**Supplementary Table 1. Characteristics of knotted stent**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Author</th>
<th>Location</th>
<th>Knotted location</th>
<th>Stent type (F, cm)</th>
<th>Sex/age</th>
<th>Pathology (purpose of stent)</th>
<th>Anesthesia</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Groeneveld (1989)</td>
<td>Singapore</td>
<td>Upper</td>
<td>D-J (N/A)</td>
<td>N/A</td>
<td>Renal stone (for ESWL)</td>
<td>L/A</td>
<td>Gentle traction</td>
</tr>
<tr>
<td>2</td>
<td>Das et al. (1990)</td>
<td>UK</td>
<td>Distal</td>
<td>S-J (N/A)</td>
<td>M/45</td>
<td>Renal stone (for ESWL)</td>
<td>L/A</td>
<td>Gentle traction</td>
</tr>
<tr>
<td>3</td>
<td>Braslis et al. (1992)</td>
<td>Australia</td>
<td>Upper</td>
<td>Multilength (4.7F)</td>
<td>F/37</td>
<td>Renal pelvis stones: single kidney (for ESWL)</td>
<td>G/A</td>
<td>URS failed percutaneous nephrostomy</td>
</tr>
<tr>
<td>4</td>
<td>Kundargi et al. (1994)</td>
<td>India</td>
<td>Upper</td>
<td>Multicoil (6F, 26 cm)</td>
<td>M/53</td>
<td>Renal stone: single kidney (for ESWL)</td>
<td>L/A</td>
<td>Percutaneous Stent removal</td>
</tr>
<tr>
<td>5</td>
<td>Flam et al. (1995)</td>
<td>France</td>
<td>Upper</td>
<td>Double pigtail circumflex (6F, 26 cm)</td>
<td>M/86</td>
<td>UUS (for relief of obstructive uropathy: too far insertion)</td>
<td>G/A</td>
<td>2nd Stent insertion (1 week later) Unite with URS &amp; 5F alligator forcep</td>
</tr>
<tr>
<td>6</td>
<td>Baldwin et al. (1998)</td>
<td>USA</td>
<td>Upper</td>
<td>Multilength (7F)</td>
<td>M/73</td>
<td>Ureteral TCC; single kidney (for surveillance ureteroscopy)</td>
<td>G/A</td>
<td>Unite with super stiff guide wire</td>
</tr>
<tr>
<td>7</td>
<td>Quek et al. (2002)</td>
<td>USA</td>
<td>Mid</td>
<td>Multicoil (7F, 24 cm)</td>
<td>F/66</td>
<td>Upper ureteral stone: cystocele (for relief of obstructive uropathy)</td>
<td>L/A</td>
<td>Gentle traction (incidentally detected)</td>
</tr>
<tr>
<td>8</td>
<td>Corbett et al. (2005)</td>
<td>UK</td>
<td>Upper</td>
<td>Multilength (4.7F)</td>
<td>M/48</td>
<td>Megaureter (for ureteroureterostomy)</td>
<td>G/A</td>
<td>Gentle traction (incidentally detected)</td>
</tr>
<tr>
<td>10</td>
<td>Sighinolfi et al. (2005)</td>
<td>Italy</td>
<td>Upper</td>
<td>Multilength (6F)</td>
<td>M/70</td>
<td>Renal stone (for ESWL)</td>
<td>L/A</td>
<td>Gentle traction (Valsalva)</td>
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<tr>
<td>11</td>
<td>Eisner et al. (2006)</td>
<td>USA</td>
<td>Upper</td>
<td>Multilength (6F)</td>
<td>M/83</td>
<td>Uretero cutaneous anastomosis (for periodic ureteral stent substitution)</td>
<td>L/A</td>
<td>PCN 3 weeks later gentle traction</td>
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<tr>
<td>12</td>
<td>Basavaraj et al. (2007)</td>
<td>UK</td>
<td>Upper</td>
<td>Multilength (6F)</td>
<td>M/83</td>
<td>Ureteral invasion of endometrosis (for uretero neocystostomy)</td>
<td>L/A</td>
<td>Sterile vaseline push-up gentle traction</td>
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<tr>
<td>13</td>
<td>Richilta et al. (2009)</td>
<td>Italy</td>
<td>Upper</td>
<td>Ureteral catheter (7F)</td>
<td>M/67</td>
<td>UUS (for relief of obstructive uropathy)</td>
<td>G/A</td>
<td>Transection with URS &amp; Holmium laser</td>
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<tr>
<td>14</td>
<td>Picozzi et al. (2010)</td>
<td>Italy</td>
<td>Upper</td>
<td>D-J (7F, 26 cm)</td>
<td>M/53</td>
<td>Staghorn stone (for remnant stone after PNL)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
</tr>
<tr>
<td>15</td>
<td>Richards et al. (2011)</td>
<td>USA</td>
<td>Upper</td>
<td>D-J</td>
<td>M/41</td>
<td>Staghorn stone (for remnant stone after PNL)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
</tr>
<tr>
<td>16</td>
<td>Tempest et al. (2011)</td>
<td>UK</td>
<td>Upper</td>
<td>D-J</td>
<td>M/41</td>
<td>Staghorn stone (for remnant stone after PNL)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
</tr>
<tr>
<td>17</td>
<td>Karaguzel et al. (2012)</td>
<td>Turkey</td>
<td>Upper</td>
<td>D-J (4.7F, 28 cm)</td>
<td>M/53</td>
<td>UUS (for relief of obstructive uropathy)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
</tr>
<tr>
<td>18</td>
<td>Bhirud et al. (2012)</td>
<td>India</td>
<td>Mid</td>
<td>D-J</td>
<td>M/43</td>
<td>Crohn's disease (for Intraoperative identification)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
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<tr>
<td>19</td>
<td>Moufid et al. (2012)</td>
<td>Morocco</td>
<td>Upper</td>
<td>D-J (7F)</td>
<td>M/43</td>
<td>Crohn's disease (for Intraoperative identification)</td>
<td>G/A</td>
<td>Percutaneous with nephroscope</td>
</tr>
<tr>
<td>20</td>
<td>Present study</td>
<td>Korea</td>
<td>Upper</td>
<td>Multilength (6F)</td>
<td>M/53</td>
<td>Renal stone (for ESWL)</td>
<td>L/A</td>
<td>Percutaneous removal with folded Termo guide wire</td>
</tr>
</tbody>
</table>

D-J, double-J; ESWL, extracorporeal shock wave lithotripsy; L/A, local anesthesia; S-J, single-J; G/A, general anesthesia; URS, ureterorenoscopy; UUS, upper ureteral stone; PNL, percutaneous nephrolithotomy; d/t, due to; URSL, ureterorenoscopic lithotripsy; PCN, percutaneous nephrostomy.
SUPPLEMENTARY REFERENCES