

Intra-op Kidney Transplant Recipient Protocol

PRE-OP Evaluation Considerations

- Check a **Potassium level**.
 - If a BMP has been ordered, but has not resulted on time, order a STAT VBG. This is a fast way to get results.
- Confirm the **last time the patient had dialysis (HD or PD)**
 - This will help you determine the patient's fluid status and will help guide intra-op IVF administration.

Lines

- **Two peripheral IV lines**
 - Vascular access may be limited due to the presence of AV fistulas. Have an ultrasound in the room. Lower extremity PIV placement is usually discouraged due to surgical clamping of the iliac vein intra-op. Remember to look at the EJ. Consider a central line if needed.
 - Central lines are no longer routinely indicated
- ***Arterial line will be placed in some patients***, dependent upon individual patient comorbidities and how well or poorly controlled those comorbidities are (ie HTN). Typically, both arms are out. So, you may consider placing an arterial line later, if needed. Discuss this with the attending anesthesiologist.
 - Reasons for an arterial line: hemodynamic monitoring, vasopressor titration, and ABG sample collection for specific labs.

Muscle Relaxant Choice (Cisatracurium vs Rocuronium)

- Traditionally cisatracurium has been used in patients with ESRD
 - Predominantly (80%) eliminated by Hoffman elimination
 - pH & temperature-dependent process. **Keep your patient warm.**
 - 20% renal and hepatic elimination
- Rocuronium with sugammadex for reversal is a reasonable choice
- Regardless of which agent you choose, **use a twitch monitor to guide dosing and document twitches**
- **AVOID mixing these two medications**
 - The UCSF QI database suggests that the risk of residual neuromuscular blockade may be higher in patients who receive both rocuronium and cisatracurium during a case.
- One European study showed a better “recovery profile” using rocuronium-sugammadex (compared to cisatracurium-neostigmine) in patients undergoing kidney transplantation (ie. lower incidence of post-op severe hypoxemia, shorter PACU stay, and decreased ICU admission).

<https://perioperativemedicinejournal.biomedcentral.com/articles/10.1186/s13741-021-00231-2>

Pre-incision medications

Discuss these meds (and immunomodulators) with the surgeons **BEFORE** induction of GA. Always confirm meds with the surgeons during intra-op **TIMEOUT**.

- **Cefazolin 1-2 gm IV**. If allergic to penicillin, use **Clindamycin 900 mg IV**.
- **Solu-Medrol 500 mg IV**. Discuss with the surgeon if the patient is less than 40 kg
- +/- **Benadryl 50 mg IV (Administer **IF** giving thymoglobulin later)**

IV fluid management

- In general, dialysis patients are relatively dehydrated prior to arriving to the OR.
- Avoid potassium-containing fluids (i.e. Isolyte and Lactated Ringer solutions).
- The amount of requested IVF differs between surgeons. **Discuss fluid goals with the surgeon and attending anesthesiologist.**
- **Keep total IV fluids to approximately 2 liters or less, if possible.** If this amount is inadequate to maintain blood pressure goals, discuss with surgeon the use of additional fluids (crystalloid or colloid) or pressors.
- **Have Albumin 1000cc in the room.**
- **Confirm the availability of 2 units PRBCs with the blood bank.** Discuss with the surgeon if any blood should be brought to the OR during surgical dissection.

Intra-op Medications (immunomodulators are ordered by the surgery team)

- **Simulect** (Basilixumab) – used for patients with lower risk of rejection
 - Administer **30 minutes after Solumedrol** is given. Infused over 30 minutes. Caution for hypersensitivity/allergy causing profound hypotension.
- **Thymoglobulin**– used for patients with higher risk of rejection
 - Ask the surgeon when to start infusion.
 - **Pre-treat with Benadryl 50 mg IV, and Solumedrol.**
 - **Must use a 0.2-micron filter**, over 6-8 hours (see pharmacy instructions)
 - Should not run-in line with other medications.
 - Can cause a **SIRS-like response**, including hypotension. If this occurs, the infusion can be stopped or slowed to run over a longer period.
- During vascular anastomosis be prepared to administer:
 - **Mannitol 12.5-25 gm IV** (confirm dose with surgeon)
 - **Lasix 100 mg IV**
- **Dopamine** (2-5 mg/kg/min) – have available in room, but do not open.
 - When vascular clamps are released, **systolic BP should be maintained at 120-140 mmHg**. **AVOID phenylephrine drip** intra-op or in PACU due to renal vasoconstriction and theoretically worsening graft function.
 - Only start Dopamine after discussion with the surgeon. Preferred by surgeons for theoretical renal protection. Side effect = tachycardia.

Reperfusion

- Record **reperfusion of kidney** from the **Vascular Event** tab in LLEAP
- Be prepared for hemodynamic changes at this time.

References/Resources:

<https://anesthesia.ucsf.edu/clinical-resources/ucsf-anesthesia-resident-pearls-renal-transplant>

https://www.accessdata.fda.gov/drugsatfda_docs/label/2010/020551s019lbl.pdf