Chapter 2
Simple Nephrectomy

Please Give Three Tips for Laparoscopic Simple Nephrectomy

Dr. de la Rosette

People tend to put in a minimum number of ports for simple nephrectomy, say, three ports, maybe because it's sexy! Maybe you can even do it with two, but I think, when doing simple nephrectomy, one should not be afraid to put in an extra port, if you think that would help and you should not wait too long to do that. From the beginning, if you feel you have chosen the wrong port and need an additional port, just go ahead and put one

in. The second tip is that when you go for the transperitoneal approach you often go for a zero-degree lens, but if you go in a retroperitoneal approach you absolutely need the 30-degree lens, because otherwise you will not have the optimal view. The third tip is that instead of using a GIA to control the renal vessels you can use the very nice Wecklock® clip. They are cheap, they are reliable, and they are easy to handle.

Dr. Keeley

A common problem among novices is that they make a great effort to find the ureter before touching the kidney and oftentimes find themselves going through a lot of fat in the retroperitoneum, unable to find the ureter for quite some time. A very simple technique is first to identify and then lift the lower pole of the kidney, putting it on stretch and thereby exposing the space medial to it (Figure 2.1). In doing so, you can lift the ureter and the hilum away from the colon and the great vessels, so that further dissection is much easier. If you try to find the ureter in its native bed or where it usually lies, you find yourself going through an awful lot of tissue in order to identify a very small structure. By lifting the lower pole of the kidney, this brings it much more on stretch. This is a technique that I learned from David Tolley in Edinburgh and he in turn learned it from a Russian urologist who was working with Dr. Gerhard Fuchs at UCLA many years ago in the early 90s. It is nothing new, but again it is the most common obstacle people come up against and, I think, oftentimes, people are incorrectly taught to find the ureter first and put that up on stretch.

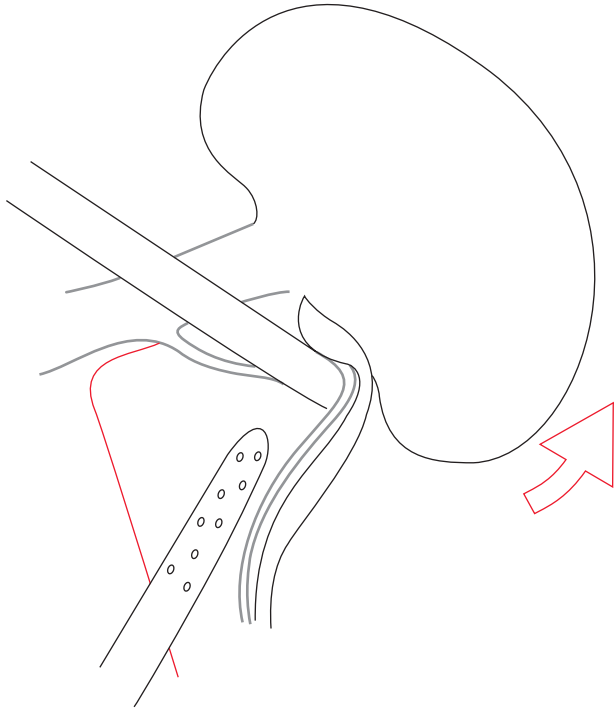

Fig. 2.1 Elevation of lower pole of the kidney.

Another simple technique, which is again nothing new or unusual, is to leave the ureter intact during the dissection, so that you don't have to spend a grasper or a retractor on the cut end of the ureter during a nephrectomy. I've seen people deliberately divide the ureter and then use that as a lever. However, if you leave the ureter intact, you can then use simple blunt instruments to lift the ureter and so the hilum can be put on stretch. This also prevents a common problem at the end of the nephrectomy, which is loss of orientation and twisting of the kidney.

How Does One Find the Renal Hilum During Transperitoneal Laparoscopic Nephrectomy?

Dr. Gill

After reflecting the bowel medially, the ureter and gonadal veins are identified, retracted laterally, and the psoas muscle identified between the ipsilateral great vessel medially and the ureter/gonadal vein laterally. On the left side, the gonadal vein is then traced cephalad to identify the renal vein. At this point, the ureter and gonadal vein are transected en-block in the vicinity of the lower pole of the kidney using an Endo-GIA stapler. The proximal end of the transected ureter and gonadal vein are tightly grasped with locking forceps and retracted antero-laterally, thereby torquing the lower pole of the kidney, upward and outward (Figure 2.2). This will swing the posteriorly located renal artery somewhat inferiorly and anteriorly, bringing it into easier view behind the renal vein. Following the gonadal vein cephalad is the best way to identify the left renal vein. We typically place one clip on the renal artery to occlude arterial inflow to the kidney. Thereafter, the renal vein is taken with an Endo-GIA stapler and the renal artery is now clearly visualized and dissected, and additional clips are placed and transected. On the right side, the gonadal vein enters the vena cava and can be clipped and divided to prevent inadvertent injury. As on the left side, the ureter and peri-ureteral fat are transected with an Endo-GIA stapler near the lower pole of the kidney, then grasped and retracted anterolaterally, thereby bringing

