

BY JUDITH KELLIHER

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HEN A 42-YEAR-OLD PATIENT LEFT Faulkner Hospital last October with merely a Band-Aid across her belly button, you might have thought she received ordinary treatment for a minor wound.

But once you know the details behind the adhesive bandage, you appreciate that her treatment was anything but ordinary. Just four hours prior to being discharged, the woman successfully underwent a first-of-its-kind single-port robotic myomectomy. The team of surgeons, medical assistants, and technicians at the Brigham and Women's Center for Robotic Surgery at Faulkner removed a fibroid the size of an orange from her uterus—through her belly button—with a single entry. Just one.

Antonio R. Gargiulo, MD, director of Robotic Surgery at the Center for Infertility and Reproductive Surgery at Brigham and Women's Hospital (BWH), led the surgical team. Since that groundbreaking surgery, Gargiulo and his team have already successfully performed a second such procedure on a 47-year-old woman who had severe abnormal uterine bleeding.

The second patient also suffered from morbid obesity, diabetes, and heart disease, and was considered a poor surgical candidate by conventional standards. She, too, left the hospital within four hours after the team removed a 4-cm fibroid from her uterus.

From the traditional to the radical

Traditionally, gynecologic surgeries such as these have involved large incisions. Then came laparoscopy, which is defined as minimally invasive abdominal surgery and uses small incisions and a video camera connected to optic fibers. This technique has been employed for several decades for simpler gynecologic procedures and, more recently, applied to advanced surgeries such as myomectomy and hysterectomy.

For women considering minimally invasive options to treat uterine fibroids, robotic myomectomy and single-port robotic surgery are game-changing techniques,



Darlene Oddo, RN; Albert Jenkins; and Madalyn Gervasi, RN, MA, CNOR, are members of Faulkner's robotic surgery team.

Larry Franklin Maglott

A STEADY HAND AND A SINGULAR FOCUS

Faulkner Hospital achieves a 'first' in fibroid removal

(left) The da Vinci Si™ surgical robot system consists of the surgeon's console, the patient sidecart with robotic arms, and the vision system that affords the surgical team a view of the operating field.

(right) The surgeon manipulates the sensitive, precision finger controls to move the surgical instruments on the robotic arms.





Jeff Thiebaut

“The academic surgeon’s thinking is always in terms of how we can push things further. A surgeon with this attitude can never be completely content with his or her tools.”

ANTONIO R. GARGIULO, MD
DIRECTOR OF ROBOTIC SURGERY AT THE CENTER
FOR INFERTILITY AND REPRODUCTIVE SURGERY

says Serene Srouji, MD, associate director of Robotic Surgery in Reproductive Endocrinology at BWH. “Single-port robotic myomectomy allows women to have relief from their fibroid-related symptoms with the least invasive surgical approach available,” Srouji says. “Reducing the number of incisions to a single umbilical incision offers the potential for not only a better cosmetic result, but for fewer complications and quicker recovery.”

Gargiulo has the same perspective. “In a time when patients are clearly asking for noninvasive treatment, surgery must aim at ultra-minimal-invasiveness.”

The collaboration and teamwork

between medical staff at BWH and Faulkner have led to many women benefiting from minimally invasive surgical treatments for their conditions, while maximizing their reproductive potential. “Our commitment to making these services easily accessible to women, and our specific clinical interests, have led to a strong collaborative relationship, and have allowed us to treat a larger number of women,” Srouji says.

Having a highly collaborative and focused team working with the robot was one key to success for this groundbreaking surgery. “The clinicians really are in a partnership,” says Kathleen Leavitt, RN, BSN, MA, nursing director in the operating room at Faulkner. “Therefore, they grow together, they learn together, and they’re sharing knowledge.”

A ‘quantum leap’

Before turning to robotic surgery, Gargiulo had been performing conventional laparoscopic myomectomies for about 10 years at BWH. But data presented at a meeting of the American Society for Reproductive Medicine in 2006 changed his approach to reproductive surgery. Gargiulo and Srouji swiftly moved ahead with formal training on the da Vinci Surgical System®, currently the only FDA-approved robotic surgical platform.

Achieving the technical expertise to develop single-port robotic myomectomy took years of careful practice perfecting standard robotic surgery cases using multiple entries, usually a minimum of four. Since 2007, Gargiulo and Srouji have completed more than 500 major robotic surgeries, including reversal of tubal sterilization, hysterectomy for large uteri, and excision of severe endometriosis—without resorting to opening up a single patient.

