

To stent or not to stent: that's the question A prospective outcome analysis of Asian population undergoing retrograde intrarenal surgery in a single center

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Introduction:

There exists a difference in opinion in EAU and AUA regarding Pre-stenting for Retrograde Intra renal Surgery(RIRS) and its outcome. Several studies from CROES1, UROICE2 and more recently, BUSTER3 have supported pre-stenting.

Objective:

To assess outcomes of RIRS by MEL technique4 between subgroups - pre-stented(PS) and non pre stented(NPS) in terms of stone free rate(SFR), complication rate, ease of placement of ureteric access sheath (UAS), ureteric injury rate, and necessity for ancillary procedures in renal, ureteric, renal and ureteric combined stones.

Methods:

Prospective, single center, single surgeon study.

Inclusion criteria: All patients with proximal ureteric/renal or combined stones diagnosed on CT scan were counseled and enlisted between June 2018 to Jan 2020.

Exclusion criteria: bilateral RIRS, relook RIRS.

Total 124 patients were recruited in the prospective study of which 25 were excluded.

A standard template for intraop findings was used. All Patients underwent post op CT scan.

Significance of stone clearance rate was analyzed with t-test, while rest of the results were analyzed with Chi-square test.

Results:

Data was analyzed and tabulated as below.

No significant difference in SFR /UAS insertion /Ureteric injury or need for ancillary procedures between PS and NPS arms irrespective of stone location.

Three grade 1 ureteric injuries were noted. There was no significant difference of ureteric injury rate between PS and NPS groups (p=0.234 for renal stone, p=0.149 for all patients).

2 PS patients with positive culture and subsequent urinary tract infection required hospitalization and intravenous antibiotic.

No other complication noted in either groups

Conclusions:

Our Study(unlike other studies or the EAU recommendation), shows that there is no difference in PS and NPS patients given insignificant impact on

stone clearance, ease of UAS insertion, ureter injury, necessity of ancillary procedure, and postoperative complications.

Like AUA recommendation, we hypothesise after careful analysis that - choosing the right equipment, surgeon skill and meticulous technique are the key factors for good outcomes.

Table 1. Stone clearance (t test)

| Location | Pre-stented | Stone clearance rate | t | P |
|---------------------|-----------------------|----------------------|-------|-------|
| Renal stone(n=48) | Pre-stented(n=28) | 90.17%± 14% | 1.452 | 0.142 |
| | Non pre-stented(n=20) | 82.35%± 23% | | |
| Ureteric stone(n=2) | Pre-stented(n=2) | 93.75%± 8.84% | N/A | N/A |
| | Non pre-stented(n=0) | N/A | | |
| Combined stone(n=9) | Pre-stented(n=8) | 96.33%± 5.14% | 0.555 | 0.596 |
| | Non pre-stented(n=1) | 93.30% | | |
| Total(n=59) | Pre-stented(n=38) | 91.65%± 12.54% | 1.917 | 0.060 |
| | Non pre-stented(n=21) | 82.87%± 22.78% | | |

Table 2. Complication rate (Chi-square test)

| Location | Pre-stented | Complication | | χ ² | P |
|----------------------|-----------------------|--------------|-----|----------------|-------|
| | | No | Yes | | |
| Renal stone(n=81) | Pre-stented(n=53) | 51 | 2 | 1.083 | 0.298 |
| | Non pre-stented(n=28) | 28 | 0 | | |
| Ureteric stone(n=3) | Pre-stented(n=3) | 2 | 1 | N/A | N/A |
| | Non pre-stented(n=0) | N/A | N/A | | |
| Combined stone(n=15) | Pre-stented(n=14) | 14 | 0 | N/A | N/A |
| | Non pre-stented(n=1) | 1 | 0 | | |
| Total(n=99) | Pre-stented(n=70) | 67 | 3 | 1.282 | 0.258 |
| | Non pre-stented(n=29) | 29 | 0 | | |

Table 3. ease of access-sheath insertion (Chi-square test)

| Location | Pre-stented | Easiness of access sheath insertion | | | χ ² | P |
|----------------------|-----------------------|-------------------------------------|-----------|------------------|----------------|-------|
| | | Easy | Difficult | No access sheath | | |
| Renal stone(n=81) | Pre-stented(n=53) | 39 | 4 | 10 | 2.051 | 0.359 |
| | Non pre-stented(n=28) | 24 | 2 | 2 | | |
| Ureteric stone(n=3) | Pre-stented(n=3) | 1 | 0 | 2 | N/A | N/A |
| | Non pre-stented(n=0) | N/A | N/A | N/A | | |
| Combined stone(n=15) | Pre-stented(n=14) | 10 | 1 | 3 | 2.946 | 0.229 |
| | Non pre-stented(n=1) | 0 | 0 | 1 | | |
| Total(n=99) | Pre-stented(n=70) | 50 | 5 | 15 | 1.739 | 0.419 |
| | Non pre-stented(n=29) | 24 | 2 | 3 | | |

Table 4. ureteric injury rate (Chi-square test)

| Location | Pre-stented | Ureteric injury | | χ ² | P |
|----------------------|-----------------------|-----------------|-----|----------------|-------|
| | | No | Yes | | |
| Renal stone(n=81) | Pre-stented(n=53) | 52 | 1 | 1.419 | 0.234 |
| | Non pre-stented(n=28) | 26 | 2 | | |
| Ureteric stone(n=3) | Pre-stented(n=3) | 3 | 0 | N/A | N/A |
| | Non pre-stented(n=0) | N/A | N/A | | |
| Combined stone(n=15) | Pre-stented(n=14) | 14 | 0 | N/A | N/A |
| | Non pre-stented(n=1) | 1 | 0 | | |
| Total(n=99) | Pre-stented(n=70) | 69 | 1 | 2.086 | 0.149 |
| | Non pre-stented(n=29) | 27 | 2 | | |

Table 5. necessity for ancillary procedure (Chi-square test)

| Location | Pre-stented | Ancillary procedure | | χ ² | P |
|----------------------|-----------------------|---------------------|-----|----------------|-------|
| | | No | Yes | | |
| Renal stone(n=68) | Pre-stented(n=43) | 38 | 5 | 0.883 | 0.347 |
| | Non pre-stented(n=25) | 20 | 5 | | |
| Ureteric stone(n=3) | Pre-stented(n=3) | 3 | 0 | N/A | N/A |
| | Non pre-stented(n=0) | N/A | N/A | | |
| Combined stone(n=12) | Pre-stented(n=11) | 11 | 0 | N/A | N/A |
| | Non pre-stented(n=1) | 1 | 0 | | |
| Total(n=83) | Pre-stented(n=57) | 52 | 5 | 1.843 | 0.175 |
| | Non pre-stented(n=26) | 21 | 5 | | |

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