Use of On-Demand Telepresence for Intraoperative Consultation and Education in a Rural Integrated Delivery Network

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Objective

Telepresence tools enable two-way audio and visual communication for secure, real-time collaboration during surgical procedures. Through Intuitive Hub for the da Vinci robotic surgical system, Telepresence has historically been available only through events scheduled in advance.

A new, On-Demand Telepresence functionality allows for ad-hoc events to facilitate virtual collaboration whenever it is desired by the surgical team. The need for and value of this feature are not known. We conducted a pilot study of On-Demand Telepresence in a rural integrated delivery network where prompt in-person consultation is often not feasible.

Description of Technology

- Telepresence offers audio and video streaming of the console and operating room environments by remote users from their own devices.
- Telepresence permits interactions among observers and operating surgeons throughout a case, including the use of telestration (i.e., illustration in the console view).
- On-Demand Telepresence allows operating surgeons to request a secure telepresence engagement with a trusted set of surgeons in their practice or network at any time.



Methods of Use

On-Demand Telepresence was implemented at four geographically separated Ballad Heath System hospitals in the tri-city region of northeastern Tennessee:

- Bristol Regional Medical Center (BRMC)
- Franklin Woods Community Hospital (FWCH)
- Indian Path Medical Center (IPMC)
- Holston Valley Medical Center (HVMC)

Twenty-nine general surgeons had access to four experienced surgeons for ad-hoc consultation.

Pilot study with surveys and interviews of users and analyses of usage data is currently underway; the protocol was approved by the WCG Institutional Review Board.

Preliminary Results

On-Demand Telepresence was launched on August 28, 2023; in the first two months, eight on-Demand Telepresence sessions were utilized by surgeons operating at three hospitals (1 BRMC, I IPMC, 6 HVMC). Surgeons collaborated with two experienced surgeons (JR and SH).

The average session duration was 47 minutes with a range of 8 minutes to 2 hours, 55 minutes.

Preliminary Results

On-Demand Telepresence allowed early and mid-career surgeons to seek guidance from remotely located colleagues in the middle of busy practice days and after-hours. Engagement ranged from offering reassurance in a challenging cholecystectomy and not-frequently performed adrenalectomy to providing detailed intraoperative guidance for identifying a hard-to-find lesion causing a bowel obstruction.

Four separate sessions, ranging from ~12 to 51 minutes, were conducted to render assistance during different parts of a complex colon resection, with Telepresence time totaling one hour and 52 minutes during a six-hour case. For many cases, the surgeons attributed the availability of On-Demand Telepresence to avoidance of unfavorable outcomes such as conversion to an open procedure or reoperation. At this site, Telepresence will be leveraged in a peer-to-peer coaching program beginning in January.

Conclusions/Future Directions

- Informal intraoperative consultations are common in surgical practice when surgeons are co-located.
- On-Demand Telepresence enabled both brief and extended sessions of virtual collaboration during surgical procedures in situations where immediate, in-person engagement was not possible.
- The use of On-Demand Telepresence may have contributed to better patient experiences and outcomes.