PD catheter placement by a nurse

Elaine Bowes Clinical Nurse Specialist
“Just relax, I have never done this before!!”
Local anaesthetic (LA) insertion of Peritoneal Dialysis (PD) catheters is a recognised and frequently practiced procedure with satisfactory outcomes 1, 2.

**Number of benefits:**
- No requirement for a general anaesthetic
- No in-patient stay
- Reduced bed usage
- Freeing up surgical slots
- Promotes timely PD access
- Supports ‘crash-landers’ to start on PD
- Starting a home therapy in an outpatient setting
Why PD Nurses?

- Improve PD numbers
- Better control and timely PD access
- Better for patient continuity
- Greater nursing role in PD service
- Need for succession planning
- Identified possible role for PD nurse insertions
Why PD Nurses

• Nurses already knew the procedure well through assisting
• It completed the cycle of care as insertion was the only point in the patient pathway which was not nurse-led
Nurses Role

1. Improved continuity from assessment to maintenance PD

2. Training Renal Specialist Registrars impractical as relatively low number of PD catheter insertions
PD Catheter Procedures

Small number of hands
   Experience
   Innovation

Who should operate
   Surgeons
   Nephrologists / specialty / SpR
   Nurse – at KCH, majority of PD catheters are inserted by our senior nurse
Looking for a precedent

Medical / nursing roles
Nurse inserted central lines (including HD)

Junior doctors
   Job rotation / small number of procedures

PD catheters
   Relatively small numbers
   Rarely an emergency

Experience – improve outcomes / innovation
1. PD catheters should be inserted as day case procedures as long as this does not compromise the quality of care. (2C).

2. PD catheter insertion training should be available to all trainees with an interest (1C).

3. PD catheter insertion should not be delegated to inexperienced unsupervised operators (1A).
Qualifications required

- Minimum 5 years experience in PD nursing
- Renal nursing qualification
- Advanced assessment skills course
- X-ray referrers course
- Attend Baxter “PD access academy” for simulated insertions
- Online consent training (ICON)
Mentorship

- Competent, experienced and enthusiastic mentor identified to support nurse during training and supervised practice
- Supervised practice undertaken using Seldinger Technique to perform LA PD catheter insertions
- Once fully competent, signed off to perform procedure unsupervised
Red Tape

Care Group
  Matron
  Head of Nursing
  Director of Medicine
  Trust Lawyers
  Director of Education
  Director of Nursing
Clinical Governance

Documentation:

• **Pathway for Insertion of Peritoneal Dialysis Catheter**
• **Competency Document detailing previous experience essential to role**
• **Time Line for Training**
• **Standard Operating Procedure**
Pre operative SOP

- Patient seen in Low Clearance Clinic or on the Renal Ward
  Discuss Dialysis Treatment Options and confirm choice of PD.
  Referral then made from LCC for percutaneous PD catheter insertion
- Pre- Assessment by PD TEAM – Home Assessment
  Patient pre-assessed
  Bloods taken as per protocol, MRSA screen as per protocol
  History of micturition and bladder ultrasound if necessary (NOW FOR ALL PATIENTS)
  Date set for procedure
  Pre-op preparation pack given
- Patient admitted to Peritoneal Dialysis clinic at 08.00 am
  Allowed light breakfast
  Seen by operator
- Procedure explained, Consent, Pre op checklist, INR
  Given pre-op Vancomycin 1g
  Exit site marked
Post op SOP

- **Post Operative Procedure- Operator**
  - Operator writes discharge letter /encounter
  - Fills in access page
  - TTOs prescribed by Doctor

- **Post Operative Procedure- Assistant**
  - Treatment room cleaned between procedures
  - Change clinical waste bags

- **Post –operative Care**
  - Patient remains in PD Unit for 3-6 hours post operatively
  - Patient nursed as per protocol
  - abdominal X-ray to be obtained if clinically indicated ( difficult insertion )

- **Pre –Discharge Consultation**
  - Patient discharged by operator as per protocol
At last

After 9 months of meetings and documentation writing we were given the go ahead on 02/11/2009
Inserting Needle

Percutaneous peritoneal dialysis catheter implant.mp4

Instilling needle to peritoneum
Guidewire
Peel away sheath
Introduce Catheter
Check Efflux is clear
Mattress suture
Check patency again
On 3rd of November 2009 the first nurse inserted LA PD catheter ever in the U.K. was completed successfully.
The Insertion of a peritoneal dialysis catheter under local anaesthetic can be done using a laparoscopic or percutaneous Seldinger technique.

