

# Laparoscopic Nephrectomy

**R.K.Mishra**

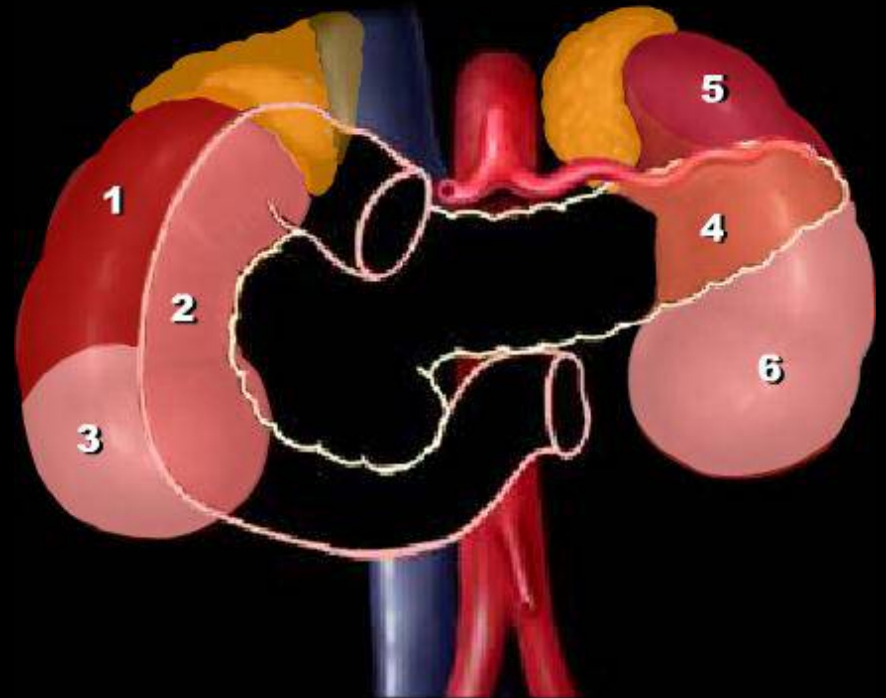
# Anatomy

- right kidney:

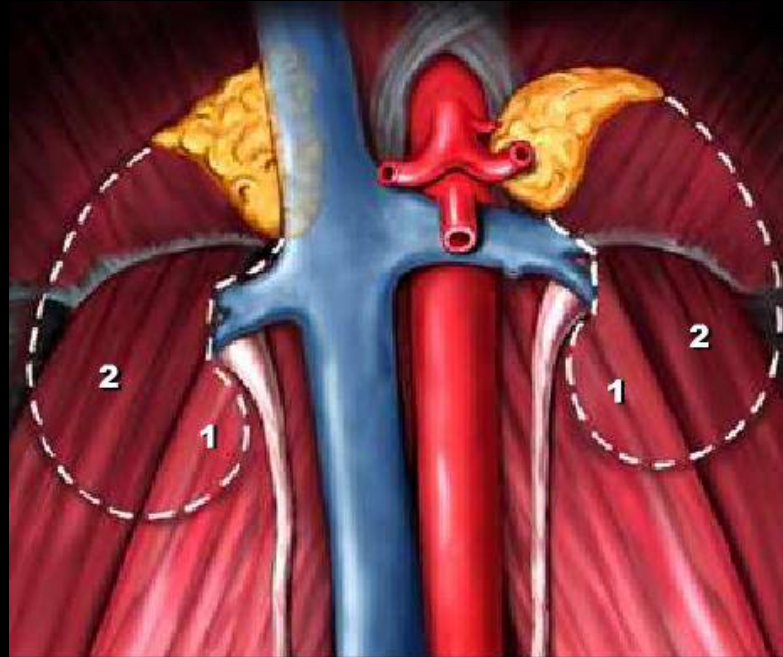
1. Inferior surface of liver
2. Second portion of duodenum
3. Hepatic flexure of colon

- left kidney:

4. Tail of pancreas
5. Inferior surface of spleen
6. Splenic flexure of colon



# Anatomy



1. Psoas muscle

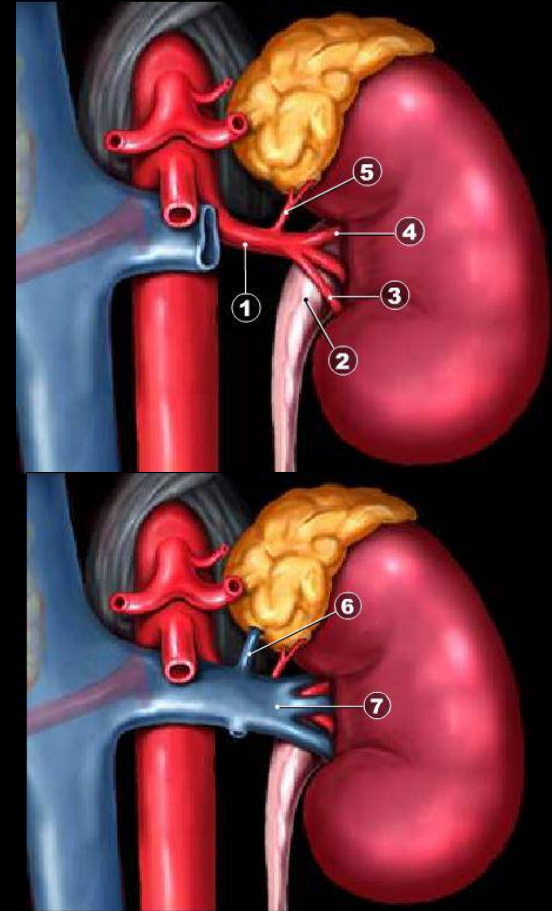
2. Quadratus lumborum muscle

The posterior surface of the kidneys lies on a muscular plane comprised of the psoas muscle medially and the quadratus lumborum muscle laterally.

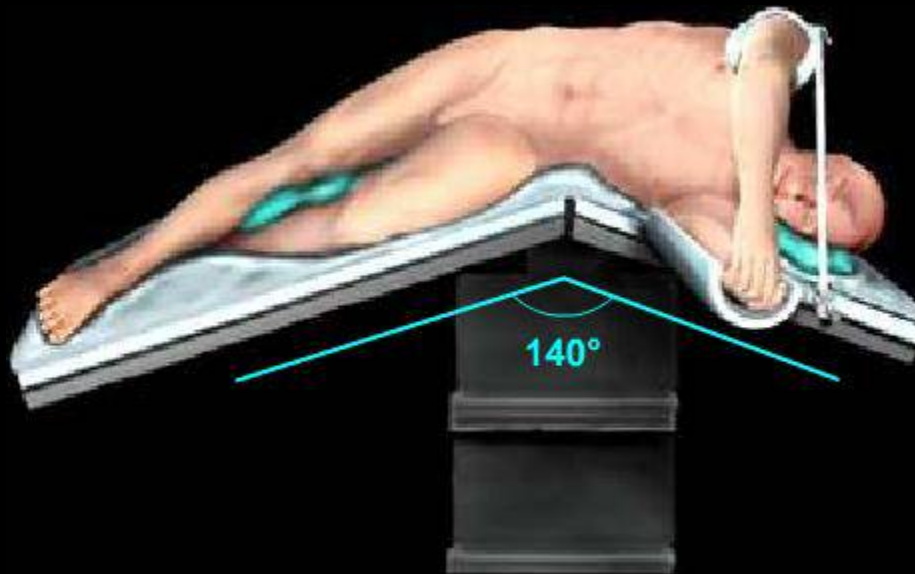
# Vascular Structures

1. Left renal artery (arises from aorta at vertebral level L1/L2)
2. Left renal pelvis
3. Left lower pole artery
4. Left upper pole artery
5. Left inferior adrenal artery
6. Left adrenal vein
7. Left renal vein

The renal pedicle is comprised of the renal artery and its branches, the renal vein, and the lymphatic vessels surrounding the initial portion of the renal pelvis.



