Paper #5: Real Time Robotic Assisted Telemedicine Surgical Collaboration between Ukraine and the US

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Introduction: Surgical collaboration is essential to learning and continual improvement. Traditionally surgeons either view video recordings of a surgical procedure or visit a surgical team to observe a live surgical procedure. A recorded video is efficient but not interactive. A visitation is interactive but is expensive, time consuming and may not allow the visiting surgeon a clear view of the operative field. We report on our initial experience of using a robotic high definition camera system to provide real time remote surgical collaboration among experienced surgeons.

Methods: A long standing relationship with regular visits had been established between the Kharkiv Ukraine (Sytenko Institute of Spine and Joint Pathology) based surgeons and the Children’s Mercy Hospital spine team, all SRS members. With the conflict in Eastern Ukraine disrupting the ability to travel, an alternative form of collaboration was needed. CMH had an established telemedicine program with remote robotic camera capability, using the RP-Vantage system (InTouch Health, Santa Barbara CA intouchhealth.com). The system has two high definition cameras, one of which is on a 9 foot articulated boom. The cameras can be controlled remotely real time through online software computer access, allowing the viewing participant to control both cameras and sound system.

Results: Four initial surgical cases, summer of 2014 were remotely monitored. With the 8 hour time difference, a case starting at 8:30 am CST in Kansas City could be viewed in Kharkiv at 4:30 pm. Cases included an 18 year old male with prune belle syndrome and scoliosis, a 5 year old boy with surgical resection of a C4 aneurysmal bone cyst, a 6 year old boy with a 90 deg thoracic scoliosis undergoing initial insertion of growing rods and 12 year old girl atypical 87 deg thoracic scoliosis. The Ukrainian surgeons controlled the two cameras in real time, giving visualization and audio of both the operative field and room. The observing surgeons had efficient use of their time by being able to do other activities during routine parts of the case. There were not the typical barriers of poor bystander visualization, concern about infection by additional personnel near the operative field or travel and time costs.

Conclusion: Remote robotic surgery was cost effective, efficient, interactive and safe for surgeons to interact and collaborate on surgical cases in real time.

Significance: This system has great potential for long distance real time interaction for collaborating surgeons. It likely also should be effective for mentoring and proctoring spine surgery remotely from any long distance.