PERCUTANEOUS NEPHROLITHOTOMY (PCNL)

San Fernando General Hospital
Trinidad

Our initial experience

Drs M. Rampaul, P Rouse, S Sarker, U. Okoli
Goetz Miniloin Incision
The Goetz Miniloin Incision

- [West Indian med. j;47(suppl. 2):31, Apr. 1998.](#)
- Autor: Goetz, Lester J.
- Title: The Goetz mini loin incision: a new minimally invasive technique for removal of kidney stones
- Abstract:
- A mere 2" incision in the line of the 12th rib, The Goetz Mini Loin Incision (GMLI) was developed in South Trinidad to provide a safe, cost effective access to the kidney for removal of renal calculi comparable to the standard options currently available such as open nephrolithotomy, percutaneous nephrolithotomy (PCNL) or extra corporeal shock wave lithotripsy (ESWL). It provides immediate access to the lower pole and midzone and also to the upper pole by gently rotating the kidney on its pedicle. Blunt nephrolithotomy followed by closure of the capsule ensures complete haemostasis without any vascular clamping. 23 of 30 mini loin nephrolithotomies were each completed within an hour with an average time of 54 minutes and the rest at an average time at 79 minutes. The shortest length of stay was <24 hours in 11 and the longest just over 3 nights in 5 patients, with the rest staying overnight. The GMLI is a minimally invasive and cost effective alternative to standard nephrolithotomy, PCNL and ESWL.
Open Nephrolithotomy
EUA / AUA Guidelines

• ESWL: Upper and Mid pole stones < 20mm
  Lower pole stones < 10 mm

• PCNL: Upper and Mid pole stones > 20mm
  Lower pole stones > 10 mm
  Failed ESWL or ESWL unfavorable

• COMBINATION (Sandwich) TREATMENT: Staghorn calculi

• OPEN SURGERY
History of PCNL in Trinidad

- SFGH 20 years ago - procedure abandoned due to complications
- EWMSC about 8 yrs ago - procedure abandoned due to complications

- **2005 SFGH:** CURA PCNL workshop  
  Dr Goetz, Dr Sharma  
  12 cases done  
  Prof M Kellett, Uro-radiologist (UK)

- **2009 SFGH:** PCNL workshop  
  11 cases done  
  Dr S Shah, Radiologist Univ Hosp Jamaica, US guided
History of PCNL in Trinidad

SFGH 2010: CURA PCNL Workshop
Prof. M Kellett
15 cases done

SFGH 2011: Prof. M Kellett
16 cases done
Mentor Prof M Kellett
Stage 1: Insertion of Ureteric catheter

- Patient anaesthetized
- Cystoscopy and insertion of Ureteric catheter
- Patient in PRONE POSITION
Stage 2: Establish percutaneous tract

- Opacification of collecting system by retrograde injection of Contrast - Methylene Blue

- Percutaneous Fluoroscopic OR Ultrasound guided needle puncture of collecting system
Prone Position
Retrograde injection of contrast and / or air to opacify & dilate the collecting system
Opacification & Dilation of collecting system
Establish Percutaneous Tract - video
Guide-wire inserted
Puncture of Lower pole calyx
Alken coaxial dilators
Progressive telescopic dilatation
Insertion of 30F Amplatz sheath
30 F Amplatz sheath
Stone fragmentation

Swiss Lithoclast probe

HD camera

Nephroscope
Stone Fragmentation - video
Stone Fragmentation with Lithoclast
STONE FRAGMENTATION video
REMOVAL OF FRAGMENTS video
Result
Intra-op Renoscopy
Intra-op Renoscopy
Nephrostomy tube
34 year old lady with Bilateral kidney stones
Post-op Wound
Day 1 post-op

One week post-op
Results

• 15 procedures in 14 patients:
  7 males and 7 females

• Mean age 47.1 years (Range 29 to 57)

• Average body weight 74 kg
Results

• Mean stone size 24 mm (11 to 57 mm)

• Mean operative time 162 minutes
  (range 65 to 260 minutes)
  (Last 3 cases success puncture < 30 minutes)
Results

• Success 10/15 (67%)
  4 patients had open nephrolithotomy
  1 patient awaiting repeat procedure

• Residual Fragments in 4/10 (40%)
  (range from 5 to 7mm)
Results

• BLOOD TRANSFUSION:
  – First two patients had blood transfusion

• Mean hospital stay 5 days
  (range 2 days to 10 days)
Complications (Perioperative)

- Fever  2
- Chest wall pain  1
- Subcutaneous emphysema  1
- TUR syndrome  0

- No Major Complications
Conclusion

- PCNL is feasible in our setting
- Early experience - 67% success rate
- Low complication rate (Grade I or II) 27%
Thank-you

We acknowledge the efforts of CURA and in particular Dr Lester Goetz, meeting organizer and Dr Deen Sharma, CURA’S president for working tirelessly in arranging CURA’S workshops and in bringing Prof Michael Kellett to San Fernando General Hospital.