Continuing didactic and practical laparoscopic training courses in Mongolia: the introduction of a low-cost laparoscope and virtual reality broadcast of laparoscopic cholecystectomy

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BACKGROUND

Between 2005 and 2013, use of laparoscopic cholecystectomy increased from 2% to 58% in Mongolia. Expensive and poorly functioning equipment continue to present challenges. The University of Utah’s Centers for Global Surgery and Medical Innovation developed a low-cost laparoscope hoping to provide high-quality low-cost alternatives.

METHODS

A FDA approved combination camera, scope and light source that costs $85 to manufacture was developed at the University of Utah. Fourteen units were used to perform 21 laparoscopic cholecystectomies at a rural regional hospital in Mongolia in September 2016. Demographic patient data, diagnosis and post-operative course were collected. Mongolian surgeons completed a survey after each operation focused on the surgeon’s experience with the low-cost laparoscope. One case was broadcasted live in virtual reality with simultaneous questions and answers online.

RESULTS

Twenty-one laparoscopic cholecystectomies were performed by students, proctored by instructors from MNUMS and the University of Utah. 11 surgeon students hailed from 4 Aimag (states). 14/21 patients (66.7%) were female. Thirteen patients lived within one kilometer of the hospital, eight patients traveled as far as 200 km (128 km, mean). Mean operative time: 71 minutes. Two patients had difficult anatomy; two had thickened gallbladder walls. There were 3 complications: one intraoperative bleeding; two postoperative surgical site infections.

CONCLUSION

The introduction of a low-cost laparoscope shows immense potential to facilitate expansion of laparoscopic surgery in Mongolia and other resource-limited countries. Virtual reality live broadcasting of surgery may aid in remote-area education.