Tips and Tricks How to get things right all the time? In Peritoneal dialysis

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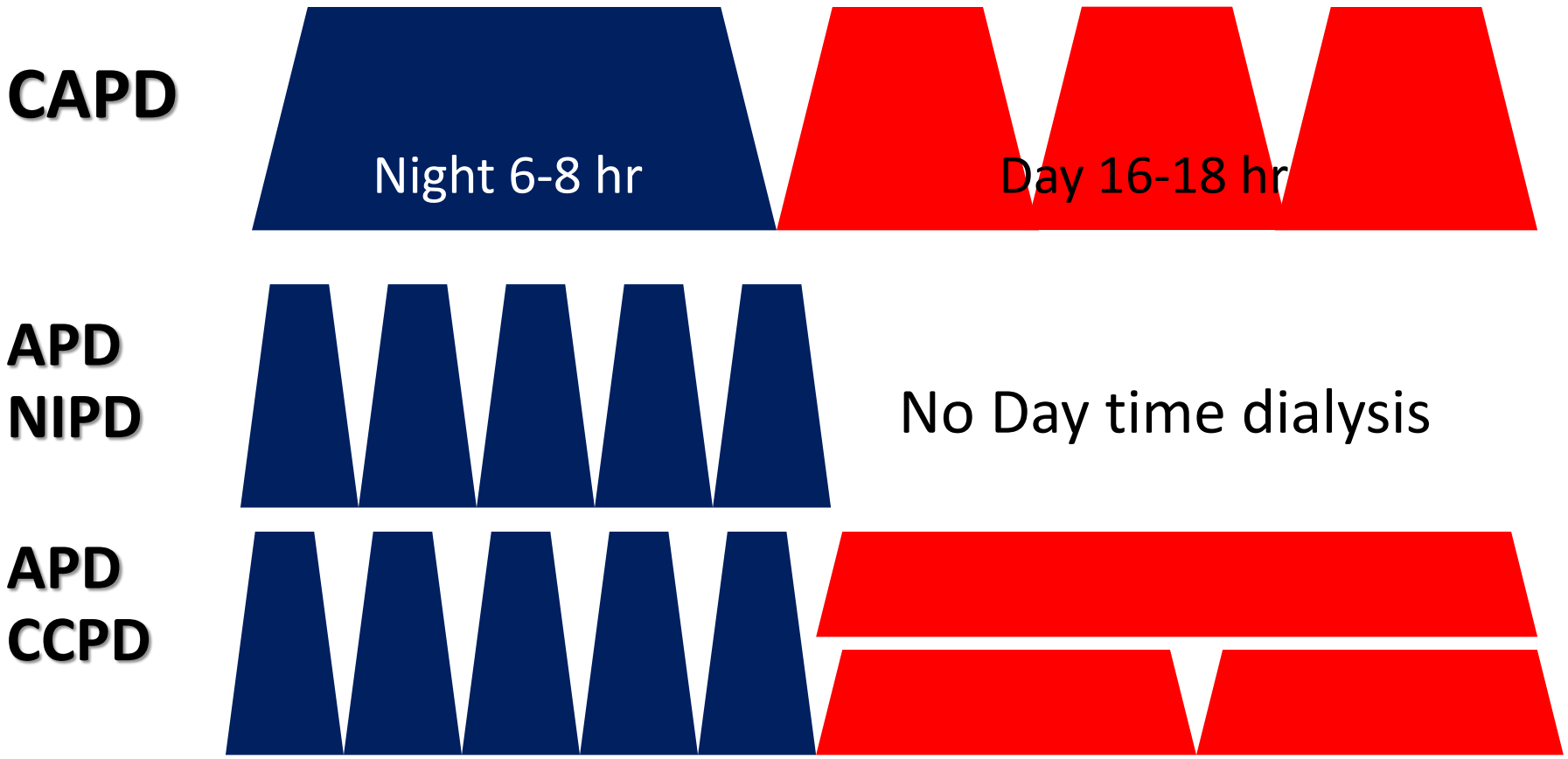
Profile of PD Prescription

