Physician News

Service Line Spotlight

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Robotic Surgery at JMH: The Revolution Continues

According to the many surgeons who use the four surgical robots installed at John Muir Health's medical centers, the growth curve for the uses of this technology continues to advance a revolution in patient care.

According to Brenda Carlson, executive director, Oncology and Specialty Services, "We now offer state-ofthe- art robotically-assisted surgery to a very wide range of patients, in multiple specialties and general surgery. As our capabilities develop, and more physicians are trained in these techniques, we are fulfilling our vision to develop a comprehensive clinical program. John Muir Health was first in the East Bay to launch a robotic surgery program 15 years ago. We are proud that we have continued to stay at the very forefront of care since then.

These incredible advancements are a reflection of the dedicated, talented surgeons and phenomenal OR teams that are directly responsible for the success of this cross-campus program."

Hearing from the Surgeons

UROLOGY

Urologist Stephen Taylor, MD, was the first surgeon to use robotic surgery at John Muir Health – which was one of the first six sites nationally to own a system.

Stephen Taylor, MD, Urologist

Since those early days, robotic surgery is now used by almost every surgical subspecialty. The robot itself is much more versatile now; it can swing around to any area of the body. It used to feel like operating with chopsticks. Now, it can be more dexterous than our own hands, and ten times more precise.

We have improvements such as vessel sealers, stapling devices, all sorts of new instruments that allow us to do more -- even vascular surgery. Every year, more instrumentation is developed. The robotic hands become more miniaturized, cameras develop higher resolution. Now, we just push a button to change the telescope's angle. New robots are being developed with more flexible, steerable hands.

Patients go home in a much shorter time, with less pain and less scarring. Some patients are still astonished that we can do this through tiny incisions -- and they go home the next day. Transfusions are a thing of the past with robotic surgery. Major narcotics were given for pain control, now patients are mostly pain-free, and some don't even take a pain pill.

Today, if a condition is amenable to robotic surgery, it should be our first choice.

John Muir Health's support for this technology has always been very good. We get the latest and greatest, and get personnel trained. That's why the program here is so successful – we embrace the technology and go where it leads.

Richard Long, MD: Urologist

Robotic surgery has dramatically changed treatment for my patients. Many of them have cancer, and I am able to do much more complex surgeries robotically. It has made a huge difference in recovery time, and reduced complication rates. Patients are surprised at how well they feel after surgery and how soon they are able to get back to daily activities. In the case of bladder cancer patients, in which the bladder has to be removed, formerly a very morbid procedure, recovery time has been cut in half and patients look like they haven't been through a surgery.

I think the main takeaway is that almost every surgery I used to do in an open procedure I now do robotically – including cancer surgery, reconstruction, and complex urinary tract stones.

When you look at these types of robotic procedures, to assess quality, you look at the volumes of a surgeon, and of the hospital. Surprisingly, it is the volume of the institution that means the most. It's not just the surgeon, but the staff. Our team is outstanding, and John Muir Health is a high-volume center, giving the best access to quality care.

Not all physicians know the value of robotic surgery, and if you're not a surgeon or an OR nurse, it can seem like a black box. We are trying to get the word out and educate physicians on their patients' behalf.

The majority of surgical residents are now being trained on the robot, and we are seeing a dramatic increase in its use for thoracic and colorectal surgery. Over time, it will become the norm. Open surgery will be more of a novelty at that time.

Brian Hopkins, MD: Urologist

Besides urology cases, Dr. Hopkins collaborates on gynecology cases using the robot.

We do a lot of pelvic prolapse cases – robotic sacrocolpopexy – supporting or correcting a severe vaginal, bladder, rectal, pelvic or uterine prolapse. The robotic approach is now the most definitive, goldstandard treatment option. You can do it with an overnight stay, and the patient goes home the next day. It is one of our busiest programs, and is often combined with a hysterectomy with another surgeon. The collaboration works very well between gynecology and urology. It's a way to correct it definitively, with an almost zero failure rate and really good outcomes.

