive ergonomics, resulting from compensation of control console, which reassigns instruments to the opposite controller. This video describes an event that could happen during any cholecystectomy. With use of the robotic system, the situation can be handled with relative ease. To our knowledge, this video is the first description of the technical compensation for hepatic vein injury during RSSC.

## METHODS

The patient was a 61-year-old male without a previous medical or operative history with BMI of 22.28 kg/m<sup>2</sup>. The patient was diagnosed with a 1.6 cm sized gallbladder stone

and sought to go through with RSSC. General surgical procedures using single site da Vinci surgical platform is described in another study.<sup>3</sup> During dissection of gallbladder from the liver bed, hepatic vein was unexpectedly exposed and injured. Gallbladder was further dissected laterally from liver bed to make space for suturing. Using the angulated robotic needle holder, injured hepatic vein was repaired with 5-0 prolene monofilament suture. Although, there is a lack of EndoWrist movement in RSSC, suturing technique was feasible.

Total operation time was 134 minutes. Since our early experience with RSSC showed mean operative time of  $132.6 \pm 25.2$  minutes, the result was comparable.<sup>3</sup> Patient was discharged on the second postoperative day without complications. In our experience, incidental hepatic vein injury could be safely managed by RSSC to avoid conversion to conventional laparoscopic or open approach. On retrospective review, preoperative computed tomography finding revealed hepatic vein coursing close to the liver bed.

## DISCUSSION

Incidental hepatic vein injury could be safely managed using RSSC to avoid conversion to conventional laparoscopic or open approach. Preoperative attention need to be paid about this potential intraoperative complication when preoperative computed tomography scan is available.

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