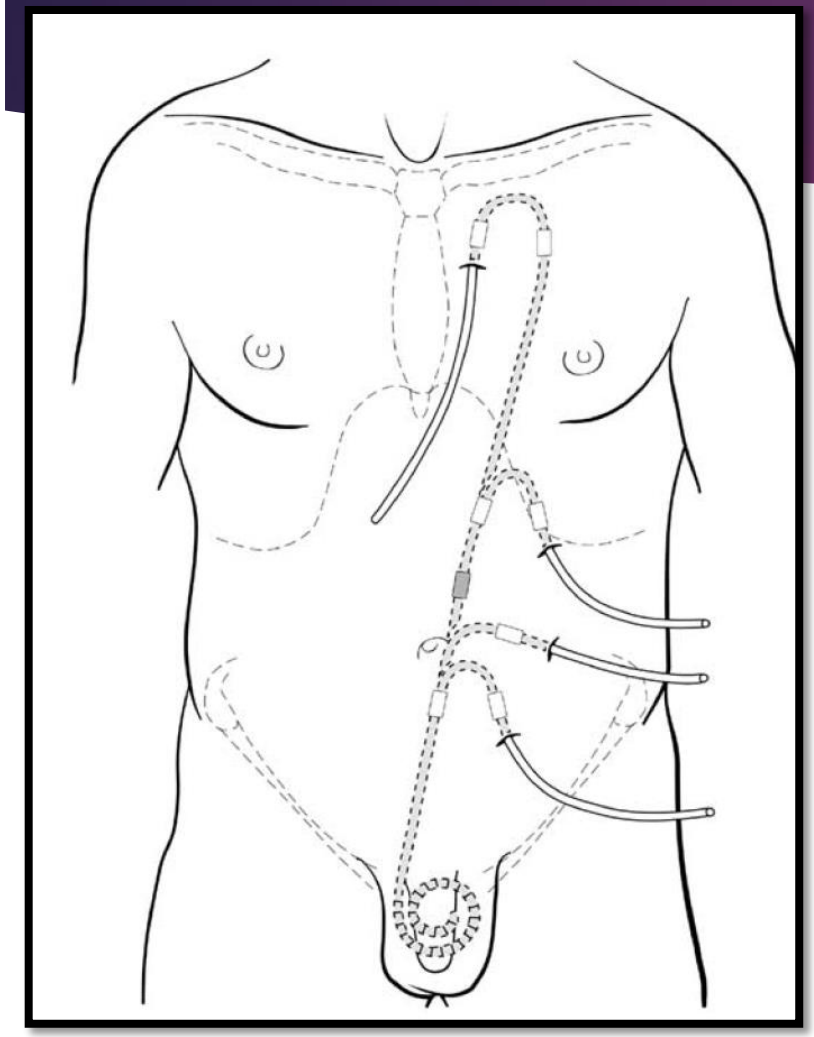


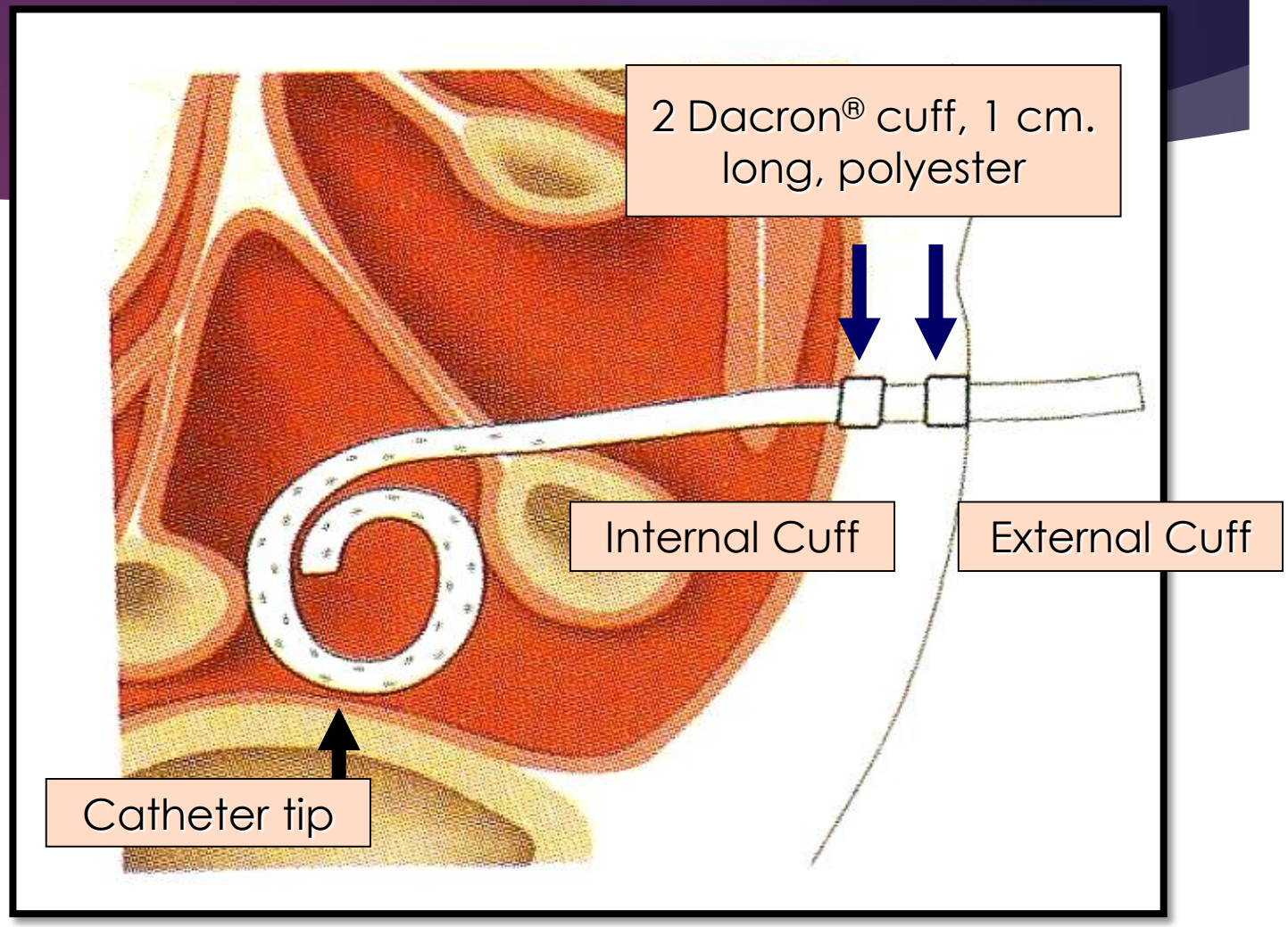
APD-NIPD mode is preferred to APD-CCPD mode among Thai population

What do we need form peritoneal dialysis access?