Volume is growing, as the problem of prolapse and incontinence after childbearing is prevalent, and can affect quality of life and even bladder and kidney function. Basically, we are providing a definitive system of repair with a very quick recovery, a short hospital stay, and very few side effects or risks. It's great to see how life-changing it can be for women.It's exciting

The robotic system employs a 3D camera, which yields high-definition depth perception of the surgical field at 10x power magnification, along with extremely precise surgical instruments. State-of-the-art controls can allow better dexterity than the human hand alone.

to see the evolution of the robotic platform – the functionality, what it can do now, vs. in 2002 when it was first FDA-approved. The constant evolution makes it fun to do this work.

COLORECTAL ROBOTIC SURGERY

Samuel Oommen, MD, Colorectal Program Director

The main application for robotics in colorectal surgery is in the performance of Total Mesorectal Excision (TME) in the management of rectal cancer. The three-dimensional magnified view with EndoWrist motion aided by a stable platform allows precise identification of the autonomic nerves and other vital structures in the narrow confines of the pelvis.

TME for rectal cancer is the key in reducing local recurrence. This procedure can be technically challenging, particularly in obesity and in a narrow male pelvis. The robotic technique allows removal of the operative specimen with an intact mesorectal envelope which leads to reduced recurrence and improved survival rates. The sexual and urinary dysfunction can be avoided by the preservation of pelvic autonomic nerve plexus.

Having a robotic surgical option along with our considerable experience in laparoscopic and Transanal Endoscopic Microsurgery (TEM) allows us to offer these minimally-invasive surgical techniques to our patients with both benign and malignant colorectal diseases to provide superior quality of life and oncological outcomes.

When you add the various components of the Enhanced Recovery after Surgery (ERAS) protocol, it improves the patient experience. Pre-habilitation, or getting patients optimized to undergo surgery, with nutrition, hydration, and attention to co-morbidities, is a component of the ERAS protocol as well as managing early feeding, early ambulation and opiate sparing multimodal analgesia post-surgery.

Since 2007, when robotically–assisted colorectal surgery was first offered at John Muir Health, we have a vast experience of procedures. With a team of operating room staff dedicated to these procedures, John Muir Health is a national leader in robotic colorectal surgery.

The most exciting aspect of using robotic surgery now is the recently added table motion technology. This allows us to change the position of the table with the robot still docked in. In colorectal surgery, we perform multiquadrant surgery, and use the force of gravity to help us while working in various quadrants. In other words, we have to turn the table to the right, left, with head up, or head down, and these movements could only be done in the past if you undocked the robot from the instruments. This is time-consuming and disruptive to the continuity of the process. Now, we can perform movements of the table with the robot still docked. This has improved the safety of the procedures, and decreased operating time and labor. The technology has enabled us to perform more complex colorectal surgery, like total colectomy, left or right colectomy, and transverse colectomy in addition to TME surgery.

With experienced surgeons, an outstanding team, an operating room equipped with state-of-the-art robots and a supportive administration, John Muir Health is poised to provide an exceptional patient experience with superior outcomes in robotic colorectal surgery.

Negar Salehomoum, MD: Colorectal Surgeon

I noticed in my training that any surgery that could be done laparoscopically was performed that way. But starting with robotics here at John Muir Health, I saw that patients improve even faster. Enhanced recovery after surgical protocols helps decrease time to regain bowel function, with little to no pain. With the robot, we can use those minimally invasive instruments in more ways than in straight laparoscopic surgeries. For instance, in doing a colon resection, we can place incisions in a variety of areas -- extraction sites can be in areas that don't cause as much pain post-op. Where we place our ports can help minimize trauma to the abdominal wall. Our patients are up and moving faster, tolerating their diet advancement, and are out of the hospital sooner.

Many patients can get tremendous benefits from robotic surgery. We are able to do a wider variety of procedures, and higher complexity cases. For instance, those who have had multiple surgeries in the past and much scar tissue, and even colostomy patient cases, are much simpler to do with the robot.

It is unusual to see the robotics that we have available to us, especially in colorectal surgery, in a community hospital, and at an optimal level. This not anything I was expecting when I came here.

Ran Kim, MD: Colorectal Surgeon

For many years, some surgeons may have been thinking, 'why do I need to change to robotic surgery?' They don't see how the personal touch could be overtaken by a machine. But by using the robot, we can increase the human power that we use in open or laparoscopic surgery.

