Assessment of the da Vinci Single Port (SP) Robotic Platform on Cholecystectomy in Adolescents

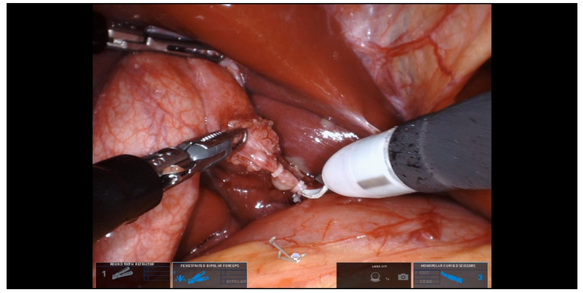
Gregory Klazura, MD; Akua Graf MS4; Thomas Sims, MD; Marko Rojnica, MD; Nathaniel Koo, MD; Thom Lobe, MD; UIC

Objective

The new da Vinci's single port (SP) robotic platform has great appeal for pediatric surgery. To assess the feasibility, efficacy and to identify potential challenges, seven adolescents underwent SP robotic-assisted cholecystectomy, and their results were evaluated.



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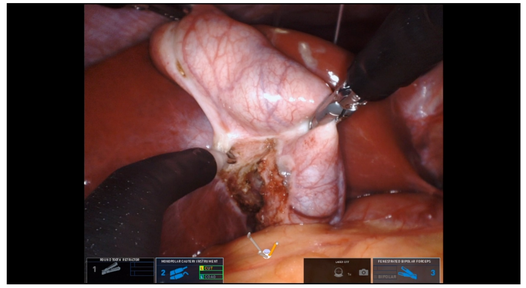


Description of the Technology

- SP is a 4th generation da Vinci surgical system.
- Through a single 2.5 cm cannula the surgeon controls three fully-wristed, elbowed instruments, and the first fully-wristed da Vinci endoscope.
- SP instruments can reach up to 24 cm deep and triangulate at the distal tip.
- Instruments can also reach anatomy anywhere within 360° of port placement.
- A vertical incision was made through the umbilicus for port access.
- The neck of the gallbladder was grasped for retraction as the duct and vessels were dissected, clipped and divided.
- Hook cautery was used to remove the gallbladder from its bed.
- Suction and a 5 mm EndoCatch were placed directly through an instrument channel.
- No additional instruments or ports were required.

Results

- Patients were ASA class I, II, and III.
- The mean age was 17 years old, mean weight was 72 kg, and 6/7 patients were female.
- There were no fatalities and no returns to the operating room.
- The mean estimated blood loss was 2 ml and the mean case duration was 126 minutes.
- 5/7 patients were treated as outpatients and none of them required narcotics on discharge.
- One reported bilateral shoulder pain one day postoperatively and was taking hydrocodone/acetaminophen at the time of 13-day follow up.
- The two patients with overnight stays were sickle cell patients, one of whom developed a superficial wound infection, which was successfully treated with oral antibiotics.





Conclusions

SP robotic platform cholecystectomy in adolescents appears to be safe and effective, even in our Sickle Cell population. The wristed movement of the robotic instruments improves the surgeon's dexterity, and the single incision is hidden in the contour of the umbilicus, providing good cosmesis. The cost, procedure duration, and long-term complications must all be further considered, but this series sets an exciting precedent for the SP robotic platform and provides a glimpse of what is ultimately possible in pediatric robotic surgery.

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