



TALENTS DEBATE:

***“NO NEED FOR STANDARD 30F PCNL  
ACCESS”***

**“NO” – SRI SIVALINGAM, MD**

# Disclosures – Sri Sivalingam

- Consultant – Boston Scientific, Bard endourology
- Educational program – Cook medical

# STANDARD PCNL STILL HAS A PLACE!

- Definition
  - $\geq 24F$  sheath
- Key caveat
  - Not arguing that mini PCNL doesn't have a role
  - We are defending that standard PCNL is not dead!

# 1. STANDARD PCNL IDEAL FOR SMALL/MEDIUM SIZED STONES

# THE PLUCK N' RUN APPROACH...

- Stones <1cm along a single axis
- Guaranteed 100% SFR!
- Potential cost savings
  - Shorten OR time
  - No need for laser/ultrasonic device



## **2. STANDARD PCNL MAY BE MORE SUITABLE FOR STRUVITE/INFECTIOUS STONES**

# STANDARD PCNL MORE SUITABLE FOR INFECTIOUS STONES

- Stone recurrence increases from 0% to 40% when residual fragments present (*Iqbal et al, J. Endo, 2016*)
  - Standard caliber PCNL can facilitate evacuation of infectious debris
    - active suctioning
    - better visualization!!
- Minimize risk of sepsis with standard PCNL
  - Shorter OR times
  - Lower intrarenal pressures

# Risk factors for sepsis after percutaneous renal stone surgery

Evgeniy I. Kreydin and Brian H. Eisner

Nature reviews, Oct 2013


**Table 2** | Intraoperative risk factors for infectious complications after PCNL

Study	n	End point	Risk factors
<b>Retrospective</b>			
Dogan <i>et al.</i> (2007) <sup>28</sup>	338	Postoperative fever	Positive stone culture ( $P < 0.05$ )
Chen <i>et al.</i> (2008) <sup>41</sup>	209	SIRS	Operative time ( $P < 0.001$ ) Multiple punctures ( $P = 0.001$ ) Blood transfusion ( $P < 0.001$ )
Wang <i>et al.</i> (2011) <sup>52</sup>	420	Septic shock	Operative time ( $P = 0.001$ )
<b>Prospective</b>			
Muriappan <i>et al.</i> (2007) <sup>45</sup>	132	Postoperative SIRS	Purulent material obtained on first puncture (RR 2.64, $P = 0.02$ ) Positive pelvic urine culture (RR 3.2, $P = 0.001$ ) Positive stone culture (RR = 3.2, $P = 0.001$ )
Zhong <i>et al.</i> (2008) <sup>22</sup>	80	Postoperative fever	Mean renal pelvic pressure $\geq 20$ mmHg ( $P = 0.013$ )
Gonen <i>et al.</i> (2008) <sup>31</sup>	61	Postoperative fever	Operative time ( $P = 0.028$ ) Positive pelvic urine culture ( $P = 0.028$ ) Positive stone culture ( $P = 0.041$ )

Abbreviations: PCNL, percutaneous nephrolithotomy; SIRS, systemic inflammatory response syndrome



# Mini versus Standard Percutaneous Nephrolithotomy: the impact of sheath size on intra-renal pelvic pressure and infectious complications in a porcine model

Dr. Christopher J Loftus , Dr. Bryan HinckDr. Iryna MakoveyDr. Sri SivalingamDr. Manoj Monga

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- Mini-PCNL in the setting of an infected collecting system:
  - higher intra-renal pressures
  - higher risk of end-organ bacterial seeding
- Greater potential for infectious complications in a clinical setting

# Does a Smaller Tract in Percutaneous Nephrolithotomy Contribute to High Renal Pelvic Pressure and Postoperative Fever?

Zhong W et al. *J Endourol.* 2008;22(9):2147-2151

TABLE 1. CHARACTER OF RPP DURING MPCNL VIA DIFFERENT PERCUTANEOUS TRACT

<i>Group</i>	<i>No.</i>	<i>RPP (mm Hg)</i>	<i>No. (one episode of RPP ≥ 30 mm Hg)</i>	<i>Accumulated time of RPP ≥ 30 mm Hg (s)</i>
14-French	20	24.55 ± 4.04	20	316.20 ± 18.28
16-French	20	16.49 ± 4.33	20	96.05 ± 8.11
18-French	20	11.22 ± 2.63	16	41.95 ± 9.19
Double-16-French	20	6.64 ± 1.65	11	10.05 ± 5.20

RPP = renal pelvic pressure; MPCNL = minimally invasive percutaneous nephrolithotomy.