In laparoscopic surgery, the fulcrum is at the level of the skin. With robotic surgery, it is right where the problem area is, and it gives you much greater power than laparoscopic surgery or the human hand. It is so much easier to operate, and visualization is so much better with the tiny 3D camera.

An additional factor is that in laparoscopic or open surgery, there is a tremendous amount of stress and strain on the surgeon's body. Allowing the robotic surgeon to sit down to perform a procedure causes minimal stress on the legs, shoulders, elbows and hands. In cutting down the power required to operate, it can improve the longevity of the surgeon. This translates to a benefit for our patients as well.

GYNECOLOGIC ONCOLOGY

Babak Edraki, MD: Medical Director, Gynecologic Oncology Program

Our expanded robotic capabilities have allowed us to be more effective in the services we provide to our patients. The scope and number of procedures performed robotically has increased – the majority of uterine cancers are now treated this way. The cancers that lend themselves most to the robotic approach would be endometrial, which is the most common, and then some pre- and early cancers of the cervix itself. There are some nuances – one thing we are looking at is sentinel lymph node mapping for endometrial cancer. This allows us to identify those nodes with most risk of metastatic disease within them. It allows us to remove just those, rather than using the more general approach. Decreasing the number of nodes that need removal decreases potential morbidity, such as lymphedema. We are doing a pilot study now, and beginning to go into general application. So far, so good!

What we are doing now versus five years ago is essentially the same, but easier. Technology allows the exposure to be a little better, we are able to reach higher places, and have access to more of the abdominal cavity.

For the most part, physicians are aware of the benefits of robotic surgery for their patients. For instance, I had a patient with Stage 4 endometriosis, a very difficult case as it involved the rectum and ureters. The entire surgery was able to be done robotically and minimally invasively, and the patient was able to go home the next day – it was very extensive surgery, but all done through five small incisions, about ¼" each. It makes me feel so good that we are able to have the technology and ability to offer our patients this approach.

Dimitry Lerner, MD: Gynecologic Oncologist

I'd like other physicians to know that we are using robotic techniques to make surgery safer and less morbid. The medical indications continue to expand. We are able to offer robotic fertility-preserving surgery for patients with early stage cervical cancer. Some patients with ovarian cancer and majority of patients with uterine cancer can also benefit from robotic surgery. Morbidly obese patients who in the past were deemed too high-risk for surgery can now benefit from surgery with small incisions.

Robotic surgery won't replace open surgery completely, as there is a role for both. We are able to do more using a minimally invasive approach, always pushing the envelope to benefit the patient. The precision of robotic surgery is unrivaled -- three-dimensional visualization and delicate tissue handling make surgery easier and safer.

We are now adopting a new technique, sentinel lymph node technique, in uterine cancer. Sentinel lymph node identification can substitute lymph node dissection in uterine cancer, helping avoid unpleasant complications such as lymphedema.

A patient story: A few years ago, a young woman was diagnosed with early stage cervical cancer. Traditionally, a hysterectomy would be recommended. She was single at the time and wanted to preserve her fertility. We were able to do a robotically-assisted radical trachelectomy to remove the cervix and surrounding tissue, place a cerclage and save her uterus. When patients are diagnosed with reproductive tract cancer at an early age, it's a very traumatic experience. There is a great concern of losing an essential function such as fertility. When you can tell them that there are options, plus the procedure is minimally invasive and they can recover quickly without adverse effects oncologically, it's a win-win.

GYNECOLOGY

Stephen Wells, MD: Gynecologist

For benign gynecologic surgery, I feel we are in the middle of the curve of advancement in robotic surgery. We used to limit ourselves to treatment of fibroid tumors and complicated ovarian cysts, but now we are utilizing the techniques in much more complicated procedures.

As I had hoped, more surgeons are now performing robotic surgery, with greater variety. Now, we do surgeries for the treatment of endometriosis, pelvic relaxation or uterine prolapse, and even combine procedures with urology surgeons – we perform the hysterectomy portion, they do the vaginal vault suspension. Before, these had to be done through a long incision; now there are just four tiny incisions -- and these are major surgeries.