# Patient Position



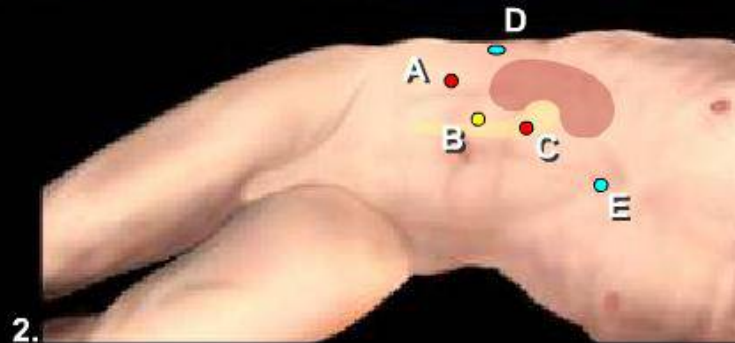
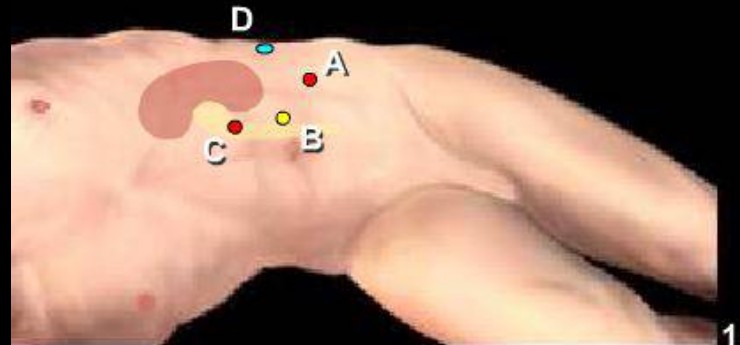
# O.T. Setup

The surgeon performs the nephrectomy with one assistant. A second assistant may be helpful if the surgeon is inexperienced.

1. Surgeon
2. First assistant
3. Second assistant (optional)
4. Scrub nurse



# Port Position



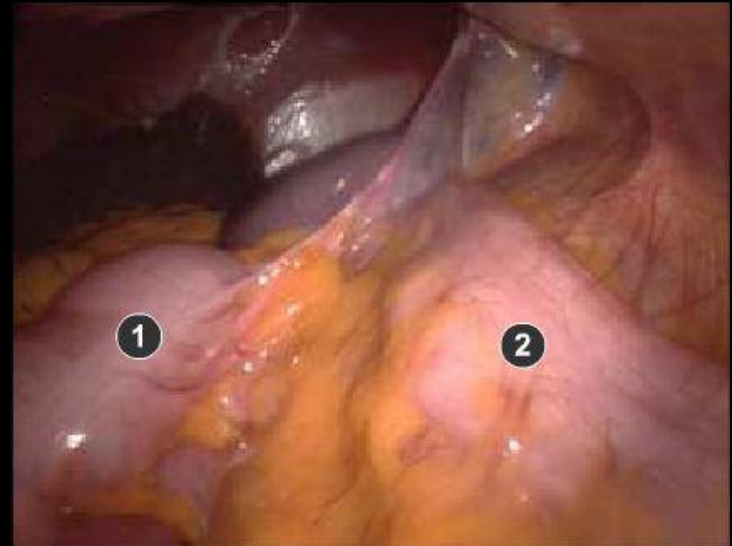
Four trocars are used for a left nephrectomy, and 5 for a right nephrectomy.

# Left Nephrectomy

The quality of the exposure is a determining factor of the facility of the surgical act.

