

PD catheter placement by a nurse

Elaine Bowes Clinical Nurse Specialist



“Just relax , I have never done this before!!”



Seldinger technique

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

Renal Association to the rescue

- 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).**

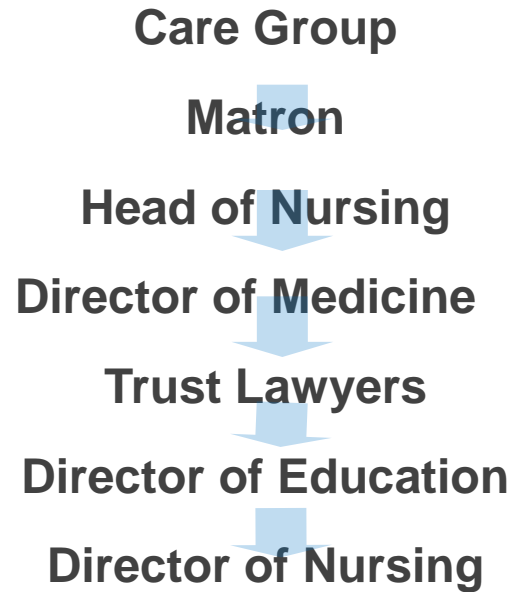
Qualifications required

- **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



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

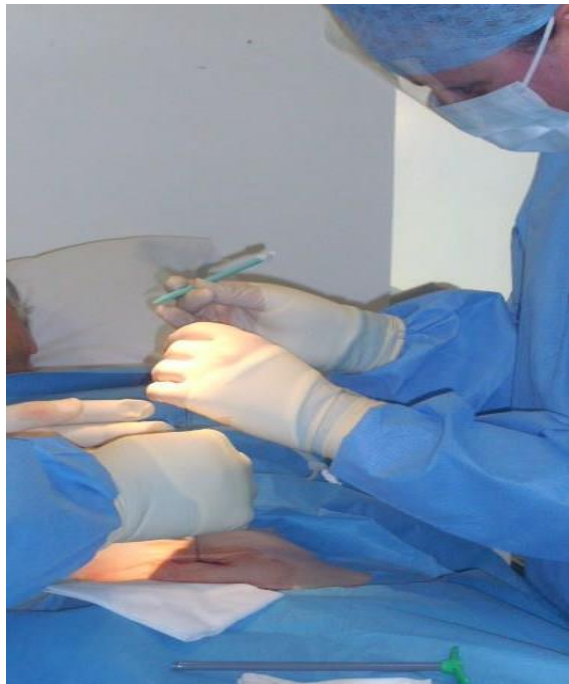
**After 9 months of meetings and
documentation writing we were given the go
ahead on 02/11/2009**



