



The Milton and Carroll Petrie  
**Department of  
Urology**

## **Bladder Cancer Program at Mount Sinai**

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[www.mountsinai.org/roboticbladder](http://www.mountsinai.org/roboticbladder)



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**Bladder Cancer  
Program at Mount Sinai**

- Robot-Assisted Cystectomy
- Robot-Assisted Urinary Diversion
- Extended Lymph Node Dissection
- Non-Opioid Pain Management
- Immunotherapy



**Peter Wiklund, MD, PhD**

*Director, Bladder Cancer Program,  
Mount Sinai Health System*

*Professor of Urology, Department of Urology at the  
Icahn School of Medicine at Mount Sinai*

## Overview

The Department of Urology at the Icahn School of Medicine at Mount Sinai is a leader in the diagnosis and treatment of bladder cancer. As the fourth most common cancer among men and the sixth most common cancer among women, it is not surprising the United States has more than 81,000 new bladder cancer cases diagnosed every year. Our physicians are uniquely able to offer our patients access to groundbreaking treatments and techniques, in addition to access to clinical trials of new therapies.

Our bladder cancer program is led by Peter Wiklund, MD, PhD, Director of the Bladder Cancer Program for the Mount Sinai Health System. Dr. Wiklund is one of the world's preeminent surgeons in the field of bladder cancer. He has the most experience with robot-assisted cystectomy with totally intracorporeal neo-bladder in the world. He pioneered this procedure in 2003 and subsequently built the leading robotic cystectomy program at the Karolinska Institute in Stockholm, Sweden. Dr. Wiklund has performed more than 3,000 robotic operations and has extensive experience in advanced pelvic oncological surgery in patients where the tumor is growing on several pelvic organs (multi-organ tumor, bladder, prostate, colorectal, ovarian, and uterine).

Dr. Wiklund performs all aspects of surgery himself and ensures that all patients receive the best possible care. He also works closely with medical and radiation oncologists in The Tisch Cancer Institute at Mount Sinai, a National Cancer Institute-designated center, in order to provide a customized, integrated and innovative approach to treatment of patients with bladder cancer.



## About Dr. Wiklund

Peter Wiklund, MD, PhD, is an innovator in the field of robotic bladder cancer surgery. He is a pioneer and leader in doing robot-assisted cystectomy with totally intracorporeal neo-bladder, with more than 3,000 robotic operations in his career. Dr. Wiklund has done more of these complicated robotic surgeries than almost any surgeon in the world due to his mastery of different types of urinary diversions.

Dr. Wiklund travels the world as an invited lecturer at various courses and master classes in robotic surgery. He has performed live educational surgery throughout Europe, Asia, and South America. Dr. Wiklund is Chairman of the scientific working group of the European Urology Robotic Section of the European Association of Urology and is an international member of the American Urological Association. He has been chairman of many international courses on bladder cancer and prostate cancer surgery.

Throughout his career, Dr. Wiklund has been a productive investigator who has made important original contributions in the area of physiology and pharmacology as well as urology and coordinated several multi-institutional studies. He has published more than 300 peer-reviewed original publications and has been the editor and contributing author of three textbooks on robot-assisted surgery. He has also contributed to numerous textbooks in urologic oncology.

Having successfully built a career that combines clinical practice and original research, Dr. Wiklund is known as a role model for young investigators. He is an extraordinary mentor who has guided many residents and fellows, as well as junior faculty, to successful careers in research and clinical medicine. Dr. Wiklund organized the successful international fellowship program in robot-assisted surgery at Karolinska University Hospital where urologists from around the world have trained. He also is the founder of WRSE24, which live streams robotic surgeries so that other physicians can learn best-in-class surgery techniques.