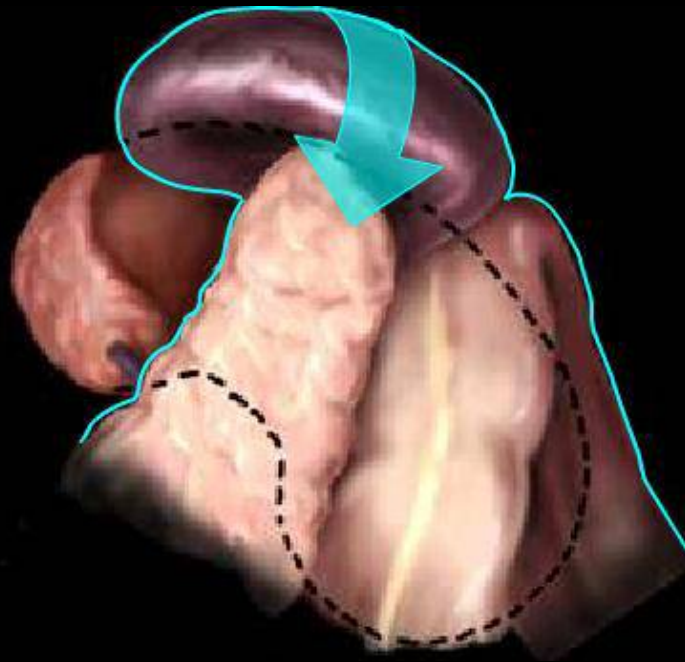
The small intestine and omentum must be pushed into the inferior half of the abdominal cavity. The force of gravity will maintain the intestinal loops in this position. A 10° to 15° ventral rotation can be helpful. Any adhesions that get in the way of the exposure are freed. Complete muscle relaxation is necessary.

1. Transverse colon
2. Descending colon





# Mobilization

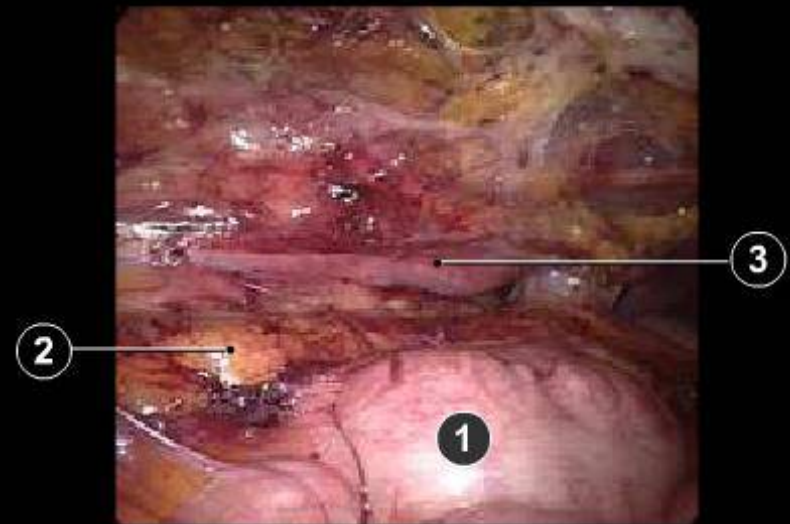


The sigmoid colon, descending colon, tail of the pancreas and spleen are mobilized ventrally en bloc, providing wide access to the retroperitoneum.

# Coloparietal Mobilization

Coloparietal mobilization is begun at the level of the sigmoid loop. The paracolic gutter is incised, starting at the summit of the sigmoid loop. The surgeon thereby reaches the retroperitoneal space, posterior to the posterior leaflet of the mesosigmoid and anterior to Toldt's fascia.