Inserting Needle



Guidewire



Peel away sheath



Introduce Catheter



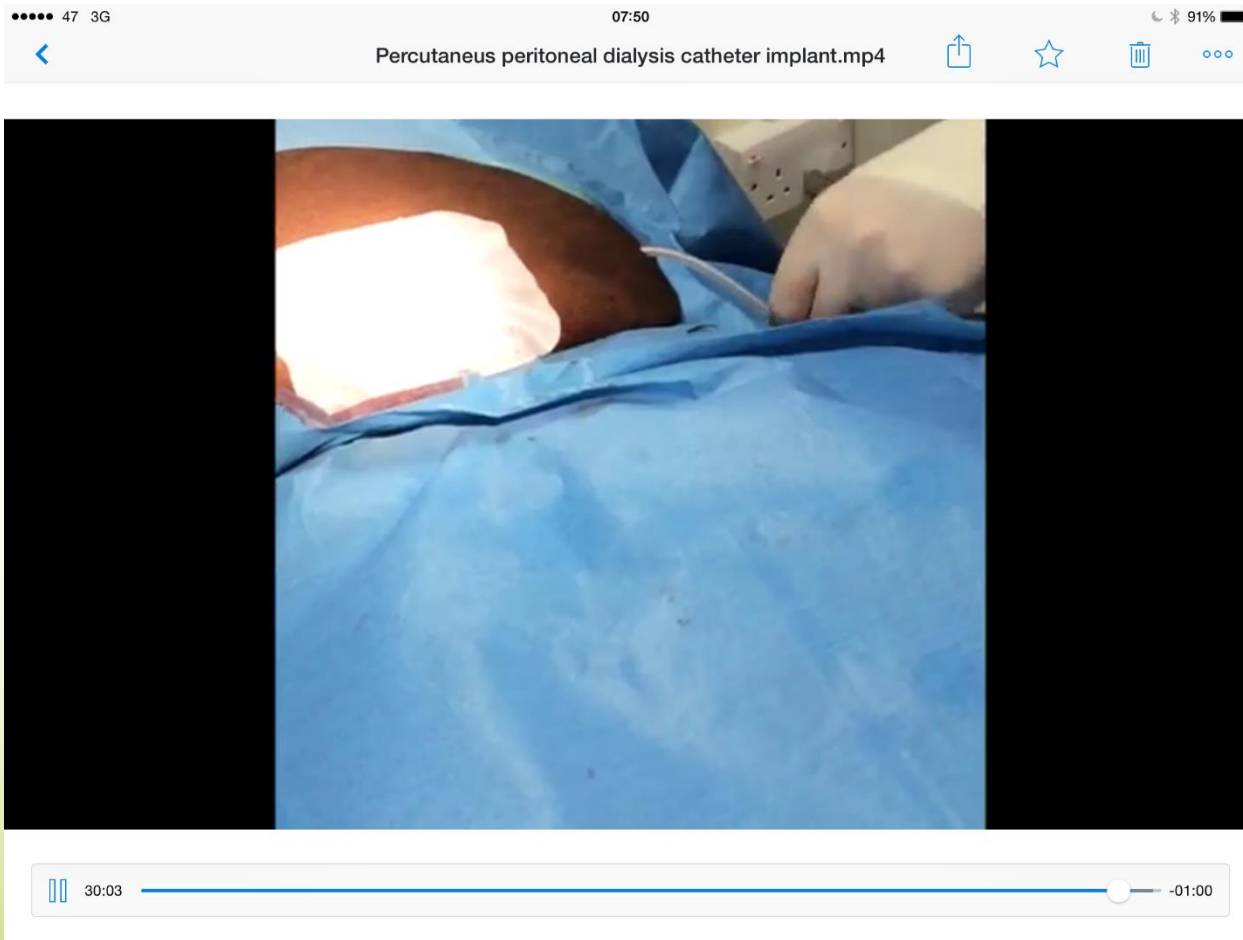
Check Efflux is clear



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 .**

Seldinger Technique

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.

Advantage s

- **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**