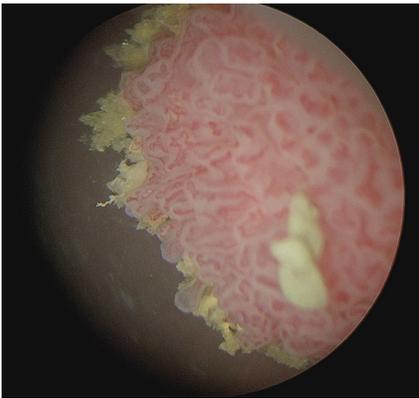
Prior to his appointment at Mount Sinai, Dr. Wiklund was Chair, Urology and Molecular Medicine and Surgery, and Professor, Urology, at the Karolinska Institute, Stockholm, Sweden.

# Bladder Cancer Types, Risks, and Symptoms

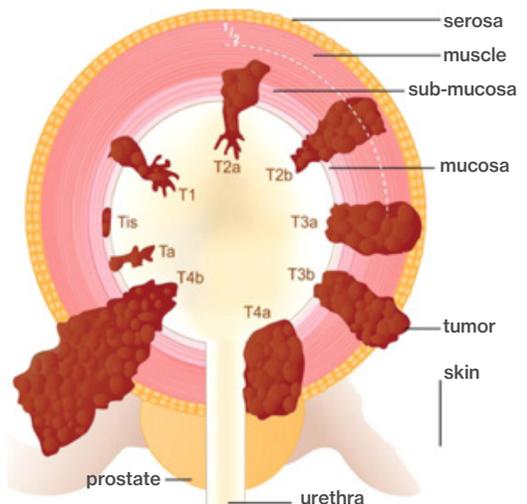
There are three main types of bladder cancer:

1. *Urothelial cell carcinoma*, previously called transitional cell carcinoma, is relatively common and affects about 90 percent of bladder cancer patients. Urothelial carcinoma occurs in urothelium, the cells that line the inside of the bladder. Subtypes of this type of bladder cancer include papillary carcinomas and flat carcinomas.
2. *Squamous cell carcinoma* begins in the squamous cells of the bladder and accounts for about four percent of all cases.
3. *Adenocarcinoma* starts in the glandular cells of the bladder. This condition is rare in the United States, representing about two percent of all cases.

Approximately one-third of bladder cancer tumors are **high grade**, which mean they have aggressive tumor cells that look abnormal and grow quickly. It is critical to treat these tumors rapidly and vigorously before they spread to other parts of the body. About two-third of bladder cancer tumors are **low grade**. These tumors look similar to normal bladder cells, are usually slow growing, and are less likely to invade and spread. Low-grade tumors often require a transurethral resection to see if the cancer has spread into the muscle layer of the bladder wall.



Bladder cancer tumor





Risk factors for bladder cancer, according to the National Cancer Institute, include smoking, exposure to certain chemicals in the workplace (such as rubber, dyes and textiles, paint, and hairdressing supplies), family history of bladder cancer, and cancer treatments such as radiation or cyclophosphamide (Cytoxan®).

Symptoms that may indicate bladder cancer include blood in your urine (which may make the urine look rusty or dark red), urgent need to empty your bladder, needing to empty your bladder more often than you're used to, and pain when you urinate.

You can reduce your risk of developing bladder cancer. Do not smoke or use tobacco products and if you do, quit. Try to avoid or minimize exposure to certain chemicals, especially hair dye and diesel fumes. Make sure your diet is rich in fruits and vegetables and low in fat and cholesterol.

# Treatment

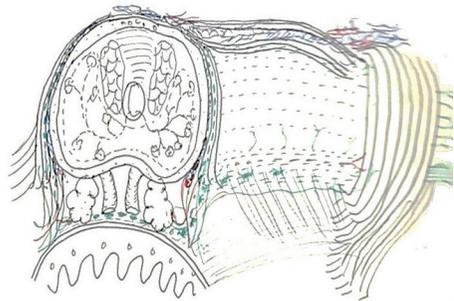
To diagnose bladder cancer, we start by taking a detailed medical history and performing a physical examination. We may also look at a urine sample under a microscope to see if you have abnormal bladder cells and also to rule out the possibility of an infection. We can examine the lining of the bladder with a cystoscope, a flexible viewing instrument that we insert through the urethra.



