Nephrectomy

EMPHASIS:
Nephrectomy is indicated for variety of conditions in which a functioning kidney cannot be preserved: Trauma, neoplasia, hydronephrosis, persistent pyelonephritis, or various pathologic conditions of the associated ureter. In this article, we will describe the technique for nephrectomy.

PREOPERATIVE DIAGNOSTICS:
1. Complete physical examination.

AXIOM: Concurrent bacterial infection is common with many renal conditions.
3. Abdominal ultrasonography.
4. Radiography
   a. Two-view radiographs of the abdomen (and thorax, if neoplasia is suspected).
   b. Excretory urogram.

AXIOM: Due to the risk of contrast-agent-induced renal failure, this procedure should only be performed if the diagnostics listed above have failed to adequately confirm the diagnosis.
5. Scintigraphy to evaluate the function of each of the kidneys individually (to ensure that the kidney to be preserved is not dysfunctional).

PREOPERATIVE CARE:
1. Indwelling cephalic catheter.
2. Intravenous anesthetic induction protocol

AXIOM: Consider the degree of renal insufficiency when choosing an induction agent. Many drugs (e.g. ketamine) are renally eliminated, so a lower dose or an alternative induction agent may be advisable.
3. Endotracheal intubation and inflate cuff.
4. Isoflurane inhalant anesthesia to effect.
5. Lead II ECG and pulse oximetry monitoring during prep and surgery.
6. Clip and prep the ventral abdomen for aseptic surgery.
7. Cefalexin 20 mg/kg IV and Baytril 7.5 mg/kg IV immediately preoperatively.
8. Intravenous fluids to maintain renal perfusion intra-op.

SURGICAL TECHNIQUE:
1. Ventral midline abdominal approach, from just behind the xiphoid, extending just caudal to the umbilicus.
2. Retract the intestines, to expose the kidney and its vessels.
3. Incise the peritoneal membrane, to enter the retroperitoneal space.
4. Expose the lateral (convex) surface of the kidney, by blunt and sharp dissection through the retroperitoneal fat.
5. Mobilize the kidney by continued dissection around its cranial, caudal, and dorsal surfaces, until the convex lateral surface can be rotated 90 degrees toward midline. (See Figure 1)
6. Locate the renal vessels.

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7. Using hemoclips, or monofilament absorbable suture, double ligate (or clip), and transect, the renal artery.

**AXIOM:** Remember that occasionally, there are multiple renal veins rather than just one.

8. Similarly, double ligate and transect the renal vein(s).

**AXIOM:** Do not ligate the artery and vein together, here or anywhere: This could lead to the formation of an arteriovenous fistula in rare cases.

9. Incise the retroperitoneum overlying the ureter, and dissect the ureter free over its entire length.

**AXIOM:** Retroflex the bladder to visualize the ureterovesical junction, located on the dorsal aspect of the bladder (See Figure 2.)

10. Transect the ureter, after ligating it at the ureterovesical junction (See Figure 2C).

**DANGER:**
Work delicately to avoid traumatizing the cranial and caudal vesical arteries, which pass near the ureterovesical junction.

**AXIOM:** Submit to the laboratory:
- a. bacterial culture swab from the renal pelvis
- b. the kidney for histopathology
- c. any calculi, for crystallographic analysis

11. Routine abdominal closure.

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Figure 1: This schematic drawing depicts the right kidney: 1A) The normal anatomy of the region and the line of the retroperitoneal incision. 1B) Beware double renal veins do occur. 1C) Double hemoclips applied to the renal vein and renal artery separately.
POSTOPERATIVE CARE:

1. Postoperative antibiotic therapy based on culture and sensitivity.
2. Suture removal two weeks postoperatively.
3. Pain management as needed, using oral, injectable or transdermal analgesics.
4. Monitor urine output during immediate postoperative period.
5. Monitor BUN and creatinine as needed postoperatively.

Figure 2: This schematic drawing depicts: 2A) The ventral surgeon's view of the bladder and the ureters. 2B) A stay stitch is placed in the cranial pole of the bladder and then the bladder is pulled caudally, giving the surgeon a view of the dorsal bladder and the exact location of the ureterovesical junction. 2C) The ureter is transected at the ureterovesical junction.

AUTHOR’S NOTE

If you have any questions concerning this paper, additional references, surgical supplies or sources of products mentioned or used in this protocol, please FAX us at 1-310-479-8976. We will answer your questions promptly.
Coming Attractions
Many female dogs suffer from vulvar fold pyoderma. Typically, these patients are obese, or have an infolded “juvenile” vulvar conformation. Incontinence secondary to hypoestrogenism may contribute to persistent dampness and inflammation to the area. Persistent odor, discomfort and self trauma result.

Due to deep folds of tissue, topical medication and cleansing of the area often fail to provide relief.

Next month, we shall present our surgical protocol for episioplasty. This surgical excision of these vulvar folds gives permanent relief and healing.

See you then!

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