Golden Rule

If there is any resistance to inserting the guide-wire, the technique should be abandoned

King's Experience of PD catheter insertion 2010 - 14

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

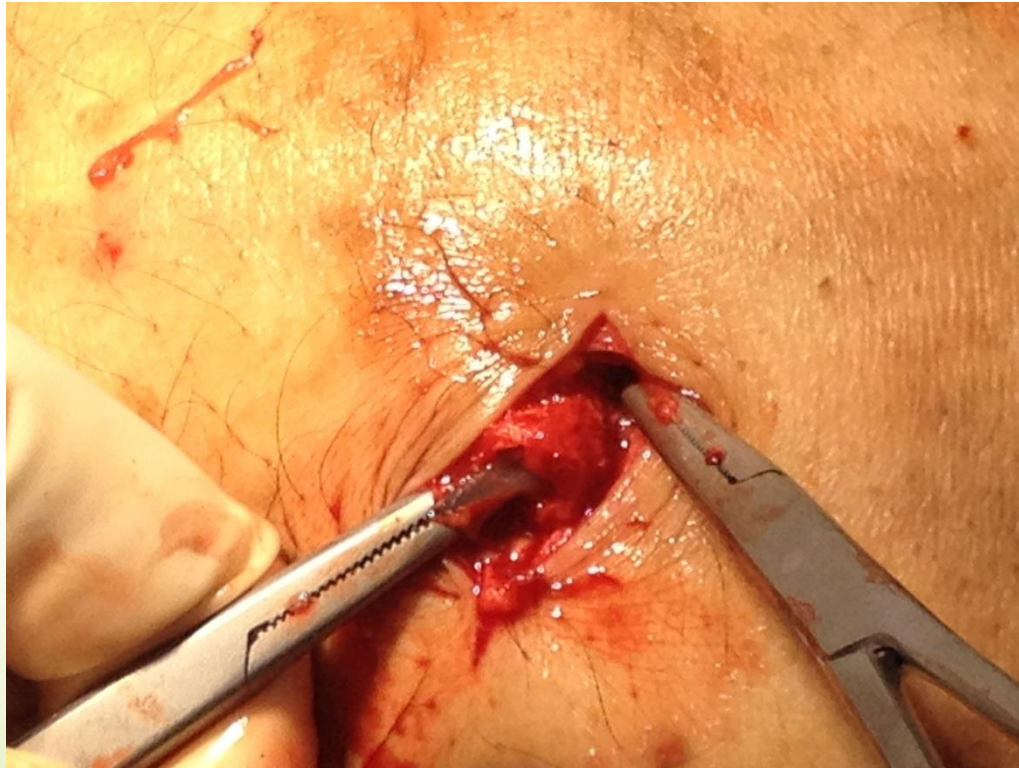
**At King's we perform PD catheter repositions under
Local anaesthetic also**