If we see abnormal appearing bladder tissue, we may perform a biopsy or remove the tumor entirely. We may also perform imaging scans such as magnetic resonance imaging, computerized axial tomography, intravenous pyelogram, bone scans, and chest X-rays.

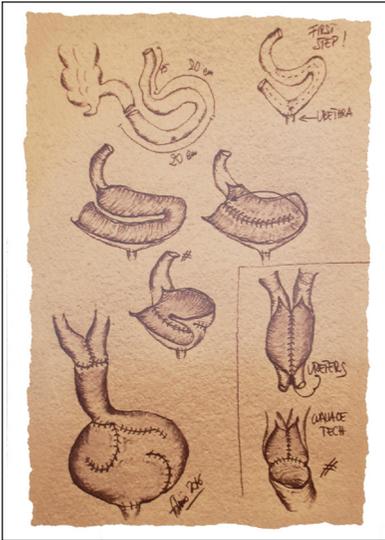
Low-grade tumors, which rarely progress to bigger tumors, need a baseline control after a cystectomy (surgery to remove the cancerous tumors). We will do an endoscopy through the urethra where we can shine white and blue light in order to check for any high-grade cancer lesions.

High-grade tumors are more complicated to remove via surgery. We use robot-assisted surgery (see page 7) during a cystectomy because it is minimally invasive, allows the surgeon to have increased magnification and 3-D precision, and results in less blood being lost. The robotic approach allows us to perform a nerve sparing cystectomy, resulting in a higher rate of erection after surgery. We build a new bladder using part of the small intestine, which allows patients to urinate normally without the need for an ostomy bag. Dr. Wiklund is a pioneer in building new bladders, and he has done more of these procedures robotically than probably any other surgeon in the world.



*Amrutesh*

Illustration of dense amount of nerves that affect erection.



Sketches of the Wiklund neo-bladder

For urinary diversion planning, we have a dedicated team of ostomy nurses who meet with each patient pre- and post-op to help educate them and manage their diversions, as well as troubleshoot complications.

Dr. Wiklund always does an extended, instead of limited, lymph node dissection during a radical cystectomy (removal of the entire bladder). He does the extended dissection because it increases the likelihood of curing the patient.

## da Vinci Robot

When Dr. Wiklund performs robot-assisted surgery, he always uses a *da Vinci* robot. Miniaturized instruments and a high-definition 3-D camera are inserted via small incisions. Seated comfortably at the *da Vinci* console, Dr. Wiklund is able to view a magnified, high-resolution 3-D image of the surgical site inside your body. The latest robotic and computer technologies scale, filter, and seamlessly translate Dr. Wiklund's hand movements into precise micro-movements of the *da Vinci* instruments. Although often called a "robot", the *da Vinci* System cannot move or operate on its own; Dr. Wiklund is 100 percent in control.

Robotic experience is the key to a successful outcome and Dr. Wiklund is one of the most experienced robotic surgeons in the world. Dr. Wiklund pioneered robot-assisted cystectomy with totally intracorporeal neo-bladder in 2003.



*da Vinci* console



*da Vinci* robot

## Other Program Centers in Urology Department at Mount Sinai

The Department of Urology's surgeons and scientists have pioneered the adoption of novel diagnostic techniques and minimally invasive treatments for a wide range of other urologic disorders. The program centers and procedures include:

### **Prostate Cancer Program:**

Dr. Ashutosh (Ash) K. Tewari, MBBS, MCh, FRCS (Hon.), System Chair of the Department of Urology leads our prostate cancer program. Dr. Tewari has performed more than 7,000 robotic prostatectomies (surgery to remove the entire prostate). He is also highly skilled in procedures such as active surveillance, genomic marker analysis, immunotherapy, and MRI fusion targeted biopsy.

