How effective is our mobile lithotripsy service?

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Aim

• To assess the efficacy of our mobile lithotripter unit with respect to stone clearance

Factors affecting ESWL outcomes

• Stone Related
  Stone Burden
  Stone Location
  Stone Density

• Renal Related
  Intra-renal Anatomy
  Drainage

• Patient Related
  BMI
  Musculo-skeletal deformity
<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Lithotripter</th>
<th>Number</th>
<th>SFR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cope et al</td>
<td>1991</td>
<td>Wolf Piezolith</td>
<td>220</td>
<td>75</td>
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<td>Mykulak et al</td>
<td>1992</td>
<td>Therasonic</td>
<td>172</td>
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<td>Cass et al</td>
<td>1995</td>
<td>HM3</td>
<td>4796</td>
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<td>Cass et al</td>
<td>1995</td>
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<td>6195</td>
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<td>Elhilali et al</td>
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<td>Lalak et al</td>
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<td>Johnson et al</td>
<td>2003</td>
<td>Dornier Doli S</td>
<td>204</td>
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Our Lithotripsy Service

• Our mobile lithotripsy service started in 2008 and was introduced to offer a local stone service
• Wolf Piezolith 3000 Lithotripter
• 100mg pr diclofenac, no routine antibiotics
• 3+1 clinic sessions per month

Methods
• Retrospectively over 12 months between 2010 and 2011
• Two doctors measured calculi diameter pre and post treatment
• Primary outcome measure was stone free rate (fragments <2mm)
• Variables analysed included stone to skin distance, Hounsfield Units and need for subsequent operative intervention
Results

- 137 patients analysed
- Mean no. of ESWL sessions per patient 2.2 (Range 1-8)
- Imaging modality used for pre op and post op:

<table>
<thead>
<tr>
<th></th>
<th>Pre op imaging</th>
<th>Post op imaging</th>
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<tbody>
<tr>
<td>CT</td>
<td>81%</td>
<td>26%</td>
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<tr>
<td>USS</td>
<td>7%</td>
<td>13%</td>
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<td>XR</td>
<td>12%</td>
<td>61%</td>
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</table>

- Mean pre-treatment stone size 7.5mm SD +/- 4.9mm (Range 1-25mm)

Stone free rates according to renal position

Overall stone free rate defined as no remaining fragments larger than 2 mm
Stone free rates according to radiodensity

- Hounsfield Unit measurements were available for 114 patients

Stone free rate according to stone size
Stone free rate according to stone skin distance

- Stone to Skin distance measurements available for 106 patients

Stone free rates according to imaging modality used for follow-up
Results

- 68% of patients were managed with ESWL alone
- 32% subsequently underwent elective operative intervention

Complications

<table>
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<th>Complication</th>
<th>No. of patients</th>
</tr>
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<td>Ureteric obstruction</td>
<td>5</td>
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<tr>
<td>Urosepsis</td>
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Complications – Perinephric Haematoma x1
Discussion

• Data will help us target which patients more likely to benefit from ESWL & those that should be offered immediate surgical intervention

• Consideration needs to be given to contemporary follow-up of patients. Should stones diagnosed on CT be followed up by CT to confirm true effectiveness of treatment?

Conclusion

• Hounsfield Units now included in radiology report

• In our experience, mobile lithotripters are a good alternative to fixed lithotripters and can offer equivalent rates of stone clearance to contemporary published data.

• This data will help our patients make an informed decision when making treatment decisions