I think the important thing to understand is that these procedures really help our patients in not just the short term, but the long term. They leave the hospital sooner, they get back to their routines sooner, and the procedures are associated with fewer complications.

Many patients are only given the option of open surgery, but after an Internet search, they learn that we can offer something much better.

Robotic surgery is one of the best things that has happened to patient care in the surgical aspect of what I do.

THORACIC SURGERY

Wilson Tsai, MD: Co-Medical Director, Thoracic Program

What I'm most excited about is that we are doing a number of types of cases that are more complex than ever. We are one of the few centers in northern California able to do a robotic esophagectomy, something we've been working on for the past two years. We have perfected our technique, with better results as oncological resection has improved the number of lymph nodes we are harvesting now.

Other physicians are coming in to watch our cases -- from universities in Florida to other California sites nearby. As so few hospitals are doing these cases consistently with such good results, people are recognizing our program.

I'd like other physicians to know that in robotic lobectomies, we have already shown improvement in length of stay, over conventional surgery. Patients should see a true specialist who only does this, as patients are both more acute and complex with many comorbidities. They are longtime smokers, with risk of strokes, and obesity.

I do four to six cases per day, and on Thursdays, possibly nine. It gives you an idea of the volume we have.

It makes me feel much happier, to know I'm offering my patients a better surgery. We have honed our techniques to the point where robotic surgery has just become regular surgery for me, on a better platform, with better techniques.

GENERAL SURGERY

Diane Kwan, MD: General Surgeon

We have made a lot of progress since just last year. We were just getting the Xi model robot then, and now ALL specialties are using it. For general surgery, it's an ideal tool. The Xi has slimmer operating arms, more versatility in where you can place the camera, farther reach, and – most important for general surgery – multi-quadrant access. The camera is superior, as is lighting visualization, and it is easier to dock.

In laparoscopic surgery, it is almost like having two extra limbs – it's fantastic. In general surgery, we can still do simple hernias on the Si.

For hernia patients, the robot gives you such an advantage, for abdominal and inguinal cases especially. In a lot of surgeries with a large inguinal hernia, i.e., a larger incarcerated hernia with incarcerated bowel, we used to turn to open procedures. Now, we can do it robotically. It's the same for large ventral hernias. The patient goes home the next day.

All the specialties have come around to appreciating and using the robot. We have started a robotic work group at John Muir Health for our program, moving forward. I think we are in a leadership position in the Bay Area.

I do want other physicians to know that we have this cutting-edge technology, and that John Muir Health is very progressive in terms of the procedures we are doing.

I'm most excited that I'm able to give this option to my patients, to give them the best possible care through this technology. It's pretty amazing.

Eugenia Kang, MD: General Surgeon

Particularly in general surgery, there has been exponential growth in surgical applications of the robotic platform. With all of the technological advancements in robotics, it is truly an exciting time to be a general surgeon! Nationally, close to one in five inguinal surgeries is now being done robotically. This is a significant paradigm shift, and it allows us to bring this option to more of our patients.

With the new Xi platform, there is a slimmer profile to the instrument components, more maneuverability in terms of docking and where to put the camera, farther reach and more access within the abdomen. Along with advancements in visualization and instrumentation, the robot allows precision and access that the surgeon has never had before. So many of the sub-surgical specialties at John Muir Health have surgeons using state-of-the-art technology and doing great things with the technology. Patients are starting to hear, and want to know more about it. It is one of the real strengths of this hospital.

The technology and what the robotic platform now allows us to do with new techniques is very exciting. We use the robot for minimally invasive repair of inguinal hernias, and are one of the few centers doing robotic single-incision cholecystectomy (gallbladder removal through one tiny incision.) The more the primary care doctors see these procedures done, and see how well their patients do – with less pain, less infection, and faster return to work – the more they see the value of these surgeries. With the hernia repairs, the patients are amazed by how well they feel, with minimal pain, even though I send them home without narcotics. We can remove a gallbladder through a small incision on the Xi. Visualization is better. Movement is better. With indocyanine green, we can look at the biliary anatomy clearly. It makes our job as the surgeon easier and safer, which is ultimately better for the patient.

We are looking forward to having an educational opportunity in March for primary care doctors, with a mobile unit – you can come and test drive the robots!