### **Comprehensive Kidney Cancer Center and Reconstructive Surgery Program:**

Dr. Ketan K. Badani, MD, system Vice Chair of Urology, leads the Comprehensive Kidney Cancer Center and Robotic Kidney Surgery Program. Dr. Badani has the most experience performing robotic kidney surgery of any surgeon in the United States. He is also highly skilled in complex urinary tract reconstructive surgery. The Comprehensive Kidney Cancer Center at Mount Sinai offers all treatment modalities for kidney cancer including radical and partial nephrectomy, ablation, and active surveillance.

### **Kidney Stone Center:**

The Kidney Stone Center at Mount Sinai, led by Mantu Gupta, MD, FRCS (Glasg.), provides a comprehensive approach to the treatment of kidney stones. He has brought to the Mount Sinai Department of Urology the latest technological advances for the treatment of kidney stones, including state-of-the-art lasers, best-in-class shock wave lithotripsy machines, and flexible miniature endoscopes that improve patient comfort and outcomes.

### **Minimally Invasive Surgery and Advanced Procedures:**

Dr. Michael A. Palese, Chair of Mount Sinai Downtown and Beth Israel Hospital leads the Minimally Invasive Surgery team for the Mount Sinai System. Dr. Palese and his group develop and perform the newest cutting edge minimally invasive techniques for robotic, laparoscopic and endoscopic procedures. The MIS team specializes in performing advanced procedures for complex conditions involving the kidney, prostate, bladder, ureter and adrenal gland.

# Medical Oncology and Research

Dr. Wiklund and his team work closely with their colleagues in medical oncology. They are able to utilize neo-adjuvant chemotherapy to shrink bladder tumors and increase the cure rate for his patients. Immunotherapy is also used frequently in order to improve a patient's prognosis. Post-surgery, they run extensive genomic tests on specimens to pinpoint actual gene mutations in order to create vaccines for future prognosis.



**Matt Galsky, MD**  
Director of  
Genitourinary  
Medical Oncology



**John Sfakianos, MD**  
Assistant Professor  
of Urology and  
Urologic Oncology



**Reza Mehrazin, MD**  
Assistant  
Professor of  
Urologic Oncology



**Prachee Pathak, PA**  
Clinically Advanced  
Physician Associate

Many patients decide to enroll in rigorous clinical trials offering the latest chemotherapy and immunotherapy agents for the best possible chance for a cure. We conduct studies to improve patient outcomes in terms of recovery, complications, erectile dysfunction, and incontinence. Our team also has one of the largest databases of patients who have had a robotic cystectomy.

Oncology, radiology, pathology, and surgery work together in a team-based Tumor Board to establish best practice guidelines to treat new bladder cancer patients.

## Non-Opioid Protocol Helps Patients Undergoing a Robot-Assisted Radical Cystectomy

Robot-assisted radical cystectomy (RARC) is performed more frequently because it improves surgical outcomes and a patient's recovery. Because patients remain exposed to the potentially adverse effects of narcotic use, Mount Sinai Health System has tested and implemented a non-opioid (NOP) protocol for patients undergoing RARC. Research has demonstrated that the NOP protocol resulted in a significantly shorter time to resuming a regular diet, shorter hospital stays, and no difference in pain scores.

