Jefferson is a regional leader in minimally invasive surgery and a pioneer in robotically assisted procedures. Our distinguished specialists are trained in the latest minimally invasive techniques, using tiny incisions and miniature robotic instruments, and were among the first in the Delaware Valley to embrace da Vinci® Single-Site robotic surgery.

As a leading academic medical center, we are one of the highest-volume hospitals performing these procedures in the Philadelphia area. We have expertise in minimally invasive and robotic surgical procedures in the following areas:

- Hepatobiliary
- General Surgery
- Otolaryngology
- Cardiothoracic
- Gynecology
- Urology

Jefferson is focused on making these procedures even more effective by continually investing in the latest tools, technologies and training. Our dedicated minimally invasive surgical suites have been updated with the latest high-definition equipment, including new cameras and monitors that feature increased sensitivity for anatomical clarity and patient safety. Jefferson also offers robotic surgery using the da Vinci® Surgical System, which provides a magnified, high-definition 3-D image for superior clinical capability and translates the surgeon’s hand movements into precise micro-movements.

Minimally invasive and robotic procedures offer many benefits to our patients. With smaller incisions, patients experience less scarring and pain, a reduced risk of infection and quicker recovery times, which can mean a shorter hospital stay—or none at all. As a result, patients return to their daily lives much sooner than ever before.

In the pages that follow, you’re invited to meet a number of our specialists in minimally invasive and robotic surgery and some of the procedures that have made them leaders in the field. If you would like to refer a patient for a consultation, please call Jefferson’s Physician Referral Line at 215-503-8888, or have your patient call 1-800-JEFF-NOW (1-800-533-3669). Additional information about the Jefferson Minimally Invasive and Robotic Surgery Center can be found at Jefferson.edu/MIS.
Cardiothoracic Surgery

Gurjyot Bajwa, MD

Gurjyot Bajwa, MD, is an Assistant Professor in the Division of Cardiothoracic Surgery at Sidney Kimmel Medical College at Thomas Jefferson University. Dr. Bajwa has special expertise in robotic cardiac surgery, a growing specialty area, and is a key contributor to Jefferson’s robotic and minimally invasive cardiac surgery program.

In September 2011, Dr. Bajwa performed the first totally robotic mitral valve repair in Philadelphia. Formerly on staff at the Cleveland Clinic, she is among a handful of surgeons in the entire country trained to perform the procedure and one of only two in Philadelphia.

Mitral valve repair, notes Dr. Bajwa, is the preferred procedure to correct mitral valve prolapse (MVP), which occurs when the valve between a patient’s heart’s left upper chamber (left atrium) and the left lower chamber (left ventricle) doesn’t close properly, which can sometimes lead to blood leaking backward into the left atrium, a condition called mitral valve regurgitation.

According to Dr. Bajwa, when compared to a complete valve replacement, robotic mitral valve repair provides better long-term survival, better preservation of heart function, lower risk of complications, and usually eliminates the need for long-term use of blood thinners (anticoagulants). Patients undergoing robotic mitral valve repair can return to normal activities within two weeks, as opposed to 6-12 weeks for a replacement. Dr. Bajwa said that most surgeons are still replacing the valve, even though “studies show that repair is better than replacement.”

<table>
<thead>
<tr>
<th>Gurjyot Bajwa, MD</th>
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<tbody>
<tr>
<td><strong>Academic Title:</strong></td>
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<td><strong>Years in Practice:</strong></td>
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<td><strong>Specialties:</strong></td>
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<td><strong>Internship:</strong></td>
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<td><strong>Residency:</strong></td>
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<tr>
<td><strong>Fellowship:</strong></td>
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Division of Cardiac Surgery Outcomes Data – July 2013 to June 2014

![Chart showing comparison of robotic and non-robotic outcomes](chart.png)

Data is sourced from the UHC (University HealthSystem Consortium) Clinical Database.
General Surgery

Francesco Palazzo, MD, FACS

Francesco Palazzo, MD, FACS, is a specialist in minimally invasive gastrointestinal surgery and Assistant Professor, Department of Surgery at the Sidney Kimmel Medical College at Thomas Jefferson University.

As a surgeon within Jefferson’s Gastroesophageal Center, Dr. Palazzo specializes in the minimally invasive treatment of esophageal and gastrointestinal disorders. The bulk of his work comprises minimally invasive esophagectomy (MIE), laparoscopic anti-reflux surgery, laparoscopic paraesophageal surgery, laparoscopic heller myotomy, laparoscopic surgery for hiatal and paraesophageal hernias, and minimally invasive bariatric surgery.

Dr. Palazzo also uses the da Vinci® Surgical System to perform a minimally invasive robotic procedure for gallbladder removal called single-site robotic cholecystectomy. During this procedure a small incision at the belly button is used to insert the robotic instruments necessary to remove the gallbladder; the robotic technology provides surgeons with 3-D vision and a magnified view. For patients, the procedure offers the potential benefits of low blood loss, low rate of complications, short hospital stay and a small incision for virtually scarless results.

