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How 3D Visualization and Wristed Instrumentation Deliver Clinical and Economic Benefits in Lieu Of Robotics

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When the parent facility approached Cadillac Hospital to purchase its old surgical robot, Cadillac Hospital was faced with a difficult decision. Either it could purchase the robot with the potential of increasing O.R. efficiency and consume the financial risks associated with training and servicing the robot in a smaller community hospital or, it could find a cost-effective alternative that closely aligned with the cost sensitivities of the community facility.

Dr. Kent Bowden became a trailblazer for the latter option. Being one of the first to trial FlexDex wristed instrumentation with Olympus 3D, Dr. Bowden has proven that the coupled technologies have the opportunity to change laparoscopy, just as laparoscopy changed surgery.

Here is his story:

ACQUIRING THE TECHNOLOGY

Cadillac Hospital strives to provide its surgeons with technology that optimizes quality of care on a small facility budget. So when I was asked to attend numerous conference sessions and work with a consultant to determine the best surgical technology route for our facility, I struggled to see how robotic benefits could outweigh the potential risks of financial adversity. I began researching alternative options that would provide similar benefits to robotic surgery, and I was introduced to FlexDex. I was excited to evaluate the technology as I could already see the benefit of similar hand motion and control as compared to the robot, but at a price that fit our budgetary needs.

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Outside of the surgical field, I was impressed with the intuitive nature of FlexDex. When I moved my wrist to the right, the grasper turned to the right. When I moved my wrist down, the grasper moved down. **All the motion of my hand translated intuitively to the instrument tip, no other laparoscopic tool accomplishes this.** It was a sense of control and maneuverability I had only experienced in open surgery, and it replicated the motion of a robotic platform. It seemed we would need to simply add FlexDex to my laparoscopic cases and we would have the solution we were seeking. However, once I started using FlexDex in a laparoscopic procedure, it allowed me to intuitively drive the needle at most any angle, but it was still challenging to discern the articulation in a flat environment. I was missing one crucial element offered in a robotic console: 3D visualization.

My FlexDex representative suggested Olympus ENDOEYE FLEX 3D to restore depth perception on the imaging side. With the articulating tip, chip-on-tip technology, and optics that were light years ahead of our previous system, I knew we had found our missing piece. The magic of the technology occurs when Olympus 3D and FlexDex are used jointly. FlexDex allows me to operate with my fingertips: I can reach, twist, turn, flex, extend, and have infinite rotation for suturing. Olympus 3D allows me to do this and know where I am in the body cavity. Without 3D, it is like operating with one eye closed, there is no depth perception. Once I brought in 3D, my operative efficiency improved up to 30%. When I first started with 3D I felt the major aid was in technically challenging cases, but I appreciate the clarity so much now, I use it in any laparoscopic case I can.

MAXIMIZING QUALITY OF CARE

While cost played a role in the decision not to pursue robotic alternatives, Cadillac Hospital's primary focus is on finding solutions that improve the quality of care we are able to provide to our patients. There is a direct correlation between procedure time and patient outcomes: the longer a patient is under anesthesia, the higher the risk for complications. It is my responsibility to minimize the risk to patients while under my care - traditional robotics would not have allowed me to meet this responsibility.

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With robotics, even with an efficient, well designed program, there will still be increased OR time (~20 minutes) tied to setup, docking, undocking and turnover time when compared to laparoscopy. During this time, patients are often paralyzed and breathing on a ventilator, their temperatures aren't modulated, and they're in heroic positions that expose them to an environment that limits quality of care. These are all consequences that I've been able to minimize with the assistance of Olympus 3D and FlexDex wristed instrumentation - my skills and efficiencies are improving each time I'm in the O.R. to produce leaner procedures.

MINIMIZING FACILITY COSTS

A crucial element in minimizing costs is usability across multiple specialties. In small facilities such as ours, the robot sits dormant for a majority of the time, yet still costs money from depreciation and servicing. When I don't have the Olympus ENDOEYE FLEX 3D in my hand, another thoracic, general, GYN, or URO surgeon is using it in their procedures. I guarantee it is much harder to see a return on a $2 million expenditure for a technology that sits dormant in the corner of the O.R., than it is to see a return on a fully utilized technological combination at roughly a 1/10 of the cost, especially when it can replace or upgrade an optics system that every OR already has!

When we were first approached by the robotics sales representative, we had an O.R. budget of $32 million that spanned 5 specialties and 27 surgeons. They proposed selling us a robot for the price of 1/16 of our annual budget. This price was before considering the additional required costs of sending surgeons for trainings, monthly servicing fees, and the recurring cost of disposable robotic arms. While Cadillac Hospital didn't ultimately purchase the robot, numerous hospitals of similar sizes have bought into the idea that robotics will increase their O.R. efficiency, thus providing a new sense of financial stability for the facility.

The issue is that small facilities do not have the volume for complex robotic cases like component separation hernia repairs or major esophageal repairs where robotic surgery is appropriate. This causes smaller facilities to use the robot just because they purchased it, which leads them to do cases where the cost of the procedure is greater than the collections. On top of this, smaller facilities run the risk of losing money through longer procedural times as surgeons and facilities are paid on a per-procedure basis. For example, if I'm able to complete a gall bladder procedure in 45 minutes with Olympus 3D and FlexDex compared to an hour and a half on the robot (including setup time), both my performance and hospital income are substantially higher than with a robotic approach. **Ideally, surgeons and facilities want to create highly reproducible, efficient, and effective cases - Olympus 3D and FlexDex have enabled us to do this in my facility.**

To learn more Olympus 3D visualization, please visit **www.medical.olympusamerica.com/3D**

To learn more about FlexDex wristed instrumentation, please visit **www.FlexDex.com**

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