Anesthetic Technique for Laparoscopic Donor Nephrectomy

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General: This is a laparoscopic procedure in the right or left lateral decubitis position. In experienced hands, this procedure takes between 3-5 hours from in the OR to in the PACU. One must make certain the risks to the individual patient are minimal and that the appropriate work-up has been done to insure adequate renal function with one kidney.

Monitoring: Patients are generally healthy, therefore standard anesthetic monitors will suffice. A foley catheter will be placed to monitor urine output which should be $\geq$ 1 ml/kg/hr at all times throughout the case.

Positioning: Right or left lateral decubitis with table flexed and kidney rest up. Axillary roll should be placed. Assure adequate padding of down eye, ear and arm (ulnar nerve). Beware of neck and brachial plexus stretch.

Technique: Any general anesthetic technique is acceptable. Nitrous Oxide should always be avoided. Our practice is to employ a balanced technique with volatile agent, Fentanyl and Rocuronium/Vecuronium with immediate extubation upon finishing the procedure. A one time dose of both Toradol 30 mg IV and Tylenol 1gram IV should be given toward the end of the case.

Positioning: The effects of the lateral decubitis position and abdominal insufflation (15 mm Hg) on pulmonary mechanics (decreased compliance, increased peak airway pressures and VQ mismatch) and the cardiovascular system (decreased venous return and cardiac output) must be remembered. Subcutaneous emphysema may be a problem postoperatively.

Other Considerations: Ancef, 2 grams should be given prior to incision. **Mannitol, 12.5 grams is given IV once positioned prior to incision, then repeated 30 minutes prior to arterial clamping (communicate with the surgeon)** to take advantage of it's properties as an oxygen free radical scavenger as well as an osmotic diuretic.

Patients must be kept well hydrated throughout the procedure to insure adequate perfusion of the kidneys. Be very generous with intravenous fluids to insure urine output of > 1 ml/kg/hr, usually between 3-4 liters**. Normosol (Plasmalyte)** is the fluid of choice as it is a balanced electrolyte solution that is pH balanced to 7.4 to avoid iatrogenic acidosis.

A small dose of Lasix, such as 10 mg, may be used at the end of the case to get rid of excess intraop fluids **(communicate with the surgeon).** Further, as soon as the vessels are cross clamped, the IV's should be decreased to KVO.

Occasionally, Papaverine is applied directly to the renal artery during dissection to avoid spasm. Theoretically, this could lead to systemic hypotension; however, we have not seen this to be a problem.

Postoperative nausea is a problem; therefore, an OG tube is passed to keep the stomach evacuated after intubation, Decadron 4mg IV is given early in the case, and Zofran 4 mg IV is given towards the end of surgery.

Always remain aware of the possibility of converting to an open procedure, although in our experience this rarely happens. To be safe, large bore IV access (at least one 18 gauge IV or larger that runs well, if smaller than 2 should be used) should be established to permit easy delivery of large quantities of IV fluids and allow for resuscitation should hemorrhage leading to an open procedure occur.