- CAPD 2L x 4-5 Cycles/d
  - d-well time 4-6 hr /cycle
  - Too short→ inadequated dialysis
  - Too long too → much fluid reabsorption → ultrafiltration failure
  - Inflow time 5-10 mins
  - Outflow time <30 mins
- APD/NIPD 10L/night; 2Lx 5cycles

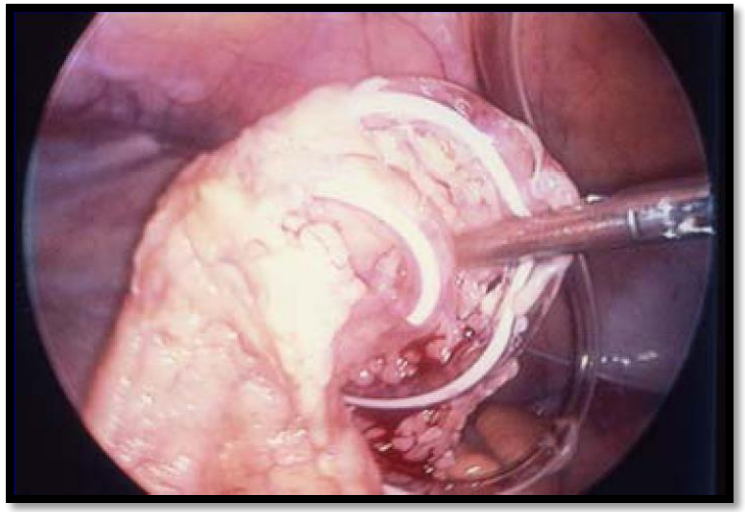
Where to create an access for PD?





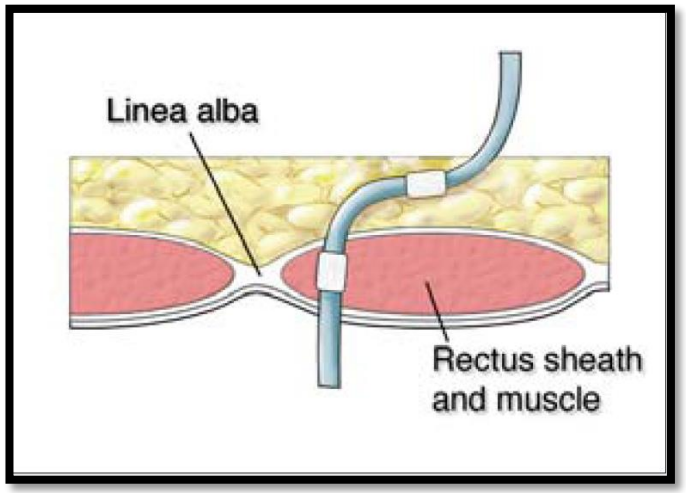
Location of Catheter Tip

- It is important that the tip of the catheter be in the deep pelvis – this ensures optimal hydraulic function of the catheter and minimizes the risk for omental entrapment (lower right figure – omental entrapment as seen on laparascopy).

