A PATIENT’S GUIDE TO PERCUTANEOUS NEPHROLITHOTOMY (PCNL) AND TUBELESS PCNL

Minimally Invasive Surgical Treatment for Large Kidney Stones

For more information on PCNL/Tubeless PCNL and treatment for large kidney stones, visit www.drjuliodavalos.com or call 877-422-8237.
Percutaneous nephrolithotomy (PCNL) is an innovative, minimally invasive surgical treatment for large, complex kidney stones (greater than 2 cm in diameter) that cannot be passed through the urinary tract or that may be difficult to treat with other common kidney stone therapies such as shock wave lithotripsy (SWL) or ureteroscopy.

Percutaneous refers to a surgical technique performed via a very small incision through the skin, rather than an open, more invasive procedure.

Tubeless PCNL is a groundbreaking surgical technique that provides additional benefits to PCNL patients including no post-surgical drainage tube, a quicker recovery and less discomfort.
Understanding PCNL

PCNL surgery may be performed in the hospital, with most patients staying at least one day. In some cases, tubeless PCNL will be performed in Chesapeake Urology’s state-of-the-art Summit Ambulatory Surgical Center (known as ambulatory tubeless PCNL) which is specially-equipped and staffed for PCNL surgery. The decision to have the procedure performed on an ambulatory basis versus in a hospital is based on the complexity of your kidney stones and your overall health, and will be determined by your surgeon.

How PCNL surgery is performed

- Depending on your urologist and your individual stone properties, you may need an appointment with an interventional radiologist prior to your surgery (your urologist will provide you with the referral). The interventional radiologist uses X-ray imaging called fluoroscopy to help guide the precise placement of the renal access tube (nephrostomy tube) into the kidney. This tube is placed through your back and into your kidney near the stone. This procedure is usually done one to two days before the PCNL surgery. The tube is utilized by your surgeon to gain access into the kidney to remove the stone. Some Chesapeake Urology physicians will place the nephrostomy tube at the time of your procedure.
- On the day of your PCNL procedure, your surgeon utilizes special imaging to map out the kidney to ensure a more complete removal of the stone(s).
- Through the placed renal access tube, a thin wire is passed into the kidney and a balloon is used to dilate a tract.
- A tube is placed over the balloon and a scope is inserted into the tract to look into the kidney.
- Special instrumentation is placed through the tube to break up the stone(s) into tiny pieces that can be removed or passed through the urinary system. The goal is to clear all stones and fragments from the kidney.
- Once the stones are removed, it is not uncommon to have a ureteral stent placed to allow the kidney to drain better while it heals from the procedure.
- In some cases, the nephrostomy tube will remain in the kidney following surgery for drainage of urine and blood. The tube is removed in your surgeon’s office about three days following surgery.
- Stones will be sent for analysis to aid in developing a program to prevent further stone formation.

What is a nephrostomy tube?

A nephrostomy tube is a catheter that is placed in your kidney and attaches to a drainage bag that collects urine outside of your body. The tube is sometimes removed following discharge from the hospital. However, some PCNL patients may go home with the external drainage tube still in place to give the kidney more time to heal. If this is the case, the nephrostomy tube is removed in your surgeon’s office in several days.
Advantages of PCNL

• Post-procedure stone free rate of greater than 97%.
• Less post-operative pain as compared to open surgery.
• Fewer complications as compared to open surgery due to the small incision and minimally invasive access to the kidney.
• Quicker return to activities of daily living and work compared to open surgery.
• In some cases, a quicker return to daily activities as compared to less invasive kidney stone treatments such as SWL or ureteroscopy (due to the fact that in most scenarios the stones can be completely cleared in one procedure).
• Better stone-free rates post-procedure for larger and more complex stones as compared to less invasive options (SWL and ureteroscopy).

Tubeless PCNL – A new standard of care for treating large kidney stones

The tubeless PCNL procedure is performed as a standard PCNL surgery; however, patients do not have a nephrostomy tube placed by an interventional radiologist prior to surgery as they do with standard PCNL. Your surgeon will create his own renal access tract during the surgery, eliminating the need for an interventional radiologist and two separate procedures.

No drainage tube is the unique advantage in the tubeless PCNL procedure and our surgeons are among the most experienced in the nation in performing this advanced, minimally invasive technique.

How tubeless PCNL is performed

• PCNL is performed to remove the stone(s) from the kidney.
• In place of a nephrostomy (drainage) tube following extraction of the stone, the renal access tract leading from the outside of the body (the skin, or percutaneous) to the kidney is sealed using a specially designed plug. This plug is made from a gelatin sealant that then seals the access tract internally from your skin into the kidney.
• Most patients receive a urinary stent that dilates the urinary tract and maximizes the drainage of the kidney. This gives the kidney time to heal from the procedure and also allows small stone fragments to easily pass through the urinary system without causing a blockage. The stent is usually removed in your surgeon’s office in three to five days following your surgery.
• A CT scan will be performed post-operatively to ensure all stone fragments have been removed, to ensure the renal access tract is completely sealed with the special plug and that the stone fragments are completely removed.
What is a ureteral stent?

In place of an external drainage tube, tubeless PCNL patients receive a ureteral stent, a small plastic tube placed in the urinary tract, which dilates the urinary tract and maximizes the drainage of the kidney. This gives the kidney time to heal from the procedure and also allows small stone fragments to easily pass through the urinary system without causing a blockage. The stent is usually removed in your surgeon’s office in three to five days following your tubeless PCNL surgery.