**We also remove peritoneal Dialysis catheters under
local anaesthetic**

Soak external part of catheter



Incision over proximal cuff –expose cuff

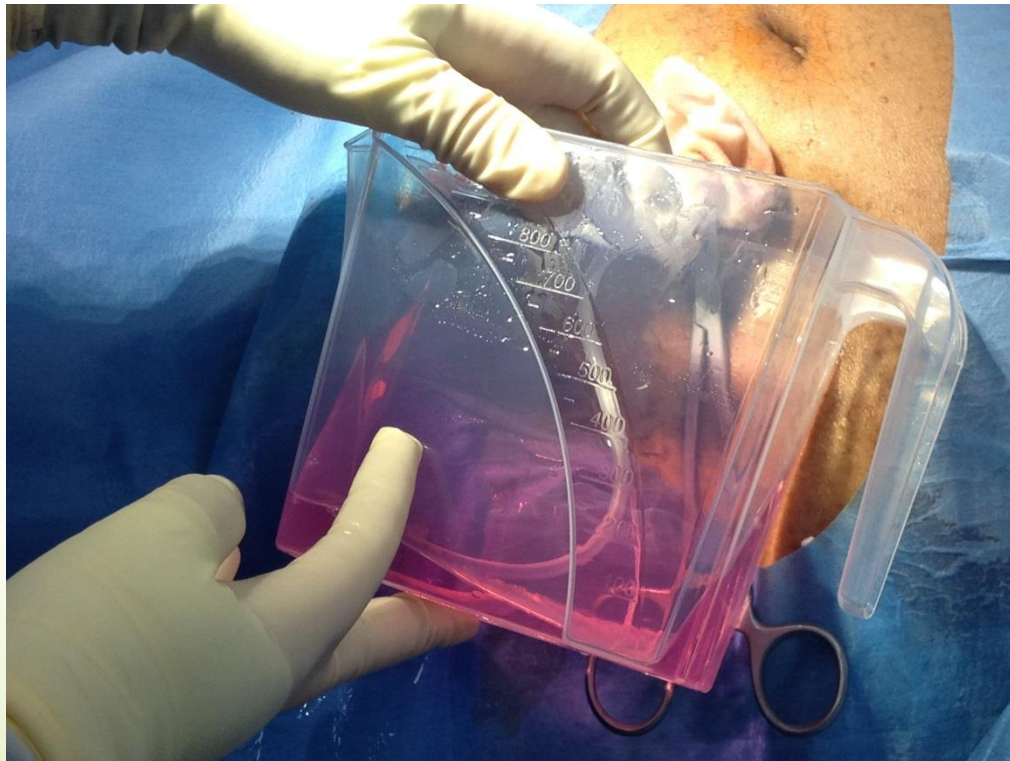


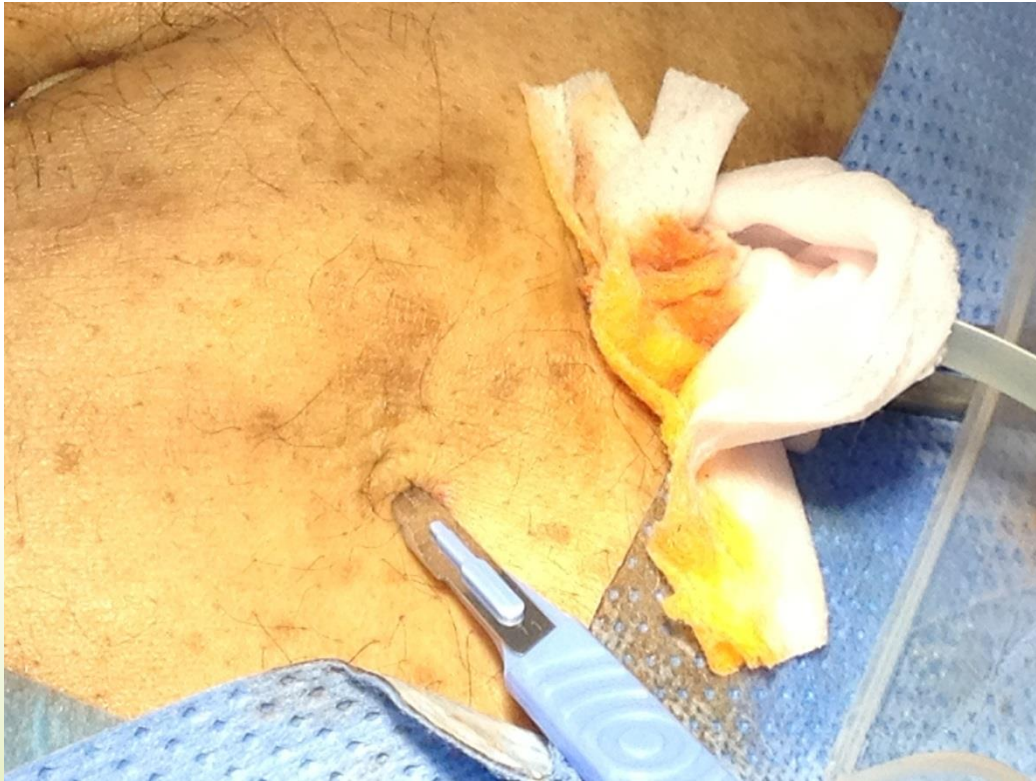
Remove Dacron cuff entirely

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Soaking the catheter in chlorhexidine -5 mins