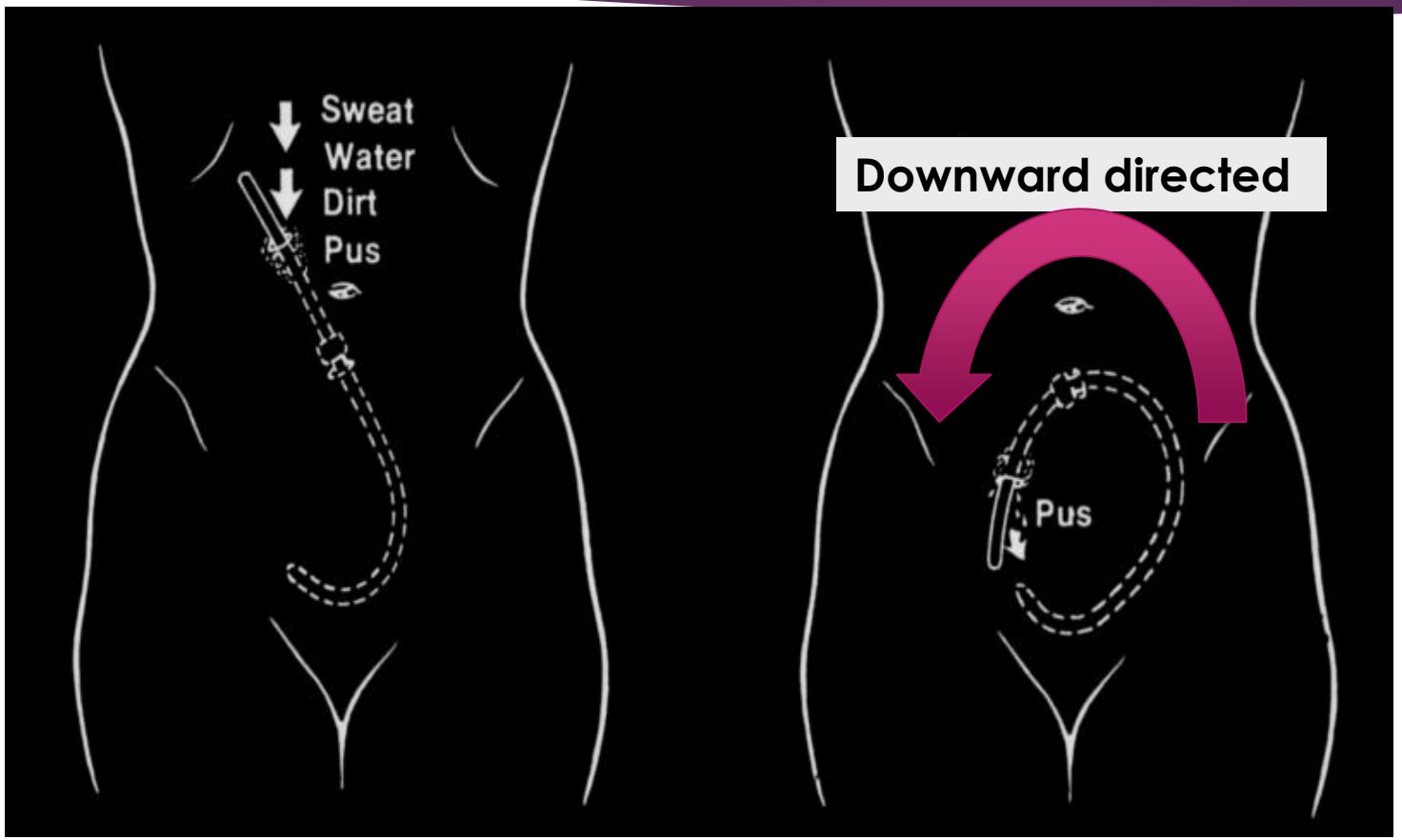


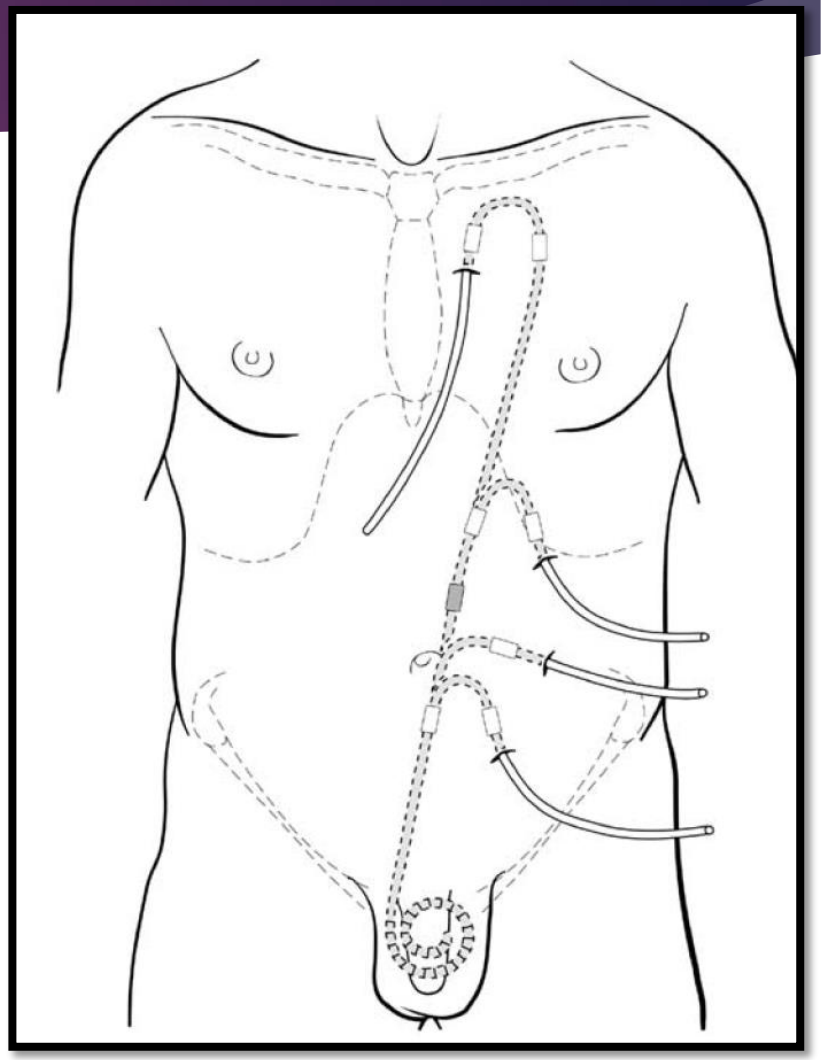
Location of Deep Cuff

- The catheter enters the **peritoneal** cavity just distal to the deep cuff.
- Deep cuff should be located at a place that allows the tip of the catheter to be in the deep pelvis.
- Paramedian – this ensures that the catheter is not going through but linea alba (increases risk for leaks)



Where to create an access for PD?