# 3. STANDARD PCNL MIGHT HAVE ECONOMIC ADVANTAGE

# WHY SPEND ON MORE EQUIPMENT WHEN THE ALTERNATIVE IS THE GOLD STANDARD?

**Table 1.** Summary of PCNL techniques available.

Terminology	Access sheath (Fr)	Manufacturer	Equipment	Cost* (£)	Cost* (€)	Cost* (\$)
Mini	14–20	Cook Medical Stuart Wolf Karl Storz	Reusable 12Fr scope, dilator, amplatz sheath	£8000	€11,350	\$12,500
Ultra-mini	11–13	LUT	Reusable 3Fr scope, dilator, amplatz sheath	£8800	€12,480	\$13,750
Micro	4.85	PolyDiagnost	Reusable Standard setup (modular fix-focus, optic modular PCNL, joint arm, steritray light cable)	£8679 plus £375 per case	€12,310 plus €530 per case	\$13,550 plus \$585 per case
			Disposables Microperc set (parts for puncture, working shafts, with dilator)			

\*Prices are estimates only based on nondiscount quotes from manufacturers.  
PCNL, percutaneous nephrolithotomy.

*Wright et al, Ther Adv Urol 2016*

# STANDARD PCNL = SHORTER OR TIME

- Economic impact of prolonged OR times
  - MPCNL operative times consistently shown to be longer than standard PNL

232

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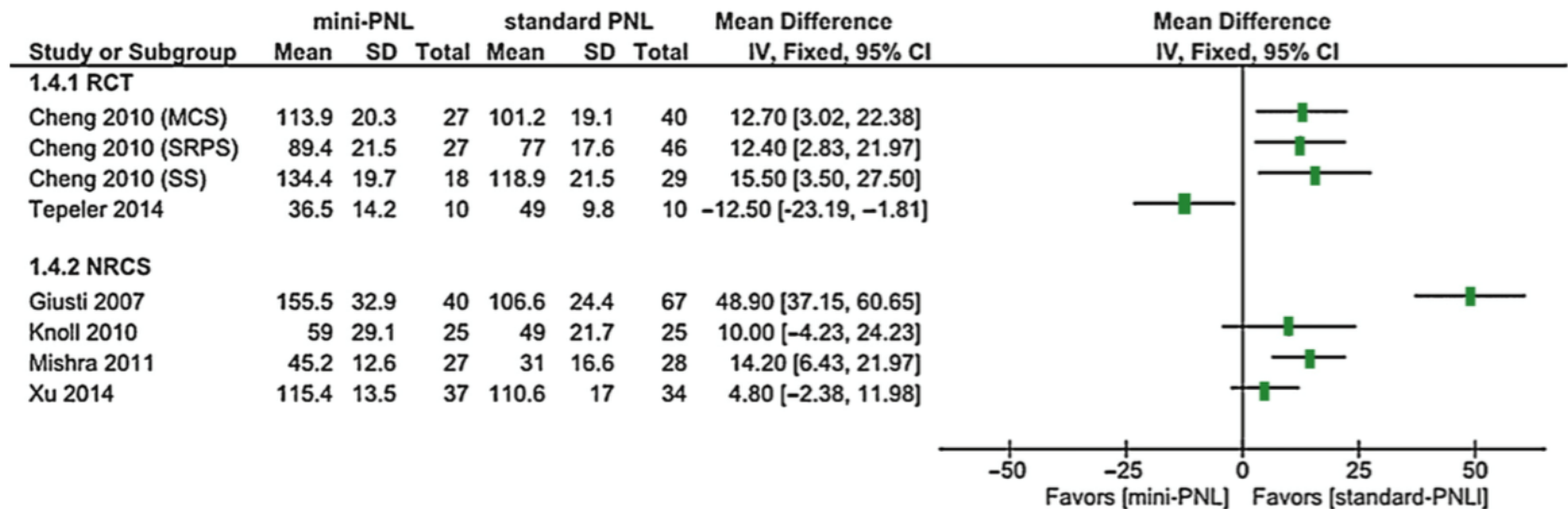


Fig. 5 – Forest plot showing the duration of the procedure (min) reported in randomized controlled trials (RCTs) and nonrandomized comparative studies (NRCS). Reference numbers for studies are given in Table 1. PCNL = percutaneous nephrolithotomy; SD = standard deviation; CI = confidence interval; IV = inverse variance.

Ruhayel et al, 2017

# PROLONGED HOSPITALIZATION WITH STANDARD PCNL IS A MYTH...

- Discharge times for standard tract PCNL <24hrs at our center
- > 95% of cases tubeless
- Ambulatory/outpatient standard PCNL

# STANDARD PCNL STILL HAS A PLACE!

- Medium sized stones with 100% clearance
- Lower intra-renal pressures → less septic complications
- Economic benefits 2° shorter OR times/less capital expenses