Dr. Palazzo is also trained in the LINX Reflux Management System, which is used for treating gastroesophageal reflux disease (GERD) when medication no longer provides adequate symptom control. LINX consists of a series of magnetic beads that are connected by titanium links that allow the beads to actuate (open) during a swallow or belch. The force of attraction of these beads exerts forces on the weak lower esophageal sphincter (LES) to help prevent reflux.

Dedicated training in minimally invasive surgery is critical to mastering the intricacies of the various procedures, Dr. Palazzo said, and is what differentiates Jefferson from other surgical centers in the Philadelphia area. “The difference is, we kept up with the advances for minimally invasive development over the past 15 years,” he said, adding that some surgical centers in the area lack the technology to do minimally invasive procedures.

Dr. Palazzo provides clinical services at both Jefferson’s Center City campus and Jefferson’s Methodist Hospital, with a primary administrative role at Methodist.

Francesco Palazzo, MD, FACS

<table>
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<tr>
<th>Academic Title:</th>
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<td>Fellowship:</td>
<td>University of California, San Francisco, CA</td>
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Minimally Invasive Esophagectomy Outcomes Data – November 2007 to May 2014

Data is sourced from the American College of Surgeons-National Surgery Quality Improvement Program (ACS-NSQIP)
Obstetrics and Gynecology

Gregory T. Fossum, MD

January 2015 marked 23 years of service at Jefferson for Gregory T. Fossum, MD. Robotic surgery was very much in its infancy when he joined Jefferson in 1992. Today, Dr. Fossum, an obstetrician and gynecologist specializing in reproductive endocrinology and infertility, estimates that he has performed a combined 2,000 robotically assisted hysterectomies and myomectomies.

His robotically assisted myomectomy patients go back to work three to seven days after the procedure; hysterectomy patients are back to work two weeks post-surgery. The normal for returning to work is six to eight weeks for both procedures with open surgery.

Surgeons such as Dr. Fossum have made Jefferson a leader in advanced treatments for women. Dr. Fossum was recently recognized by Intuitive Surgical®, the maker of the da Vinci® Surgical System, as an epicenter surgeon – a leader in robotic-assisted surgery – and will serve as a mentor and instructor for robotic gynecologic surgeons from across the nation. Dr. Fossum is one of just 26 such epicenter surgeons in the country.

Combining robotic and non-robotic procedures, Dr. Fossum estimates that he has performed as many as 10,000 myomectomies. Of those, none resulted in hysterectomy. The national average, Dr. Fossum said, is 5 percent. "That's a big fear for women who want to be able to get pregnant," he said, "that the doctor will have to do a hysterectomy while they're asleep."

While there are numerous surgical centers in the tri-state area that offer robotically assisted reproductive surgery, Jefferson can successfully remove larger pathology – uterine fibroids, for example. "We will take care of the patient regardless of their pathology," Dr. Fossum said, noting that many hospitals send their patients to Jefferson to remove larger fibroids and cysts.

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Gregory T. Fossum, MD

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Department of Gynecological Surgery Outcomes Data – July 2013 to June 2014

<table>
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<th>Mean Length of Stay in Days</th>
<th>% Patient Deaths</th>
<th>% Patients Receiving Blood</th>
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<tr>
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Data is sourced from the UHC (University HealthSystem Consortium) Clinical Database.
Some tumors deep inside the mouth and neck are so difficult to see and reach that surgeons using ordinary approaches would need to divide the patient’s mandible to reach the tumor.

Using a robotic-assisted surgical technique, David M. Cognetti, MD, co-director of the Jefferson Center for Head and Neck Surgery, is able to get to and remove those difficult-to-reach tumors. Jefferson is one of the few hospitals in the Delaware Valley to offer this advanced technique, known as Transoral Robotic Surgery (TORS). TORS is used to treat cancers of the tongue, tonsils, and larynx, and offers significant advantages over traditional surgery including quicker recovery times and reduced risk of long-term swallowing problems. TORS is also used for benign tumors of the pharynx and parapharyngeal space. It allows for safe removal of these tumors without an external scar and avoids a temporary tracheostomy tube, which is frequently required with conventional approaches.

“It gives us access to an area of the body that was traditionally difficult to reach,” says Dr. Cognetti. “Now we have a tool that allows us to operate in this area without disruption of surrounding structures, with the added benefits of lowering doses of radiation, avoiding chemotherapy and decreasing long-term side effects.”

In February 2010, Dr. Cognetti became one of the first surgeons in the U.S. trained in the procedure and is one of the nation’s most experienced. Intuitive Surgical®, which manufactures the da Vinci® Surgical System, has recognized Dr. Cognetti as a national case observation site for TORS. Physicians from around the country come to observe Dr. Cognetti in order to learn the technique.