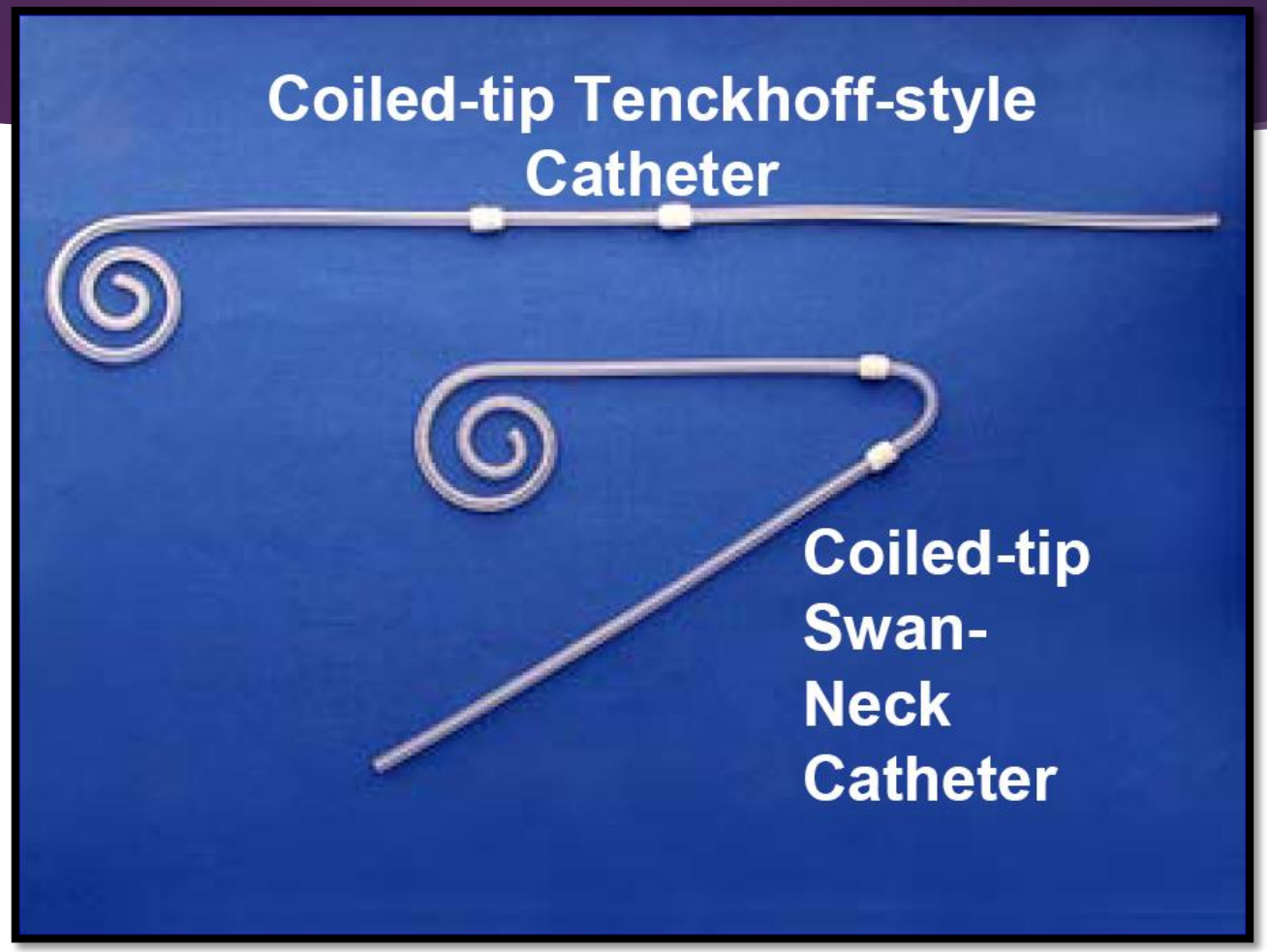
Where to create an access for PD?

Regular catheter

Swan neck catheter

Is the Exit Site Visible? Particularly Important for the Obese

Standard Abdominal Catheters



When to create an access for PD?

- Ideally, the PD catheter should be implanted about 2 weeks before the start of PD
  - This allows for healing of the incision
  - Sometimes it is hard to predict when a patient will need to start dialysis
  - Can start PD right away, but should be with smaller volumes and with the patient supine

GUIDELINE 1. PATIENT PREPARATION FOR PERMANENT HEMODIALYSIS ACCESS

- **1.1 Patients with a glomerular filtration rate (GFR) less than 30 mL/min/1.73m2 (CKD stage 4) should be educated on all modalities of kidney replacement therapy (KRT) options, including transplantation, so that timely referral can be made for the appropriate modality and placement of a permanent dialysis access, if necessary. (A)**
- **1.2 In patients with CKD stage 4 or 5, forearm and upper-arm veins suitable for placement of vascular access should not be used for venipuncture or for the placement of intravenous (IV) catheters, subclavian catheters, or peripherally inserted central catheter lines (PICCs). (B)**

KDOQI Guideline
American Journal of Kidney Diseases, Vol 48, No 1, Suppl 1 (July), 2006: pp S188-S191