1. Sigmoid colon
2. Posterior leaflet of the mesosigmoid
3. Left gonadal vein

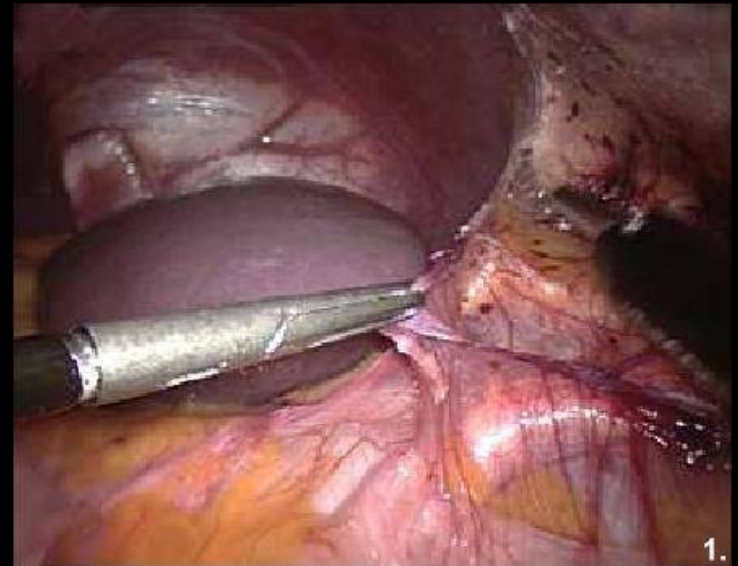


# Mobilization of Colon

The descending colon and the splenic flexure are mobilized.

The coloparietal mobilization is pursued by the caudal to cephalic incision of the peritoneum of the left colic gutter. Dissection is done posteriorly to the mesocolon, taking care not to open its posterior leaflet, which is used as a landmark. The splenic flexure is mobilized in the same way, without opening the splenorenal ligament.

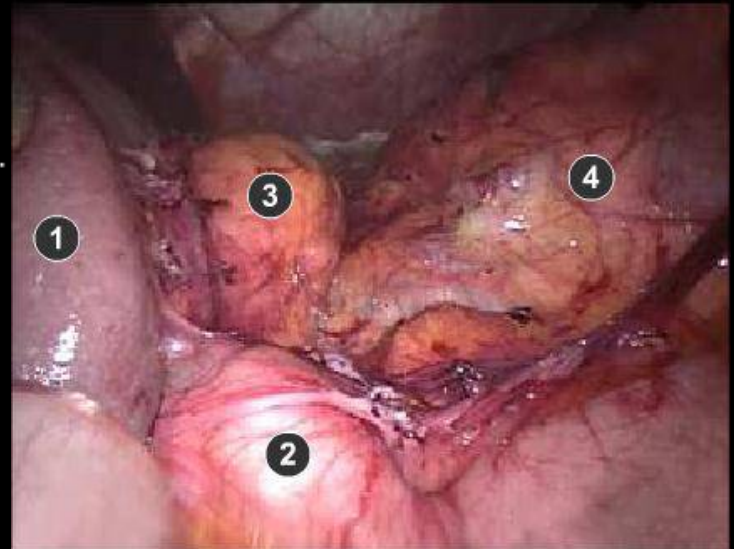
1. Mobilized splenic flexure



# Splenic Mobilization

The colo-spleno-pancreatic complex is mobilized ventrally to the left edge of the aorta. Because the dissection is done in an avascular plane, it is bloodless. The duodeno-jejunal flexure must frequently be mobilized ventrally over a few centimeters.

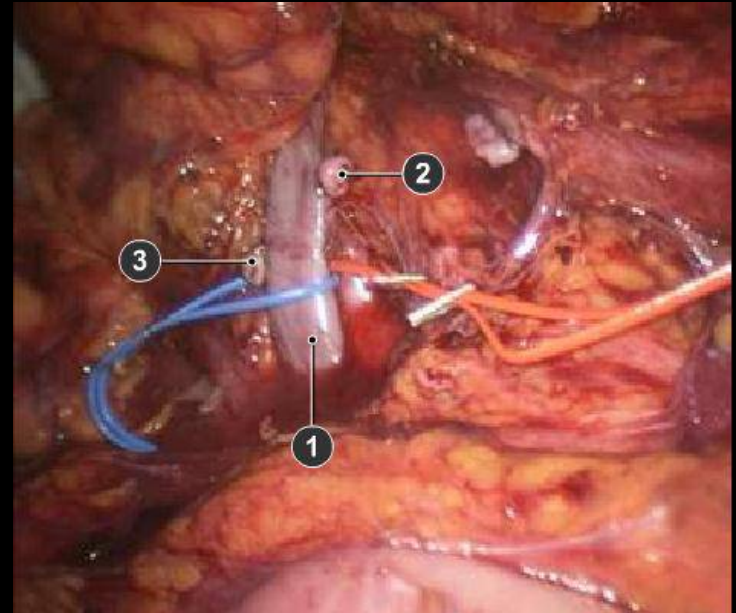
1. Spleen
2. Descending colon
3. Tail of pancreas
4. Left kidney



