

Robotically assisted minimally invasive bladder reconstructive surgery on children performed

For the first time, a surgical robot has been used to perform minimally invasive reconstructive surgery on five children whose bladder was dysfunctional because they were born with spina bifida [incomplete formation of the spine or spinal cord].

Researchers who presented a study at the 2009 Clinical Congress of the American College of Surgeons concluded that robotic surgery made it possible for the children to avoid the pain associated with a conventional operation. "Postoperative pain can be an issue with open surgery in these patients because surgeons cut the abdominal muscles and the surgery is extensive. But physicians can't give much morphine to control the pain because morphine dilates the intestines and recovery is slow. Another way to take care of postoperative pain is to give epidural analgesia, where you put a catheter into the spine and then administer the pain medication. But patients with spina bifida have a spinal column problem, so epidural drugs cannot be administered," explained Mohan S. Gundeti, MBBS, MCh, FRCS (Urol), FEAPU, assistant professor of surgery and paediatrics and chief and director of paediatric urology at the University of Chicago Medical Centre Comer Children's Hospital.

The patients who underwent the robotic surgery required only 24 to 36 hours of post-operative oral analgesic treatment. The patients also recovered quickly. The children were started on a liquid diet less than eight hours after the operation and began eating regular food within a day.

Similar to open surgery

Many aspects of the robotically assisted surgery were similar to those done during an open procedure. The surgeons increased the size of the bladder by adding a section of intestine. They created a new connection between the bladder and the skin by using the appendix, which was detached from the caecum with its blood supply intact, turning it into a tube and attaching one end to the bladder and the other to the lower right side of the abdomen.

However, the robot allowed the surgeons to decrease the size of the surgical incision. Instead of the standard eight to ten-inch long muscle-cutting, abdominal incision, the surgeons made four to five one-half inch incisions through which they inserted tiny cameras and robotic surgical instruments. The surgical robot provided a clear three-dimensional view of the surgical field, and it helped the surgeons make the small and precise movements needed to guide the manipulation of the instruments in hard-to-reach areas.

Surgical robots increasingly have been used in children to correct congenital abnormalities or to remove dysfunctional or cancerous tissue. A robot was not used to reconstruct the bladder, however, until early in 2008 when Dr. Gundeti and his

associates at the University of Chicago performed the first procedure of this kind on a 10-year-old girl who had neurogenic bladder [a condition caused by inability of the brain to transmit signals along a damaged spinal cord that results in incontinence, recurrent infections, and ultimately kidney damage].

Since that time, the surgeons have performed robotically assisted minimally invasive bladder reconstructive surgery on six other children. The group is reporting on the results of the surgery in the first five of these children at the Clinical Congress.

Dr. Gundeti and his associates hope their experience with these children will lead other institutions to begin performing the procedure. "There are plenty of surgical robots in the United States. There are at least 400 or 500 robots, and maybe 60% are in academic centres and 40% are in private settings. Most of the surgeons who use them are urologists who operate on adults. The paediatric urologist today is comfortable doing robotically assisted procedures on the kidney and urethra. Hopefully, over the years after they watch someone do it or attend workshops or have hands-on training, they will be comfortable using the robot on the bladder and in reconstruction," he said.

Source: University of Chicago Medical Centre Comer Children's Hospital

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