Peritoneal Dialysis Catheter Placement: A Surgeon’s Approach to a Positive Patient Experience

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Disclosure

Medical Board, National Kidney Registry

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Information Retention

- Teaching: 90%
- Practice doing: 75%
- Discussion: 50%
- Demonstration: 30%
- Audiovisual: 20%
- Reading: 10%

Objectives

• To highlight how appropriate catheter placement facilitates PD longevity

• To understand how to test for, and prevent leaks when placing a PD catheter
Peritoneal Dialysis Catheter Placement: Basic Considerations

- International Society for Peritoneal Dialysis:
  - One-year actuarial survival should approximate 80%.

- Each PD catheter-related complication:
  - Increases risk of catheter failure more than 3-fold.

- Infection (peritonitis | exit site/tunnel):
  - The leading cause of PD failure (40%).
Adjusted Mortality by Treatment Modality

Under age 65

Age 65 and older

United States Renal Data System, 2017 Annual Report
Dialysis Access: Changes from Initiation – 2 years

2013 - 2016

Percent of patients

- At initiation
- 1 month
- 6 months
- 9 months
- 1 year
- 18 months
- 2 years

Color Legend:
- Other/Unknown
- Death
- Tx
- PD
- Catheter
- AV graft
- AV fistula

United States Renal Data System, 2017 Annual Report
Peritoneal Dialysis Catheter Insertion Techniques

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• Laparoscopic assisted insertion
  – Allows for direct visualization of catheter placement/location and significantly reduces procedure associated misadventure.
  – The catheter tip should ’float freely’ in the dependent pelvis.
  – Allows for selective omentopexy under direct vision.
  – Precise securing of the deep cuff allows for immediate use of the catheter with no risk of leak – allows for urgent start.
  – No need to wait for the catheter to ‘heal’ prior to first use.
1. Chlorhexidine scrub

2. Surgical prep (ChloraPrep®)

3. Barrier drape
Dialysis Access Changes from Initiation – 2 years

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United States Renal Data System, 2017 Annual Report
Pelvic Anatomy and Catheter Placement

- Uterus
- Bladder
- Collapsed Rectum
Anatomy and Catheter Placement: Ways to improve outcomes

- Reinforce the importance of emptying the urinary bladder
- Perioperative stool softeners
Omentopexy – securing the omentum to the anterior abdominal wall – this keeps the omentum out of the pelvis.
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Omentopexy: Why it’s Important for Patients on PD

Omentopexy: Tools

Carter Thomason CloseSure System
Omentopexy: Technique

Omentopexy: Technique

Catheter Placement: Cuff Location Diagram (sagital view)
• Peritoneum completely surrounds the cuff.

• ‘Tire Leak Test’ at 15 mm HG.

• If there is no leakage of air under pressure, then PD fluid won’t leak.
Catheter Placement: Deep Cuff | Urgent Start
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Tire Leak Test: Simple and effective
Tire Leak Test: Simple and effective
Tire Leak Test: Peritoneal Dialysis Catheter Insertion

1) Saline added
2) Pneumoperitoneum
3) No bubbles – no leak!
Exit site is based on surface anatomy

Ash, *Seminars in Dialysis*, 2003
Considerations and Benefits:

- Appropriate medical, surgical and psychosocial candidate for peritoneal dialysis.
- Appropriate Pre-ESRD education, establishes realistic expectations for the patient and their family.
- Catheter can be used immediately, regardless of body habitus.
- Can significantly reduce the need for Central Venous Catheters (and associated morbidities).
Minimizing procedure related morbidity in peritoneal dialysis catheter placement is paramount to a patient’s success with this modality.

Urgent / Semi-urgent peritoneal dialysis catheter placement continues to be under-utilized in the United States.
Thank you!

Time for Discussion and Questions