CLINICAL PRACTICE GUIDELINES FOR PERITONEAL ACCESS

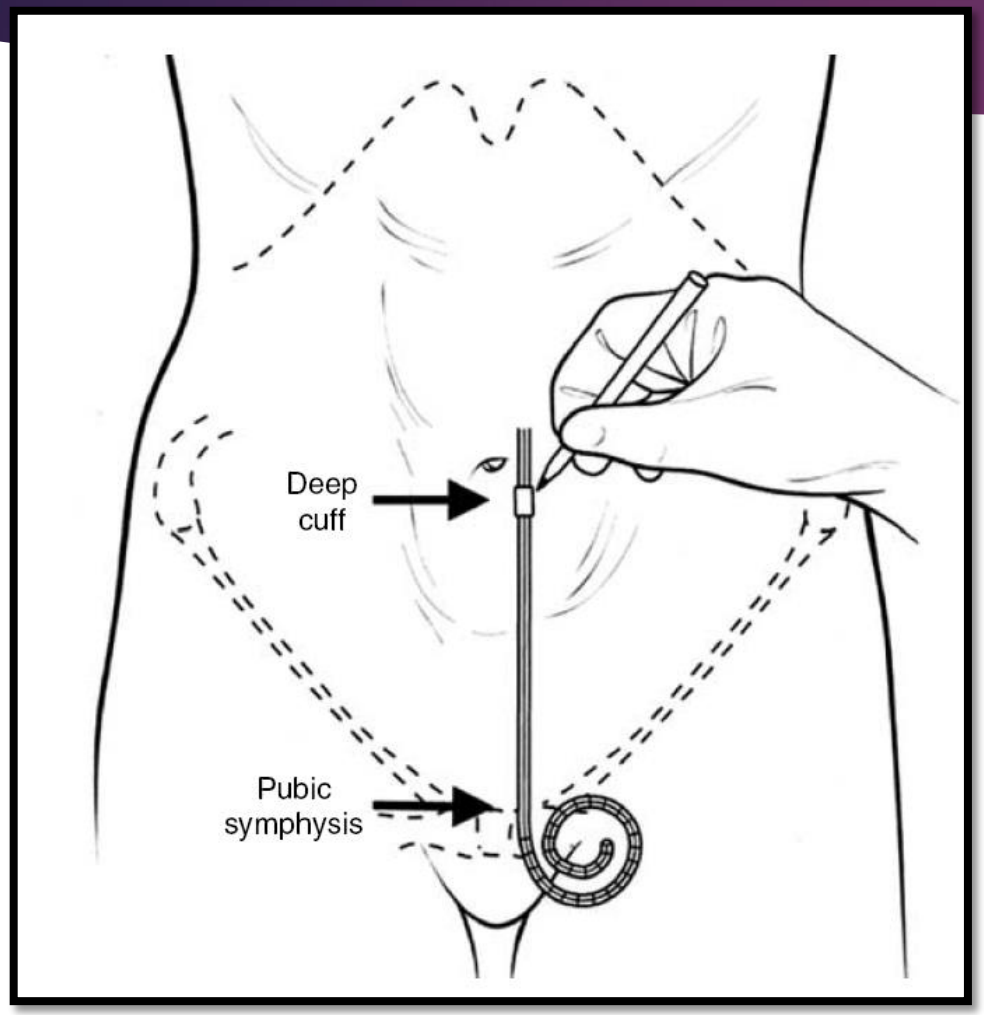
- Guideline 1.1: The Access Team (1C): We recommend that each center should have a dedicated team involved in the implantation and care of peritoneal catheters.
- Rationale: The access team should comprise nurses, nephrologists, and surgeons who have experience in peritoneal dialysis (PD). Each member of the team should understand the importance to the patient of successful access placement and the need for attention to detail in the reduction of complications (10).
- GUIDELINE 2: TIMING AND COORDINATION OF REFERRAL AND SURGERY
- Guideline 2.1: Timing and Coordination of Referral and Surgery (2B): We suggest that, whenever possible, catheter insertion should be performed at least 2 weeks before starting PD. Small dialysate volumes in the supine position can be used if dialysis is required earlier. Rationale: There are two main patient groups requiring PD access:

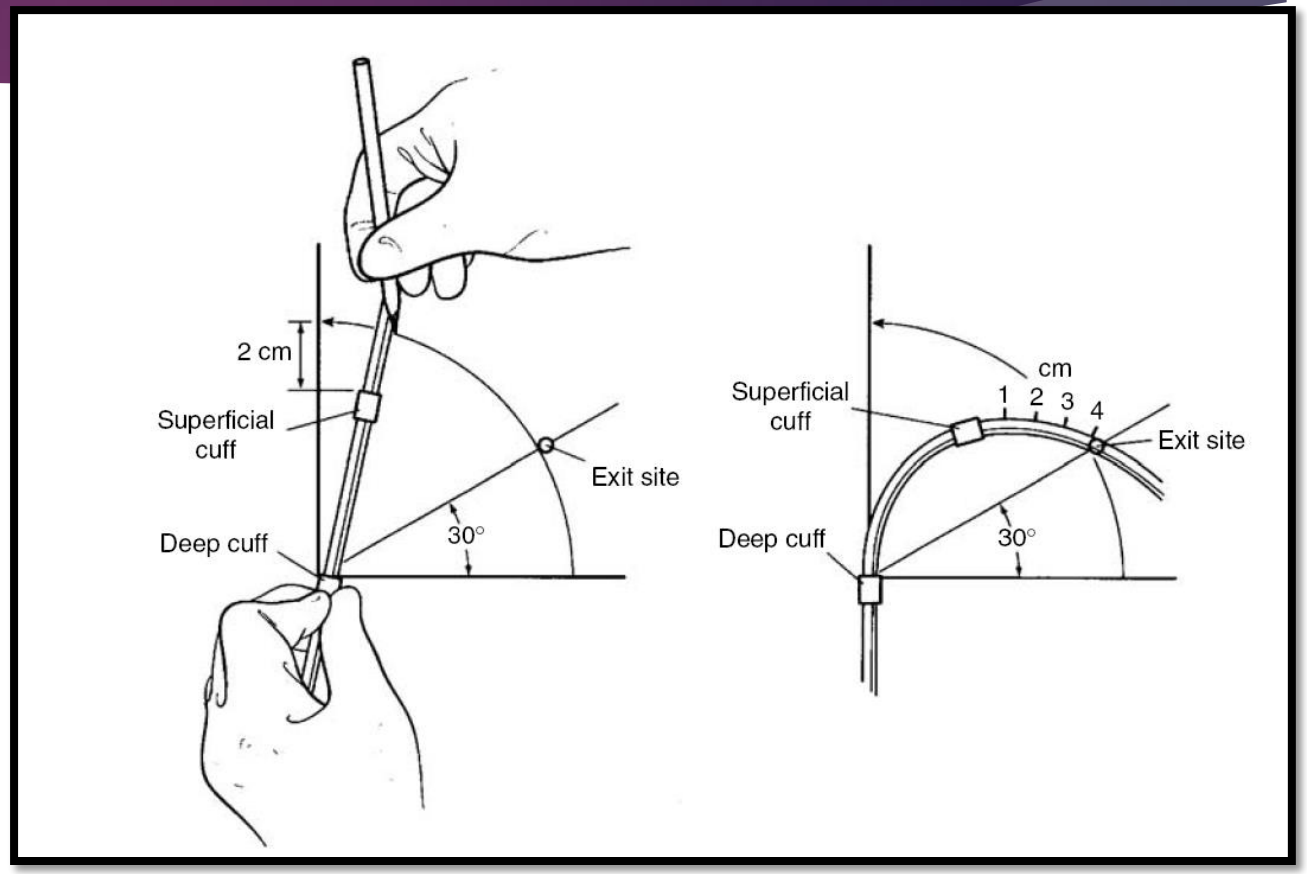
Perit Dial Int 2010; 30:424–429

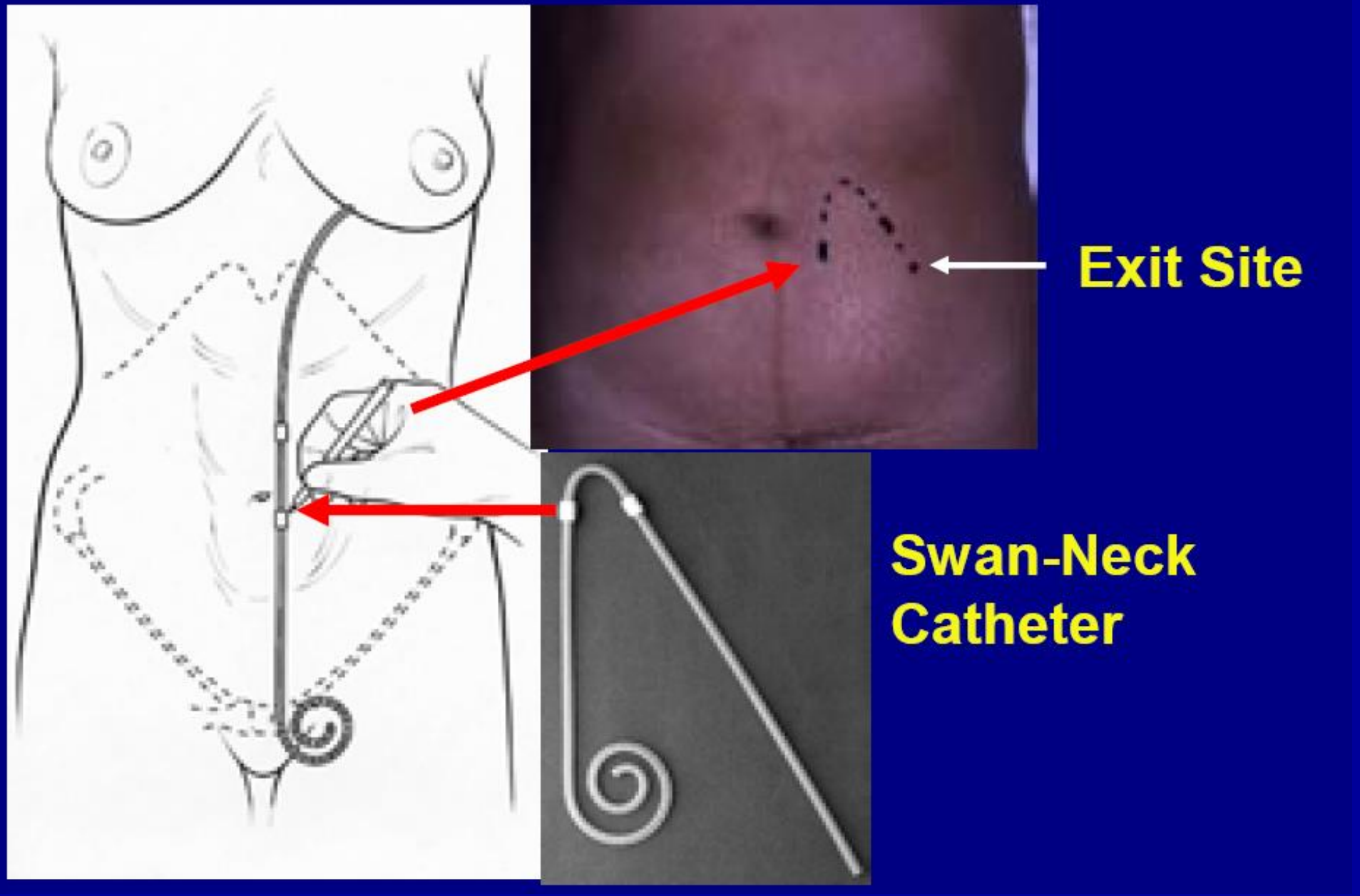
Determination of Catheter Insertion and Exit Sites

- Exit site should be determined and marked PRIOR to the insertion
- It should be determined while patient is upright (seated or standing)
- Avoid: beltline, prior surgical sites, midline
- For swan-neck designs, a stencil is used to demarcate tunnel and exit
- The insertion site is determined by noting deep cuff position when upper border of coil is aligned with upper border of symphysis pubis

Schematic drawing






Exit Site
Swan-Neck
Catheter

GUIDELINES 4: THE IMPLANTATION TECHNIQUE

- **Guideline 4.1: The Implantation Technique (1B): We recommend that local expertise at individual centers should govern the choice of method of PD catheter insertion.**

