

Thulium Laser Lithotripsy in Supine Mini-PCNL: Safe and Effective

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Disclaimer

- Olympus (Tokyo, Japan) SoltiveTM SuperPulsed Thulium Laser
 - Provided to institution on a trial basis



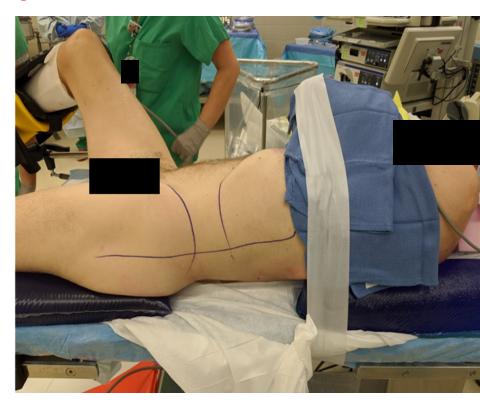
Overview

- Initial experience with Thulium fiber Supine Mini-PCNL in North America
- Karl Storz (Tuttlingen, Germany) Minimally Invasive PCNL System
- Thulium Laser Fiber
 - Olympus (Tokyo, Japan) Soltive[™] SuperPulsed Laser



Supine Mini-PCNL Positioning

- Split leg table
 - Ipsilateral leg straight
 - Contralateral leg in stirrup
- Gel rolls under shoulder and hip
- Ipsilateral arm across chest





Supine Mini-PCNL Access

- US or cross-table fluoroscopy
- Karl Storz (Tuttlingen, Germany)

Minimally Invasive PCNL System

17.5F reusable sheath





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2-3cm incision closed with subcuticular absorbable monofilament suture



Thulium SuperPulsed Laser

- Smaller device
- Smaller fibers
- Standard 110volt electric outlet
- Beyond 2,000Hz possible
- Excellent dusting capabilities



Methods

- Two institution consecutive series of Supine Mini-PCNL with Thulium Fiber Laser
 - Olympus (Tokyo, Japan) SoltiveTM SuperPulsed Laser

- Karl Storz (Tuttlingen, Germany) Minimally Invasive PCNL System
- Stones cleared through nephrostomy sheath until visual and fluoroscopic clearance
- Technique and management maintained at institutional standard

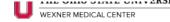


Baseline Characteristics

Table 1. Baseline characteristics of patients undergoing				
Mini-PCNL with Thulium Laser Lithotripsy				
Patient Characteristic	#	Mean	Range	SD
Patients	15			
Age (Years)		58	27-84	19
вмі		33	24-45	6.7
Charlston Comorbidity Index		2.7	0-10	3
ASA Score		2.9	2-4	0.6

SD, Standard Deviation; BMI, Body Mass Index; ASA, American Society of

Anesthesiologists



Baseline Characteristics

Table 2. Baseline characteristics of stones treated with				
Mini-PCNL with Thulium Laser Lithotripsy				
Stone Characteristic	# (%)	Mean	Range	SD
Unilateral	14 (93)			
Single Primary Stone	8 (53)			
Total Stone Volume (mm3)		4,744	524-18,000	4,970
Stone Density (HU)		1,210	510-1,650	294
SD, Standard Deviation; HU, Hounsfield Units				



Outcomes

Table 3. Operative Outcomes in				
Mini-PCNL with Thulium Laser Lithotripsy				
Outcome	# (%)	Mean	Range	SD
Laser time (minutes)		13.1	0.9-28	9.8
Laser time (seconds)/Stone vol (cm3)		196.5	46-588	170
Operative time (minutes)		87	56-116	17.4
Postoperative Stent Rate	9 (60)			
Postoperative Stent Days		9	1-23	9
Decrease in Creatinine (mg/dL)		0.1	(-0.9)-0.2	0.3
Decrease in Hemoglobin (g/dL)		1.8	0.3-3.5	0.1
SD. Standard Deviation:				

Outcomes

- Length of stay was 1 night for all
- No intraoperative complications

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CD Standard Deviation				

- 1 patient presented on 7th day for gross hematuria requiring bladder irrigation
- No blood transfusions in this series



Conclusions

- Efficient
 - Limited treatment times even in large dense renal calculi
- Effective
 - Calculi completely cleared through Mini-PCNL sheath
- Safe
 - No intraoperative complications in current series
- Synergy between Supine Mini-PCNL and Thulium Laser
 - Gravity and Venturi effect potentiate passive clearance of dust/fragments



Thank You

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