

The da Vinci System

Elizabeth Ameno, Biomedical Engineering, University of Rhode Island

One of the newest, state-of-the-art surgical systems to hit the market at the price of \$1.3 million is known as the da Vinci system. (1) The da Vinci system is comprised of a console that is positioned a few feet away from the operating table, four robotic arms that can rotate almost 360°, various instruments, and a video camera and monitor. The da Vinci system is



Various instruments for the da Vinci system. (1)

used to make typically major and invasive surgeries with many risks, like a prostatectomy or heart valve surgery, minimally invasive with fewer risks. (2) After the patient receives anesthesia, the surgeon makes four or five small incisions that are about one inch each in the area that the surgery is to be performed. The surgeon then inserts the camera and three instruments into the incisions and sits down at the surgical console to conduct the main part of the surgery. He stares through what appear to be binoculars and moves the controls on the panel to conduct the arms of the machine to make the necessary movements needed to properly carry out the surgical procedure. When the surgery is completed, the surgeon guides the instruments out of the body and uses them to stitch the incisions closed. (2) Performing surgery with the da Vinci system is very beneficial to the patient. Usually with major surgeries, patients experience a lot of pain and blood loss, and must recover for many weeks before returning to their everyday activities. With the use of the da Vinci system, on the other hand, patients experience minimal pain, blood loss, and scarring, have a lower risk of infection,

and a much faster recovery, allowing them to get back to their daily lives in a shorter amount of time. (3) Also, the da Vinci system is equipped to allow two surgeons to work at different consoles on opposite sides of the room and operate on the same patient. This allows there to be eight robotic arms with eight different instruments performing a surgery. If there were four surgeons each with two arms operating on a patient at



Surgeons operating using the da Vinci system. (4)

the same time in the same area, the operating room would be very crowded, but with the da Vinci system this type of surgery is executed with ease. (4)

References:

- (1) Research | University of Kentucky. June 6, 2005. Alicia Gregory. September 27, 2009 <<http://www.rgs.uky.edu/odyssey/spring05/surgery.html>>.
- (2) Welcome to Doylestown Hospital. September 20, 2009 <<http://www.dh.org/body.cfm?id=656&fr=true>>.
- (3) University of Maryland Medical Center. June 8, 2009. Bill Seiler, Ellen Beth Levitt. September 20, 2009 <http://www.umm.edu/news/releases/surgical_robot.htm>.
- (4) da Vinci Surgery - Minimally Invasive Robotic Surgery with the da Vinci Surgical System. September 20, 2009 <<http://www.davincisurgery.com/davincisurgery/frequently-asked-questions.html>>.