# Vascular Approach

The left renal vein is approached anteriorly from the aorta, slightly to the left, after opening Toldt's fascia, where there is the lowest risk of injury to the veins. A vessel loop is passed around the vein. Dissection of the vein is then carried out towards the hilum of the kidney. The adrenal vein and the gonadal vein are identified and divided between ligatures (clips are not used, to avoid the risk of interposing clips in the vascular stapler during division of the renal vein). The surgeon should check to see if there is a lumbar vein draining into the renal vein. Where these lumbar veins are present, they are short and must be divided between ligatures.

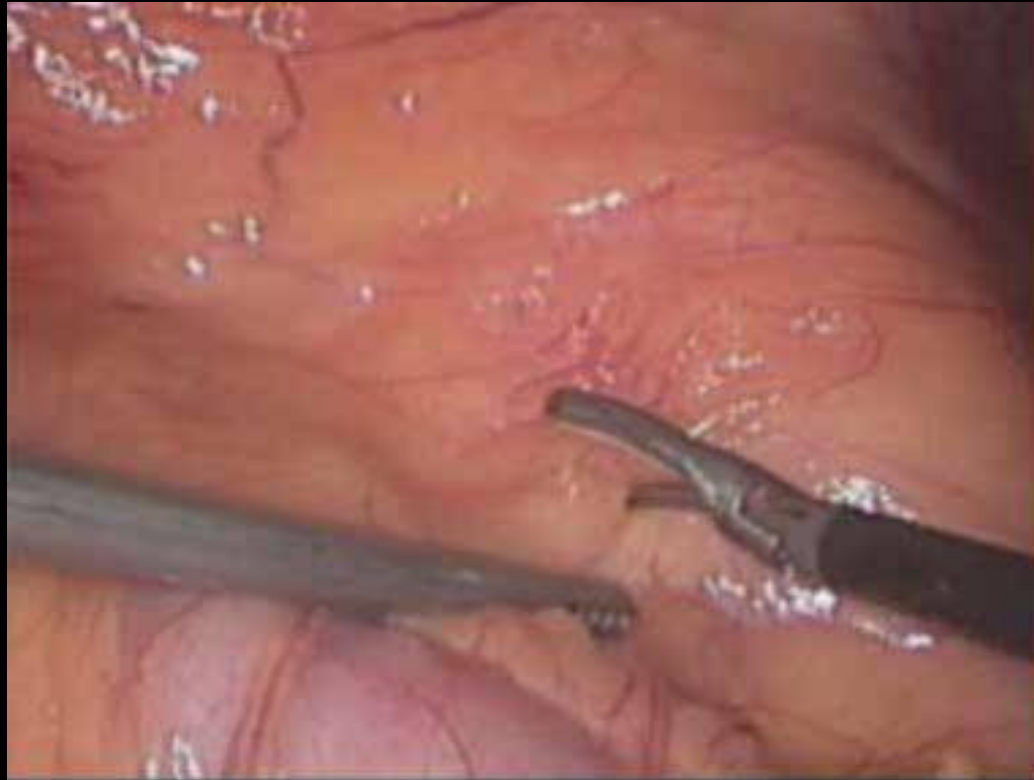
1. Left renal vein
2. Gonadal vein
3. Adrenal vein



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# Nephrectomy





# Complication

- The complication rate is 5.64%.
- The most frequent complications are
  - Bleeding (2.5%)
  - Retroperitoneal hematoma (1.2%).
  - Bowel Injury 1%
- There were no statistically significant differences in complications rate by age, sex, or surgical access: transperitoneal versus retroperitoneal.
- The complications rate was similar for both the laparoscopic and hand-assisted technique.

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# Thanks



Batch December 2006 With Health Minister of Delhi Dr. Harshvardhan