

Supplemental Material Table of Contents

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S1. Catheter Placement and Use

All the surgical catheter placements were performed by the same two surgeons. All percutaneous catheter insertions were performed by the same two interventionists. None of the four proceduralists were involved in PD access placement for the maintenance PD program or prior expertise in PD access placement.

Prior to catheter insertion, patients would receive prophylactic antibiotic doses of either 1g Vancomycin or Cefepime intravenously, however since all of the patient who had catheters insertions were already prescribed those antibiotics, no prophylactic doses were needed.

Surgical PD catheter placement

All patients were already intubated and received procedural sedation and neuromuscular paralysis. The patient's abdomen was prepped and draped in typical sterile fashion. A site in the right or left lower quadrant just lateral to the umbilicus was chosen for PD catheter insertion. It was then infiltrated with lidocaine 1% with epinephrine. A 3 cm horizontal incision was made with the scalpel and the subcutaneous tissue was divided with the electrocautery and scalpel. The anterior fascia was identified and divided sharply with the scalpel revealing the underlying rectus abdominis muscle. The rectus muscle fibers were split and the underlying posterior sheath was grasped, clamp, elevated and incised, entering the peritoneal cavity under direct vision.

A 57- or 62 cm curl cath, 2 cuff peritoneal dialysis catheter was threaded over a stylet introducer and introduced into the peritoneal cavity towards the pelvis. The catheter was advanced over the stylet introducer until the deep cuff was located superficial to the posterior sheath within the

rectus abdominis muscle. The anterior sheath was closed, securing the peritoneal dialysis catheter. The dialysis catheter was then tunneled subcutaneously, exiting through a stab incision, ensuring that the deep cuff was still located within the rectus abdominis muscle and the superficial cuff was located in the subcutaneous tunnel 2 cm from the exit site. The catheter was secured to the skin, the incision was closed in layers, and a dressing was placed.

Scarpa's fascia was re-approximated with 3-0 vicryl. A 4-0 monocryl subcuticular layer was then placed followed by LiquiBand. The catheter was then connected to the transfer set, and the locking adapter and cap were secured. The catheter was secured at the exit site with a nylon drain stitch.

Interventional Radiology Suite Catheter Placement

The patient was placed supine on the fluoroscopic table and the abdomen was prepped and draped in sterile fashion. Ultrasound guidance included evaluation of potential access site in the mid abdomen. The site was anesthetized with lidocaine and a small dermatotomy was made with blunt dissection to the rectus fascia. Ultrasound visualization of needle entry into the peritoneum was then undertaken. A 0.018-inch wire was passed through the needle and fluoroscopically visualized to be intraperitoneal. The needle was then exchanged for a percutaneous access set and contrast injection performed to confirm intraperitoneal placement.

Using a combination of stiff guidewire and a Berenstein catheter, the guidewire was passed through the lower pelvis and up into the right or left upper quadrant (depending on side of catheter placement). The Berenstein catheter was exchanged for a peel-away sheath. The

peritoneal dialysis catheter was advanced over the wire through the peel-away sheath into the peritoneal cavity. The catheter was advanced until the deep cuff rested on the rectus fascia.

The exit site was marked approximately 5cm lateral to the access site, and was anesthetized with lidocaine. A small dermatotomy was created. The dialysis catheter was connected to a tunneling device and a subcutaneous tunnel was created. The dialysis catheter was pulled through the lateral exit site until the subcutaneous cuff was positioned within the subcutaneous tunnel.

Fluoroscopy confirmed the catheter tip to be curled in the lower abdomen. The catheter was flushed with 60mL of saline and 20mL were subsequently aspirated freely. The catheter was then capped. Finally, the access site was closed and sterile dressing applied at the access and exit sites.