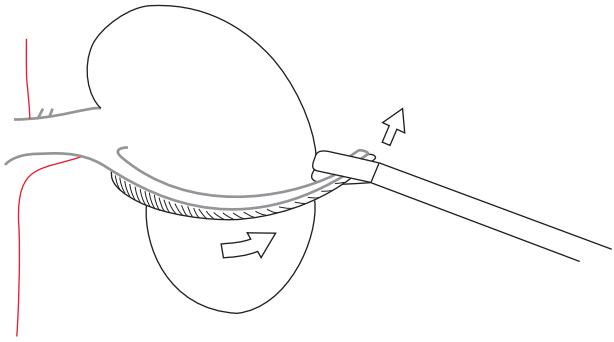

Fig. 2.2 Retraction of the ureter and gonadal vein.

the posteriorly located renal artery into somewhat better view. This is then clipped and occluded. The renal vein is then taken as on the left side, and finally the renal artery is secured.

How to Expose the Renal Artery and Adrenal Vein

Dr. Keeley

In left-sided transperitoneal nephrectomy, one can have difficulty identifying the renal artery because it is lying either right behind or slightly superior to the renal vein. In this situation, the gonadal vein is clipped and transected at some distance from the renal vein. The gonadal vein stump can then be used as a handle to reflect the left renal vein in order to expose the renal artery.

Trying to expose the upper pole of the left kidney or finding the left adrenal transperitoneally, I find, is often

times challenging. It is helpful to dissect the peritoneal reflexion lateral to the spleen. Developing the space between the upper pole of kidney and the spleen can allow the spleen to fall more medially and get out of your way, and it will take with it the tail of the pancreas, so that you get to the left adrenal and upper pole of the kidney easier.

Locating the Renal Artery in Retroperitoneal Surgery

Dr. Wolf

In many retroperitoneoscopic cases the artery is obvious once the kidney is lifted up, but in others—usually obese men—the landmarks are indistinct and the location of the artery cannot be determined in the usual fashion (looking for pulsations). We have realized that it is almost always right in front of the port at the base of the 12th rib, or at most a centimeter or two cephalad to this (Figure 2.3). This is an amazingly consistent relationship, and if you are lost it can help you get started every single time!

Dr. Gill

After port placement, the first step is to place the Gerota's fascia-covered kidney on significant lateral traction with a laparoscopic retractor in the surgeon's non-dominant hand. Using a suction or J-hook electrocautery, gentle

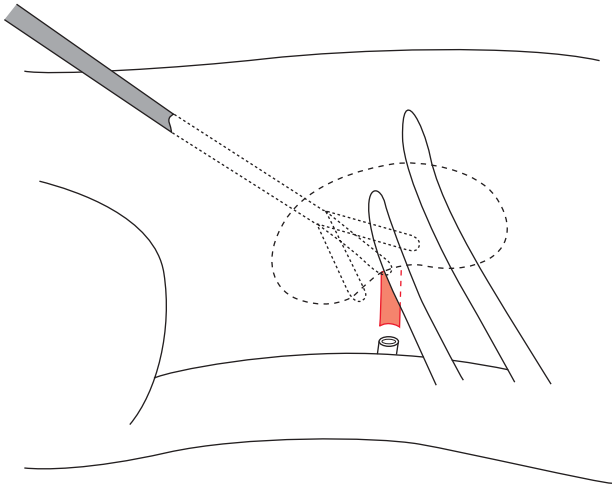

Fig. 2.3 Locating the renal artery.

dissection is performed along the anterior surface of the psoas muscle toward the superomedial direction. At this point, it is important to keep the dissection in the flimsy white fibro-areolar tissue along the ipsilateral great vessel. One must stay anterior to the ipsilateral great vessel, taking care not to stray posterior to it. If dissection is proceeding in the yellow peri-renal fat, one is probably dissecting too close to the renal parenchyma. Again, good lateral counter-traction is important to place the renal hilum on stretch. In general, the renal hilum is located at an angle of 45 to 60 degrees from the vertical. This is the angle that the shafts of your instruments outside the patient's body will be describing when you find the renal vessels. The renal artery is posterior, and the renal vein is anterior and usually caudal (inferior) to the renal artery. Before beginning dissection on the renal artery or vein, the horizontal positions of the major

vessels (aorta on the left side, vena cava on the right: both parallel to the psoas) and vertical pulsations of the fat-covered renal artery laterally are looked for, and almost always visualized. We typically control the renal artery with Weck® clips (two toward the aorta, one toward the kidney), and control the renal vein with an Endo-GIA stapler. One must remember that during renal retroperitoneoscopy the psoas is the constant anatomic landmark: the psoas "is your best friend."