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is always in terms of how we can push things further. A surgeon with this attitude can never be completely content with his or her tools,” Gargiulo says.

By late 2011, he says, Gargiulo and Srouji were ready to make the “quantum leap” to safely plan and execute the first single-port robotic myomectomy. Gargiulo sees two reasons that make the effort worthwhile: the first is to reduce complications associated with insertion of laparoscopic ports, such as vascular injuries, adhesions, and hernia formation; the second is cosmetic—for those patients seeking the least amount of visible scarring.

Though it will take time for the advantages and disadvantages of this method to be studied thoroughly, the rationale seems sound. “The thinking is that if you limit the number of entries, you will limit the number of perioperative complications of laparoscopy,” Gargiulo says.

Honing their skills

Weeks before planning the first single-port robotic myomectomy on the 42-year-old patient, Gargiulo and his

BY THE NUMBERS...

1 The number of incisions through which a fibroid was removed in the first single-port robotic myomectomy

8 The size in centimeters of the fibroid (about the same as an orange)

500+
The number of major robotic operations performed by Gargiulo and his team of reproductive surgeons since 2007

team began working in a “dry lab” environment using a “pelvic trainer” specifically made for single-port laparoscopic surgery. Faulkner team members Albert Jenkins, surgical technician, and Darlene Oddo, RN, circulating nurse, had taken a special course offered by Intuitive Surgical, maker of the da Vinci robot, which helped hone their skills to assist in robotic surgery.

“The surgical technicians must demonstrate the skills to handle the specialized instruments in robotic surgery,” says Madalyn Gervasi, RN, MA, CNOR, of the Department of Nursing Professional and Practice Development at Faulkner.

On the day of the first surgery, the clinicians assembled to ready themselves for the two-hour procedure. The team, which included attending surgeons Gargiulo and Srouji; clinical fellow Amelia Bailey, MD; Oddo; and Jenkins, worked closely and efficiently to remove the fibroid through the single incision. Also on hand was a technical representative from da Vinci to offer real-time troubleshooting, if necessary.

“Dr. Gargiulo reaches out to us in advance and looks for feedback, looks for how do we get there, how do we work on this,” Leavitt says. “He’s someone who always communicates and really embraces the group so that it’s a team.”

Taking control

To get a sense of how the surgical team and the robot work together, picture the surgeon sitting at an ergonomically designed remote console in a quiet corner of the operating room, and a robotic patient sidecart with four computer-controlled arms. One of the arms keeps the high-definition 3-D endoscope in perfect position, while the other three arms guide the articulated instruments. The surgeon controls all the movements, not the robot.

From the console, the surgeon is able to view the operating field as a magnified,

high-resolution, 3-D image. This immersive environment allows for the unchallenged concentration of the surgeon, who operates as one with the machine as he or she moves the four independent arms.

Conventional single-port laparoscopic surgery uses long laparoscopic instruments inserted through a small incision, which severely limits the dexterity of the surgeon. By using the robotic platform, the surgeon is able to overcome most ergonomic challenges imposed by single-port access and to delicately repair the reproductive organs.

When asked to describe the overall feeling of using the robotic arms through a single incision, Gargiulo lightly quotes the Grimm Brothers’ story of *The Elves and the Shoemaker*. “It was like having a little elf earnestly working for us in the very depth of this young woman’s abdomen,” he marvels.

Sitting in his office at BWH about a month after the first surgery, Gargiulo watches a video of the procedure from his laptop. To hear his comments as he reviews the video, you would never know that this was a groundbreaking procedure. Instead, he is focused on spreading the wealth. “We have to really push the limits so that, for example, the success and broader adoption of this type of procedure may dictate where the industry goes next,” he says.

For Srouji as well, the future of single-port robotic gynecologic surgery looks promising. “Conventional single-port laparoscopic surgery has its limitations due to the technical difficulties inherent in using multiple instruments through one incision at the same time: Collisions are the rule. The surgical robot allows many of those limitations to be overcome due to the peculiar and precise wristed movements that are possible at the tips of robotic instruments,” she says. ♦



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SERENE SROUJI, MD
ASSOCIATE DIRECTOR OF ROBOTIC SURGERY
AT THE CENTER FOR INFERTILITY AND
REPRODUCTIVE SURGERY

Support surgical innovation at Faulkner

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