S2. Total Kt/V calculation method

To calculate the dialysate Kt/V, the concentration of BUN in each sample collected (in mg/dL) had to be corrected for the dilution factor. This was necessary since the automated PD cycler drains any excess volume in the peritoneal bags into the drain bag prior to starting the last fill. This calculation was made as follows:

$$\text{Dialysate BUN} = \frac{\text{Concentration of BUN (mg/dL)} \times (\text{IDV} + \text{TDV} + \text{Excess volume in PD bags})}{\text{IDV} + \text{TDV}}$$

(Where IDV = Initial drain volume, and TDV = Total drain volume)

In order to calculate the daily clearance, the following calculation was then undertaken:

$$\text{Daily Clearance} = \frac{\text{Dialysate BUN}}{\text{BUN}} \times \text{PD effluent volume (L)}$$

Serum BUN

(Where the PD effluent volume is IDV + TDV)

The **weekly clearance** was then calculated by multiplying the daily clearance by 7.

Next, the patients' weight (kg) at the time of catheter insertion was obtained. If the patient's BMI was > 30 , the adjusted body weight was calculated using the following formula:

$$\text{Adjusted body weight} = \text{Ideal body weight} + (0.25 \times \text{Actual body weight})$$

Total body water was then calculated by multiplying the adjusted body weight (for those who have a BMI > 30) or actual body weight (for those with a BMI ≤ 30) by 0.6 for men and 0.5 for women.

Finally, the weekly dialysate Kt/V was calculated as follows:

$$\text{Weekly Dialysate Kt/V} = \frac{\text{Weekly Clearance}}{\text{Total Body Water}}$$

Next, it was important to calculate the urine Kt/V. The first step is to calculate the urine daily clearance.

$$\text{Urine daily clearance} = \frac{\text{Urine BUN}}{\text{Serum BUN}} \times \text{Urine Volume (L)}$$

The urine weekly clearance was then calculated by multiplying the urine daily clearance by 7.

The urine weekly Kt/V was then calculated as follows:

$$\text{Urine weekly Kt/V} = \frac{\text{Urine Weekly Clearance}}{\text{Total Body Water}}$$

Finally, the total Kt/V was determined by adding the dialysate and urine Kt/V values calculated.

S3. Ancillary staff roles and cyclers troubleshooting

To simplify matters for the nurses on the floor and in the ICU, who were overwhelmed with the patient load in the peak of the COVID-19 pandemic, each PD cart in the patients' rooms had a label on it with the contact information for the PD unit. If the cycler alarmed or any issues/concerns arose, they were instructed to contact the unit and a staff member would head over or instruct the nurse on how to proceed. Extra small caps were left on the carts in case patients needed to be disconnected – if they were going for a procedure or imaging study during their time on PD. The PD nurses noted down the expected treatment termination time and would round on the patients to confirm treatment completion.

In an ideal situation, we would have trained the floor nurses on troubleshooting the cycler, and how to aseptically connect and disconnect patients to the cyclers. The unit's contact information would still be supplied in order to support any unforeseen issues or concerns that arose.

S4. Discharge planning

Patients who were COVID-positive who were being prepared for discharge and were deemed appropriate candidates for outpatient PD met with the chronic kidney disease educator and had a psychosocial evaluation performed by the home dialysis unit social worker. If the patient passed the evaluations and was interested in continuing PD in the outpatient setting, then they had a tunneled hemodialysis catheter placed, were transitioned to HD for 14 days post-discharge prior to returning to the home dialysis unit for training and initiation of outpatient PD. This policy was undertaken by the home dialysis unit to insure the safety of the home dialysis unit staff and decrease their exposure to COVID-19. Prior to their discharge from the hospital, the patients were instructed on how to maintain the PD catheter exit site dressing by the PD nurses.

On the other hand, those who were COVID-negative were transitioned to outpatient PD upon their discharge with no need to wait 14 days post-discharge.

S5. HD demands before and during the AcPD program

In the 19 days prior to AcPD initiation, a mean of 31 patients received HD per day: 9 COVID-positive (29%) – 6 of which were performed at the bedside. During the 19 days of the AcPD program, a mean of 34 patients underwent HD per day: 27 COVID-positive (79%) – 15 of which were performed at the bedside requiring 1:1 nursing. The average number of patients per day who had their treatments canceled or rescheduled went from 3 to 10.