At King’s we use the Seldinger technique.
Advantages

- Local anaesthetic
- Day case procedure
- Theatre time not needed
- Small incision site allowing early use
Disadvantages

- As it is a ‘blind technique’ not all patients are suitable
- Risk of organ perforation
- No control over final position
- Difficult if patient has adhesions
If there is any resistance to inserting the guide-wire, the technique should be abandoned
274 PD catheters under LA (80%)

   42 (15%) failed attempt – unable to advance wire/catheter, unable to reach peritoneum (obesity – 15 patients)

   2 catheters in bladder – now US abd pre procedure

   2 needle perforation of bowel – conservative management, fine

   Operator – 141 nurse, 96 Assoc spec, 37 consultant

67 GA catheters (20%)

   2 abandoned on table – adhesions, rest successful.
Contraindications to LA Catheters

- Previous major abd surgery
- Peri-umbilical scars
- Previous significant peritonitis
  From PD / other
- Hernias
  Periumbilical
  Inguinal / incisional
- Obesity – BMI ≥ 35
- Abd aortic aneurysm
Relative unsuitability

- Second PD catheter insertion
- Patients with no responsible adult to return home to
- Larger abdomens
Catheter choice

A systematic review and meta-analysis of the influence of peritoneal dialysis catheter type on complication rate and catheter survival

SM Hagen et al. KI 2014;85:920-932

Identified 682 studies from which 13 RCTs identified.

Outcomes: catheter survival, drainage dysfunction, catheter migration, leakage, exit-site infections, peritonitis and catheter removal

Compared: straight vs swan neck catheters

   single vs double cuff catheters

   coiled vs straight catheters

Results: No difference between straight/swan neck or single/double cuff

Catheter survival better for straight vs coiled – surgical insertion
Responding to patient need

At King’s we perform PD catheter repositions under local anaesthetic also.

We also remove peritoneal Dialysis catheters under local anaesthetic.
Soak external part of catheter
Incision over proximal cuff – expose cuff
Remove Dacron cuff entirely
Soaking the catheter in chlorhexidine -5 mins
Formation of new exit site
Tunnelling to new exit site
Procedure complete
Results
First Time Failures at 3 weeks

<table>
<thead>
<tr>
<th>Year</th>
<th>LA</th>
<th>GA</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>16.0%</td>
<td>29.0%</td>
</tr>
<tr>
<td>2011</td>
<td>15.0%</td>
<td>31.0%</td>
</tr>
<tr>
<td>2012</td>
<td>10.0%</td>
<td>23.0%</td>
</tr>
<tr>
<td>2013</td>
<td>9.2%</td>
<td>23.1%</td>
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<tr>
<td>2014</td>
<td>1.6%</td>
<td>28.5%</td>
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</tbody>
</table>
90 insertions of Tenckhoff Catheter in 2015

Operator: E. Bowes 60, E. Bowes S. D. Kirmizis 6, E. Bowes / A. Figueirdo 1, E. Bowes / S. Ghoorbin 1, H. Cairns 4, D. Kirmizis 1, J. Lee 1, Surgeons 16

![Graph showing the number of Tenckhoff Catheter insertions from 2009 to 2015]
PD catheter insertion complications 2015

LA :
5 Unable to advance Guidewire
1 Post op peritonitis (Out in catheter to treat infection 7 days)
1 chest pain procedure abandoned
1 exit site bleed required suture (urea 73 on insertion)
1 scrotal leak

GA :
2 post op infections (tunnelled line, 1 exit site)
1 scrotal leak
72 Other PD Access Procedures in 2015

- **Repositions**: 12
  - Of which GA: 0
  - Of which LA: 12

- **Removals**: 50
  - Of which GA: 7
  - Of which LA: 43

- **Removal and reinsertion**: 10
  - Of which GA: 0
  - Of which LA: 10

- **New exit site / cuff work**: 1
  - Of which GA: 0
  - Of which LA: 1
Removals

Complications: 2 Haematomas both LA
What do patients think?

“To be honest, I was a bit surprised to be told that a nurse was going to carry out the procedure. However, I had total confidence in what she told me, and no doubts about going ahead with the procedure; it was carried out under local anaesthetic, Elaine talked me through what she was doing every step of the way, and it was virtually pain free.” Y.T.
Benefits

• Establishing a nurse led LA PD catheter insertion service has enabled our unit to maintain a patient centred approach to PD access and ensure a comprehensive nurse-led service.

• Nurse inserted PD catheter function is comparable to those inserted by our nephrologists.
Conclusion

• Having a nurse perform the procedure has led to a greater understanding of the requirements for the procedure.

• Our results show that it is possible for skilled, enthusiastic nurses to perform LA PD catheter insertions successfully.

• Since 2010 to present day 355 LA PD catheter insertions have been performed with an overall failure rate of 10.3% 218 of these procedures have been completed by a nurse.