Tunnelling to new exit site

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Procedure complete

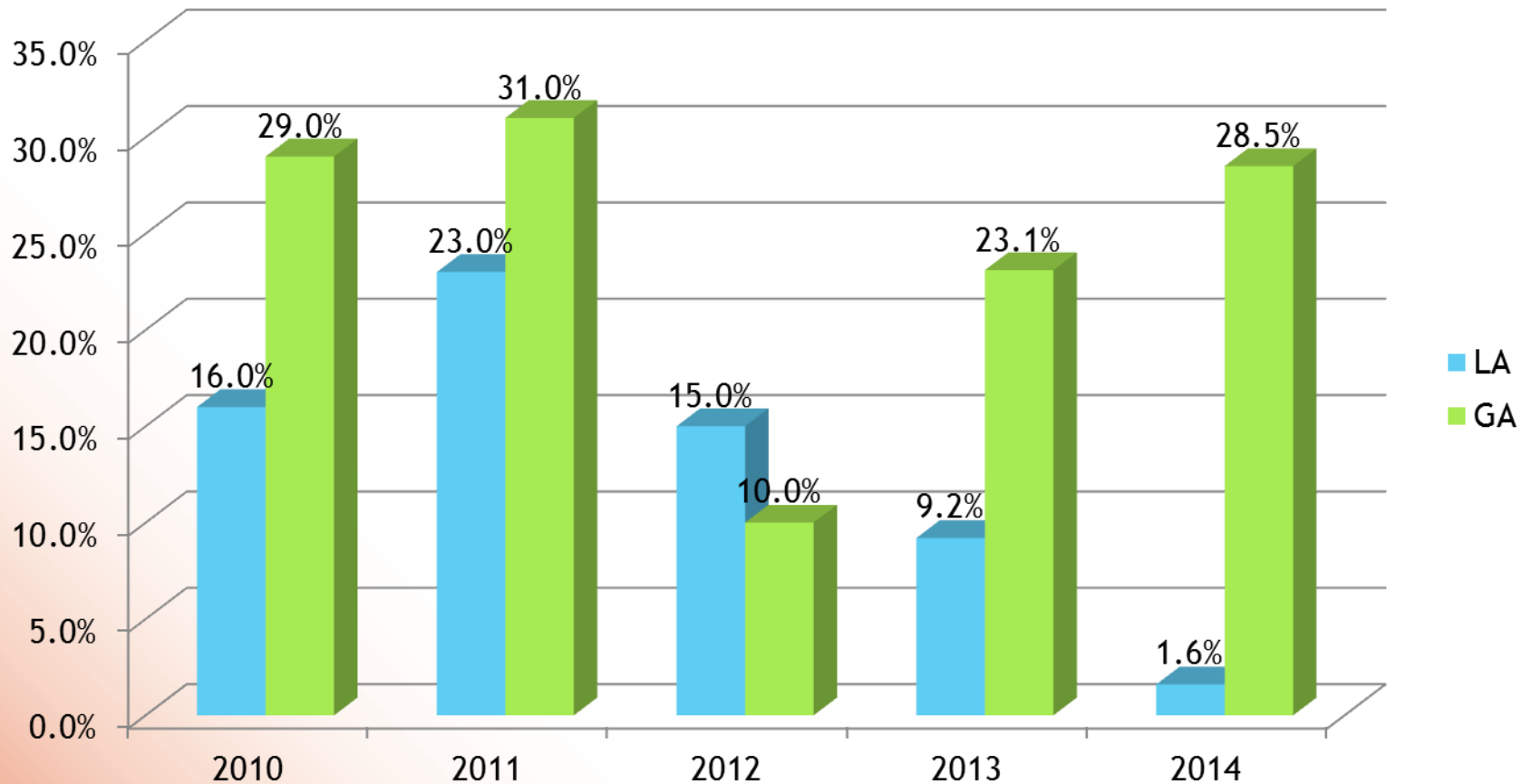
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Results