Dr. Cognetti also performs minimally invasive sialendoscopy to treat patients for salivary stones. The stones form when the flow of saliva slows down, such as with dehydration. “Once a small stone is formed, it is like an oyster making a pearl...it only gets bigger with time,” says Dr. Cognetti. The stones block the outflow of saliva, causing pain and swelling, typically when eating. Known as sialolithiasis, the condition affects 12 out of every 1,000 adults in the U.S.

Traditionally, open surgery to remove the salivary gland was the only curative option. Jefferson is the first and most experienced hospital in the Philadelphia region performing sialendoscopy to spare the gland. “It allows us to get into the incredibly small salivary ducts to remove the stones and avoid the scarring and side effects of open surgery,” Dr. Cognetti says. He thinks of salivary stones as a plumbing problem. “When your sink is clogged, you unclog the drain. You don’t take the sink off the wall.”

### David M. Cognetti, MD

**Academic Title:** Associate Professor  
**Years in Practice:** 7  
**Specialties:** Otolaryngology/Head and Neck Surgery  
**Education:** University of Pittsburgh Medical School  
**Internship:** Thomas Jefferson University Hospital  
**Residency:** Thomas Jefferson University Hospital  
**Fellowship:** University of Pittsburgh Medical Center, Pittsburgh, PA

#### Department of Otolaryngology Surgery Outcomes Data – July 2013 to June 2014

![Graph showing surgery outcomes data between robotic and non-robotic procedures.](data.png)

Data is sourced from the UHC (University HealthSystem Consortium) Clinical Database.
Costas D. Lallas, MD

Costas D. Lallas, MD, is a Professor in the Department of Urology and Director of Robotic Surgery at Jefferson. During his nine years at Jefferson, Dr. Lallas has performed over 1,000 robotic prostatectomies and was among the first to conduct robotic procedures of any kind in the City of Philadelphia.

Dr. Lallas uses the da Vinci® Surgical System primarily to treat cancers of the prostate, kidney and bladder. Dr. Lallas points to Jefferson’s multi-disciplinary approach to treating cancer as a differentiator, with a majority of patients receiving their tailored treatment plan at the Sidney Kimmel Cancer Center at Thomas Jefferson University.

“There are several specialists, all looking at the patient to decide on the ultimate treatment,” Dr. Lallas says. “If it’s surgical, then very often it will go to robotic surgery.”

Of the more than 1,000 prostatectomies performed by Dr. Lallas, all but two have been robotically assisted procedures. He firmly believes the robotically assisted procedure results in better outcomes than traditional open surgery, or even the laparoscopic procedure, for several reasons: smaller incisions; decreased blood loss; quicker convalescence and a magnified, three-dimensional view of the procedure.

With his research, Dr. Lallas focuses on finding more ways to improve patient outcomes. Here is one example that he published with one of his partners, Edouard J. Trabulsi, MD:

STUDY:

INTRODUCTION:
To identify and assess predictive factors for positive surgical margins (PSM) in patients undergoing radical prostatectomy (RP).

MATERIALS AND METHODS:
An Institution Review Board (IRB) approved retrospective review of 1751 patients that underwent RP from March 2000 to June 2013 was performed. Identified were 1740 patients whom had not received neoadjuvant therapy; these were used for the purpose of this analysis. Univariate and multivariate analysis were performed to determine factors associated with and predictive of PSMs, divided into preoperative and pathological. Variables analyzed include age, body mass index (BMI), race, surgeon, surgical modality, pathologic T-stage and Gleason sum, extracapsular extension (ECE), seminal vesicle involvement (SVI), perineural invasion (PNI) and prostate weight. Finally, each surgical technique was analyzed to determine the most common site of PSM.

RESULTS:
Rate of PSM was 23.6%. Our analysis showed that preoperative prostate-specific antigen (PSA) level ≥ 10ng/mL, and pathologic T3/T4-stage and PNI significantly predicted PSM. Age > 60 years and prostate weight > 60 g were predictive against PSM. Gleason score ≥ 7 and PSM were significant risk factors for biochemical recurrence (BCR). Surgical approach did not affect the rate of PSM. Open RP was associated with a higher apical PSM rate (38.5%) and robotic RP with a higher posterolateral PSM rate (52.3%).

CONCLUSIONS:
High preoperative PSA levels, and advanced TNM-staging predicted positive surgical margins in our cohort. Patients with PSM were subsequently found to have higher risk of BCR.
Costas D. Lallas, MD

Academic Title: Professor
Years in Practice: 9
Specialties: Urology, Urologic Oncology
Education: Jefferson Medical College
Internship: Duke University Medical Center
Residency: Duke University Medical Center
Fellowship: Mayo Clinic, Phoenix, AZ

Department of Urology Surgery Outcomes Data – July 2013 to June 2014

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<th>Mean Length of Stay in Days</th>
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<tbody>
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Data is sourced from the UHC (University HealthSystem Consortium) Clinical Database.

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