Advantages of tubeless PCNL

Tubeless PCNL offers patients a number of significant advantages including:

- Less post-operative pain than PCNL and open surgery to remove kidney stones.
- The most accurate localization of the kidney stone(s) and complete removal of the stone(s).
- Minimal trauma to the kidney and surrounding tissue.
- No leakage of fluids from a nephrostomy tube thanks to the placement of the special plug, or seal, in the renal access tract in place of the tube.
- A quicker recovery and quicker return to daily activities compared to open surgery and even to traditional PCNL surgery.
- For many patients, the procedure can be performed as a same-day surgery in Chesapeake Urology’s state-of-the-art Summit Ambulatory Surgical Center. For patients who have the procedure performed in a hospital, tubeless PCNL also offers a shorter length of hospital stay in most cases.

Who is a candidate for tubeless PCNL?

Your surgeon will determine if you are a good candidate for tubeless PCNL by assessing your overall health as well as the size and location of the stone in the kidney. In certain cases, the tubeless PCNL procedure may be performed in our specially-equipped Summit Ambulatory Surgical Center rather than in a hospital operating suite. Again, your surgeon will make this determination and discuss the best options with you for optimal outcomes.
Dr. Julio Davalos is the director of Chesapeake Urology’s Kidney Stone Program and a national leader in the treatment of large kidney stones and PCNL/tubeless PCNL surgery. With more than 1,200 PCNL surgeries and more than 500 tubeless PCNLs performed to date, Dr. Davalos is one of the nation’s pioneers in this complex surgical procedure. And, he is the only surgeon in the country performing ambulatory tubeless PCNL for removing large kidney stones as a same-day procedure in an ambulatory surgery center.

An innovator and a researcher, Dr. Davalos also helped develop the specialized surgical plug utilized in tubeless PCNL procedure with one of the largest medical device companies in the U.S. He has been an investigator in numerous research studies for the diagnosis and treatment of kidney stones, has published articles in multiple medical journals and has presented at national meetings on the topic of large kidney stones and tubeless PCNL as a standard of care.

Dr. Julio Davalos is a foremost national expert in performing PCNL and Tubeless PCNL in patients with large kidney stones. In fact, the numbers speak for themselves: Dr. Davalos has performed more than 1,200 PCNL and over 500 Tubeless PCNL surgical cases to date, making him one of the most experienced kidney stone surgeons in the country.
Preparing for your PCNL surgery

Your urologist will provide you with pre-surgical instructions to ensure you are ready for your surgery. Prior to your PCNL or tubeless PCNL procedure, your urologist will have you do the following:

- Schedule a visit with your primary care physician for a physical examination, blood work and possibly an EKG. Your surgeon’s office will provide a list of tests needed for surgical clearance.
- Do not eat or drink after midnight the night prior to your procedure unless otherwise instructed.
- You may need to stop aspirin or blood thinners depending on your physician’s instructions (never stop aspirin and blood thinners without discussing with your primary care physician).
- Please bring a list of your current medications to your surgery and arrive 90 minutes prior to your scheduled procedure.
- Arrange for a ride home. After surgery, you will need a family member or trusted friend to drive you home.

Ambulatory tubeless PCNL

Ambulatory tubeless PCNL is performed with several key modifications that allow patients to go home the same day the surgery is performed. As with many procedures in medicine, advances in procedural techniques and technology have allowed patients to recover much faster than in the past.

An ambulatory tubeless PCNL procedure is performed in our state-of-the-art Summit Ambulatory Surgical Center, specially equipped with the sophisticated instruments and technology required to perform this complex surgery. Our ASC is also staffed with nurses experienced and specially trained in the PCNL procedure, ensuring the highest level of care for patients.

Not all patients are candidates for an ambulatory tubeless PCNL. Your surgeon will discuss your particular case, medical history and current health to determine if ambulatory tubeless PCNL is an option.

At present, more than 95% of PCNL procedures done at Chesapeake Urology are performed with a tubeless technique, benefitting many patients.
What to expect after PCNL surgery

• Your surgeon will perform a CT scan to ensure that all fragments of the kidney stone have been removed. You will likely have a chest scan performed at this time as well. Your doctor will review the scan and the results of your surgery with you prior to discharge.

• If you had the procedure performed in a hospital, you will usually have a catheter in the bladder until the following day.

• You may see blood in the urine, which may last several days to weeks. This is common.

• You may have a ureteral stent placed during your procedure. The stent will stay in for several days to one week depending on your situation and your surgeon will remove it in the office.

• You will be given prescriptions that may include: antibiotics (typically 24 hours), pain medications and stool softeners.

• Your surgeon will give you instructions for follow up.

• Most patients return to work and full activity within two weeks.

*If you experience a fever higher than 100 degrees, have excessive red blood in your urine and/or cannot tolerate food or fluids, call your doctor right away.

If you go home with a nephrostomy tube:

Patients who had the standard PCNL procedure may go home with a nephrostomy tube and drainage bag.

• Empty the drainage bag before it gets full. If the bag no longer drains or you experience back pain, call your surgeon right away.

• If you experience leakage of fluid around the tube, it may be necessary to change the dressing.

• You can shower, but keep the incision site covered with a waterproof dressing. It is okay to shower with the drainage bag.

• Approximately three to five days after discharge, you will return to your surgeon’s office for removal of the nephrostomy tube.

Patients who have tubeless PCNL will not have a nephrostomy tube in the kidney following surgery; rather, an internal plug will seal the access tract from the skin into to the kidney. Therefore, only a small bandage will cover the incision site on the skin.

Chesapeake Urology has on its team one of the few urologists in the nation with the experience to perform this highly sophisticated PCNL surgery, resulting in optimal outcomes for our patients.