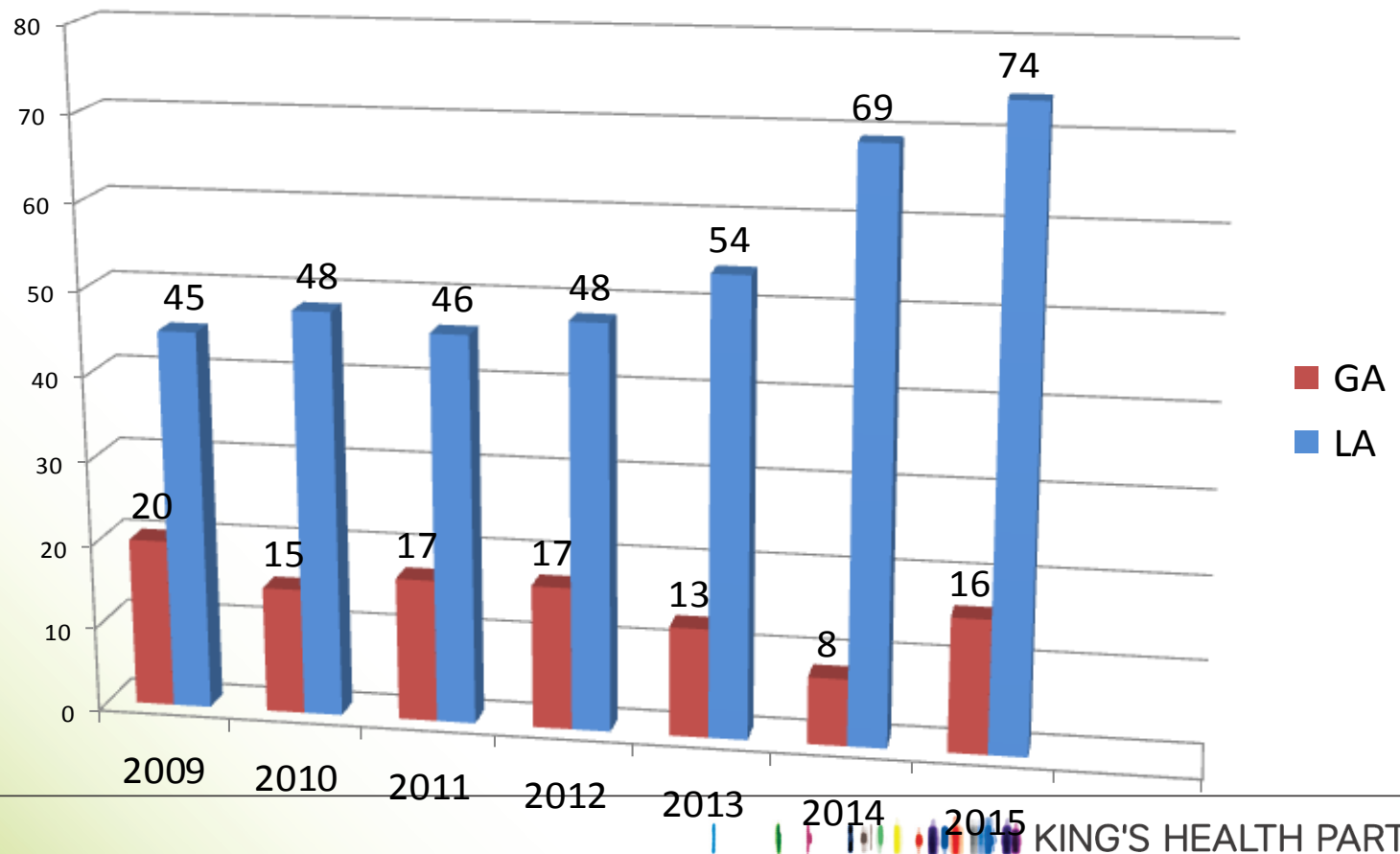


First Time Failures at 3 weeks



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



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)