Perit Dial Int 2010; 30:424–429

Methods of placement of PD catheters:

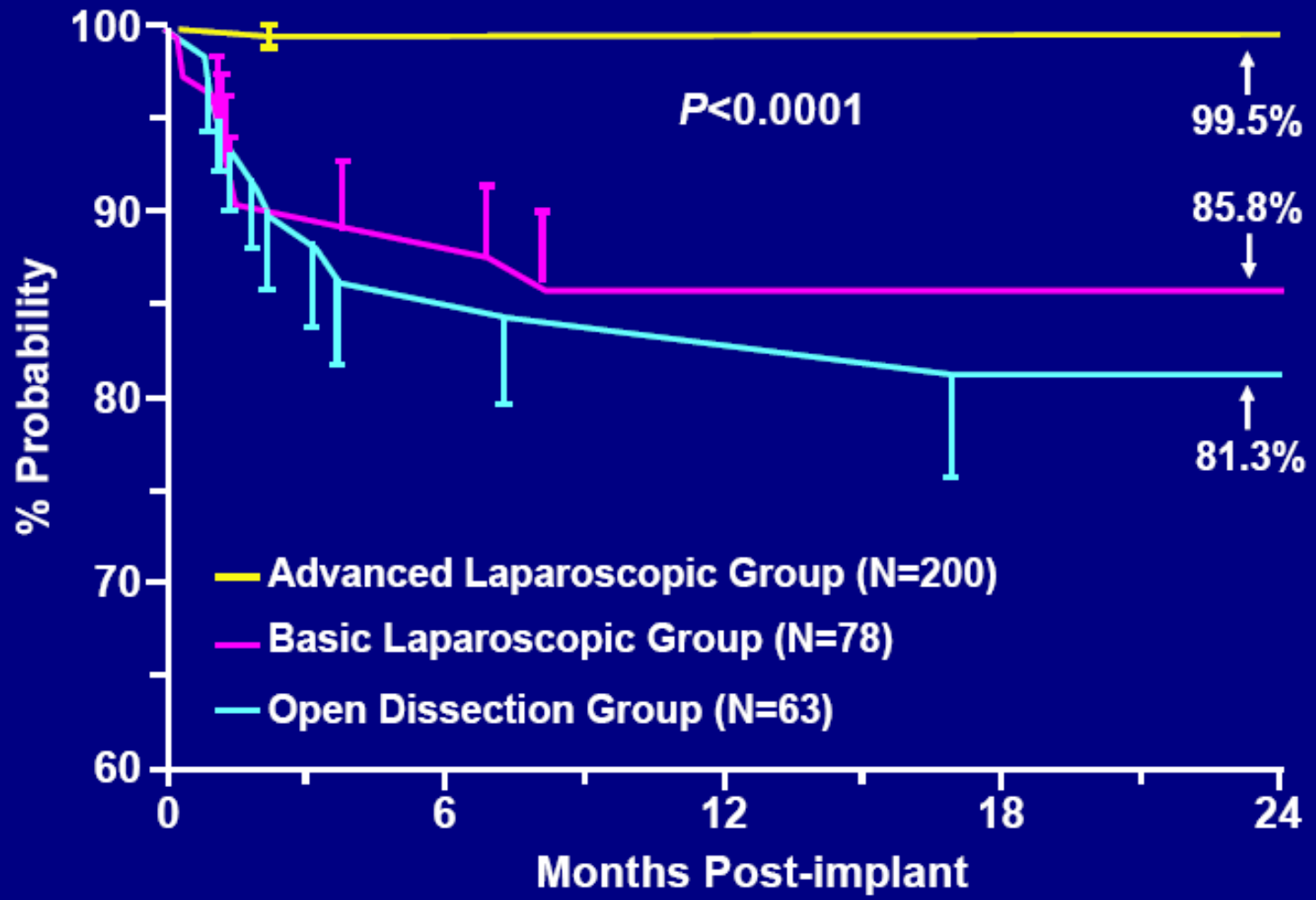
- Percutaneous, blind (with/without fluroscopy)
- Direct visualization:
  - Open, surgical dissection
  - Laparoscopic (local anesthesia, using nitrous oxide or heliuminsuffulation)

Surgical technique-Related Complications of Peritoneal Dialysis Catheter Implantation

Open Dissection	**N = 63**	**Perpendicular** **No Adjunctive Procedures**
Basic Laparoscopy	**N = 78**	**45 Angle** **No Adjunctive Procedures**
Advanced Laparoscopy	**N = 200**	**Rectus Tunnel** **Omentopexy** **Adhesiolysis**

Crabtree et al. Am Surg. 2005: 71(2):135-43.

Probability of Remaining Free of Mechanical Flow Obstruction



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Surgical Technique-Related Complications of Peritoneal Dialysis Catheter Implantation

	Open Dissection	Basic Laparoscopy	Advanced Laparoscopy
Catheter Obstruction	17.5%	12.8%	0.5%
Pericatheter Leak	1.6%	1.3%	2%*
Pericatheter Hernia	1.6%	0%	0%
Cuff Extrusion	N/A	3.9%	0%
Follow-up (Months ± SD)	23.3 ±18.1	26.9 ±21.2	21.8 ±16.3

*Transient leak. No catheter loss.

Crabtree et al. Am Surg. 2005 71(2):135-43.

How to get things right all the time? In Peritoneal dialysis

- Understanding what you are going to do
- Follow the guidelines
- Great access team is needed
- Plan before implantation
  - At least 2 week before initiation of dialysis
  - Marked exit site before insertion