

context during the study. However, even with this limited word-bank format, the subjects did not improve in their phrase recognition as the study progressed. Despite these limitations, the wireless system still performed better than the robotic system. The next step for further improving the findings of this project would be to execute a clinical observation study examining the incidence and impact of miscommunication in a robotic OR.

CONCLUSION

Utilizing an additional wireless audio communication system can significantly improve communication between the primary console surgeon and the bedside assistant, anesthesiologist, and circulating nurse during robotic surgery. Reducing intraoperative miscommunication may reduce operative delays, resource wastes, and patient complications. Improved communication may also enhance the synergy of an OR team.

A scale from 1 to 10 comparing the clarity and effectiveness of the robotic speakers (RS) and the wireless system (WS). The ratings of the wireless system were higher than those of the robotic speakers.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.urology.2018.07.059>.

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EDITORIAL COMMENT



The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.

—Bill Gates

The operating console can be a lonely place. Forehead firmly affixed ... shoes off ... Lil' Wayne playing on the Bluetooth speaker, the senior surgeon in the room may have little concept of what is going on in the OR. Who is circulating? Which nurse anesthesiologist gave lunch? What is the urine output ... what is the patient's blood pressure and why are pressors running? Without provocation, long stretches of the case can go by without surgeon engagement. Likewise, the isolating nature of robotic surgery can lull our circulating nurses, anesthesia providers, and easily distracted residents into stretches of boredom disrupted only through handheld technology. Total command of the operating room environment was once the mark of an experienced and talented surgeon ... to know who was in the OR, what the counts were, what fluids were running at what rate ... total command. Perhaps too much emphasis has been placed on involving the team in the presurgical timeout and too little emphasis has been placed on involving the team in the actual operation. I have heard very talented robotic surgeons state that they prefer to be left alone while operating. Still others operate on a console removed entirely from the OR proper. So while technology has transformed a partial nephrectomy into an

observation case, it has, as Bill Gates foretold, magnified the inefficiencies in our communication.

In this very interesting study that quintessentially focused on team member engagement (referred to as "synergy" by the authors), the investigators examined the impact of a wireless, hands-free audio system on verbal communication within a simulated OR environment. Participants were placed in their traditional OR locations. Prerecorded sounds were taken from a live procedure, combined with music and used as background noise. Surgical phrases were spoken by a Da Vinci Si console surgeon and expressed via the external Da Vinci Si speakers or through wireless headsets worn by the assistant robotic console surgeon, bedside assistant, circulating nurse, and anesthesiologist. The authors found that the wireless, hands-free system increased the accuracy of communication when compared with the conventional external Da Vinci Si speakers. They concluded that a wireless audio communication system may significantly improve communication among the surgical team and by doing so may avoid inefficiencies and improve patient safety.

Ultimately, I tend to agree with the authors that the communication clarity of the built-in Da Vinci speakers is subpar. Somehow I do not envision me wearing a wireless headset either . . . too likely to be thrown across the room "Steve Spurrier-style" and beset by its own peculiarities and limitations (as outlined in the manuscript). But we applaud the authors for recognizing that we are perhaps becoming less engaged with our OR staff, that we are all increasingly guilty of distraction and poor communication, and that we need to take our heads out of the console from time to time and turn down the Lil' Wayne.

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AUTHOR REPLY



The single biggest problem in communication is the illusion that it has taken place.

–George Bernard Shaw

The 27,000 pounds of thrust sucked the blood from my brain causing my peripheral vision to fade. The F-16 banked in a 6 G turn as we came back around to the target for the fifth and final run. As an Air Force surgeon being rewarded for service well

done, I had listened carefully to the communication during the premission briefing, . . . or at least I THOUGHT I had. I vividly remembered the pilot telling me, "If we have a bird strike or I pass out, just eject." We had been dropping ordinance during a training mission. On the final pass, the plane suddenly pitched violently toward the earth. A loud alarm announced our descent below the safe ceiling and suddenly a horrible sound came from behind my seat suggesting that the plane was breaking apart. In that fraction of a second, I considered ejecting to safety before we hit the ground. Fortunately, the pilot quickly pulled back on the stick and nosed us skyward. As I watched the target and ground disappeared behind us, I became acutely aware of how important communication really was. In my excitement to fly in a F-16, I had not appreciated that the final run was a low-level strafing using the 20-mm Gatling gun. As the sweat dried on my forehead, I understood that in war, the training for war, or in surgery . . . how NOT getting the complete communication could have potential dire consequences.

In the Air Force we called it "situational awareness". Our training officer said, "If you don't have it you get dead." At the time, it sounded melodramatic to a young physician, but the concept is important. Robotic surgery has made amazing advances, but these advances have come at the price of situational awareness. The surgeon can no longer use his ears, smell, and sense of feel to optimize patient outcomes. The scrub nurse cannot respond to the furrowed brow of the surgeon, anticipating his every wish. The remote location of the surgeon from the patient increases the importance of accurate communication, but also makes it more difficult to achieve.

We wholeheartedly agree that it is important to "pull our heads out" of the console every so often. We also agree that at times it might not hurt to turn down the music, although we might prefer vintage Eagles over Lil' Wayne. Also if the urge to enact a Steve Spurrier-style moment arises, one can always keep a backup headset handy. Madonna, Lady Gaga, the secret service, NFL coaches, Seal Team 6, airline pilots, and all sorts of important and successful people have experienced the benefits of enhanced communication between team members using wireless headsets. Why should not we, as surgeons, also have the best possible communication to enhance the outcomes for our patients.

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