## **Department of Defense Grant to Study Natural Killer Cell Dysfunction in Human Bladder Cancer**

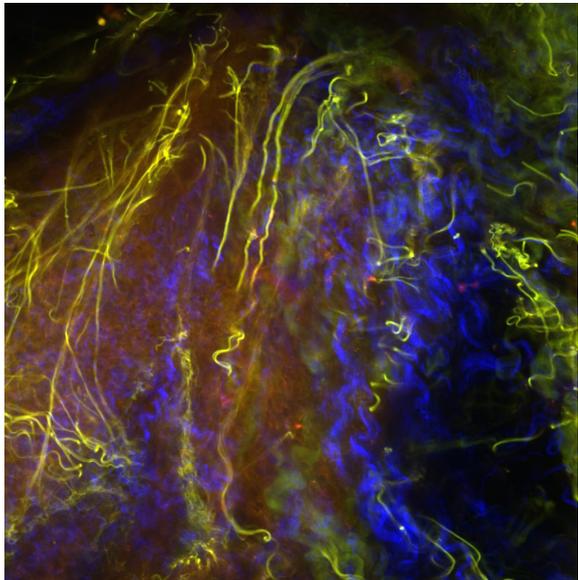
The two most common causes of bladder cancer are smoking and exposure to industrial chemicals; both are common among those who serve in the military. This study will attempt to understand the process by which bladder tumors prevent the optimal, anti-tumor functionality of natural killer (NK) cells using patient tumor samples from the peripheral blood and tumor tissue of patients with bladder cancer. The goal is to test interventions that would restore to NK cells the ability to destroy tumor cells. This unique grant is being led by John Sfakianos, MD.

## **Evaluating Health Care Delivery and the Impact of Various Treatments for Bladder Cancer**

There seems to be disparate healthcare delivery for patients with urothelial carcinoma, which is the most common type of bladder cancer. Research at Mount Sinai is focused on the evaluation of the impact of tumor down staging with neoadjuvant therapies such as chemotherapy or immunotherapy, the natural history of untreated muscle-invasive bladder cancer, and the unmet informational and supportive care needs of the patients with bladder cancer.

## **Multiphoton Excitation Fluorescence Imaging**

In vivo microscopy using multiphoton autofluorescence lets us visualize various layers in the urinary bladder at the time of surgery. It enables the surgeon to determine in real time how deep the tumor is growing into the bladder wall, helping treat the cancer more effectively.



Fluorescence imaging of a bladder wall showing layers, including collagen and elastin fibers, that is being studied by Dr. Wiklund's team.

## Recovery and Post-Operative Surveillance

For most patients, three to five days in the hospital is necessary following robotic surgery. The Mount Sinai Hospital offers optional private rooms with concierge service. All patients are seen in the hospital and one week after surgery to check and discuss pathology results.

The Bladder Cancer Program team rarely needs to prescribe opioid (pain) drugs because robotic surgery is minimally invasive, resulting in minimal pain. The team also has a strong program to avoid opioids. Most patients will have stents and a catheter that are removed ten days and three weeks after surgery, respectively.

Each patient gets a personalized, post-operative treatment plan. Vaccines, targeted chemotherapy agents based on tumor profiles, and checkpoint inhibitors (for genetic mutations) are all tools that the team uses after bladder cancer surgery.

The time to return to work depends on the amount of physical activity required by the job, ranging from four to six weeks. On average, patients return to work and resume normal activities about three weeks following surgery. Patients are served a light dinner the night of surgery and should be eating normally within a day or two after surgery. Moderate exercise, such as walking, is encouraged immediately after surgery. We do not want patients lifting weights until four to six weeks following surgery.

The final part of the post-surgery process involves bladder cancer networks that focus on patient education and peer interaction with organizations such as the Bladder Cancer Advocacy Network ([www.bcan.org](http://www.bcan.org)). It is critical that patients engage with support groups in order to manage post-operative concerns.

## Our Team

Our offices are dedicated to serving men and women with bladder cancer. Our highly specialized and experienced urologic cancer team includes physicians, clinical fellows, physician assistants and nurse practitioners, registered nurses, and medical assistants. Our practice manager and surgical scheduler are dedicated to making your office visit easy and stress-free.

Patients are seen at our spacious and modern offices at 5 East 98th Street (on the campus of The Mount Sinai Hospital) and at 625 Madison Avenue (between 58th and 59th streets). These offices are convenient to subways, buses, and parking garages.

Please feel free to ask us any question at any time. We can be contacted at 212-241-4812. For more information about Dr. Wiklund and the Bladder Cancer Program at Mount Sinai, visit [www.mountsinai.org/roboticbladder](http://www.mountsinai.org/roboticbladder).