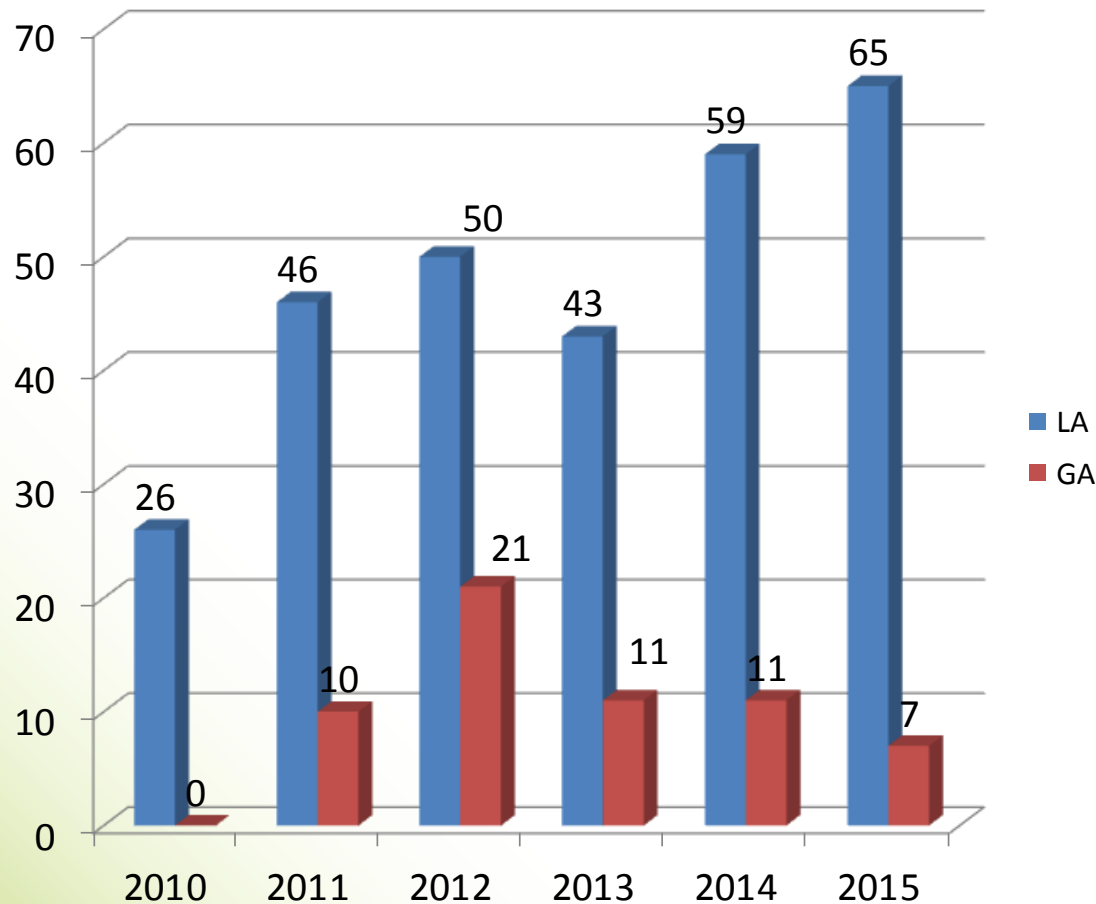
1 scrotal leak

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

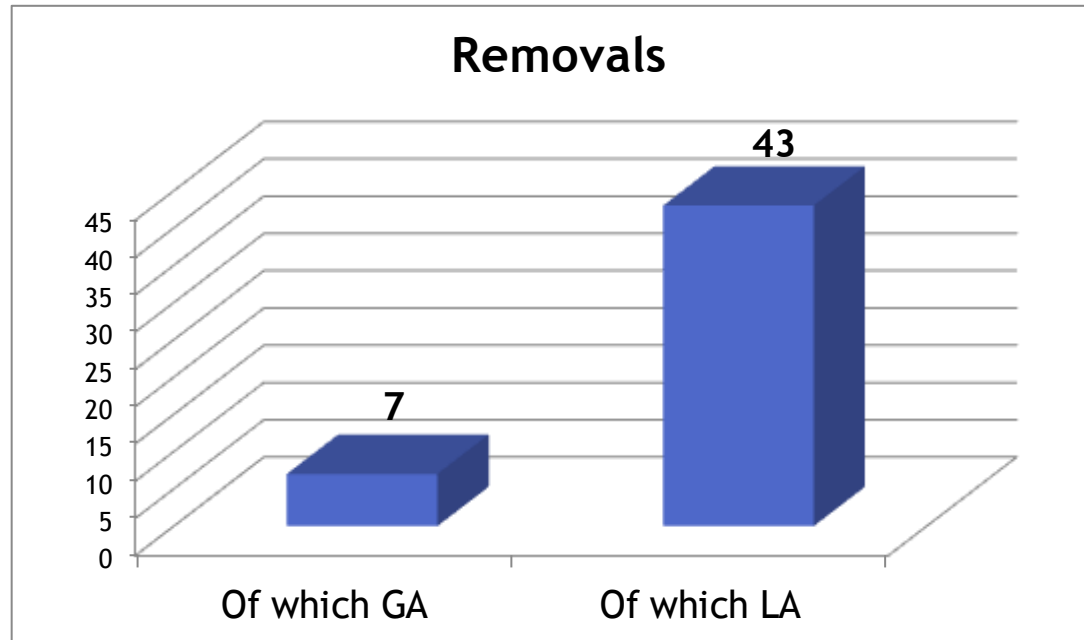
Of which LA 10

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 a an overall failure rate of 10.3% 218 of these procedures have been completed by a nurse**

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- 1. Importance of peritoneal dialysis catheter insertion by nephrologists: practice makes perfect. Philip Kam-tao Li and Kai Ming Chow. Nephrol Dial Transplant (2009) 24: 3274–3276**

 - 2 .Safety and efficacy of percutaneous insertion of peritoneal dialysis catheters under sedation and local anaesthetic. Scott Henderson, Edwina Brown and Jeremy Levy. Nephrol Dial Transplant (2009) 24: 3499–3504**