The use of the Medartis Ulnar Shortening Osteotomy System in our department:
Early results, tips, tricks and pitfalls
C. Kritiotis, L. Muir, Z. Naqui, and A. Pearce
Manchester Hand Centre, Salford Royal NHS Foundation Trust
Manchester, UK

Aim: We present a retrospective series of eight ulnar shortening osteotomies using the Medartis Ulnar Shortening Osteotomy system, focusing on surgical technique, potential pitfalls and outcomes.

Background:
Historically, plating of the ulna for fracture or osteotomy resulted in a high rate of Non-union. For almost 30 years the concept of an all-in-one ulna jig (for osteotomy), compression and plating system to optimise results has been documented [Rayhack et al.]. Despite excellent systems, commensurate outcomes rely on judicious patient selection, technical skill and high quality components.

Methods:
Eight patients underwent ulnar shortening osteotomy using this system between June 2017 and February 2018 (Table 1). The main indication was relative ulnar lengthening secondary to a prior distal radius fracture that healed with shortening. All patients had an ulnar positive variance ranging from 2mm to 7mm and had ulnar abutment syndrome with ulnar sided wrist pain as well as pain in pronosupination of the forearm. The procedure was performed via direct approach to the ulna, with volar plating. Seven patients had an oblique (45 degree) osteotomy, compressed with a lag screw through the plate and one had a transverse (90 degree) osteotomy. All patients were placed in a below elbow backslab until first follow-up appointment following surgery then a forearm cast for at least five weeks thereafter.

Table 1.

<table>
<thead>
<tr>
<th>Age</th>
<th>Date of procedure</th>
<th>Type of osteotomy</th>
<th>Compression achieved</th>
<th>Problems with tension bolt</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>18/10/2017</td>
<td>Oblique</td>
<td>Yes</td>
<td>Yes</td>
<td>* Delayed union</td>
</tr>
<tr>
<td>48</td>
<td>30/08/2017</td>
<td>Oblique</td>
<td>Yes</td>
<td>No</td>
<td>Uniting</td>
</tr>
<tr>
<td>34</td>
<td>07/02/2018</td>
<td>Oblique</td>
<td>Yes</td>
<td>No</td>
<td>Uniting</td>
</tr>
<tr>
<td>59</td>
<td>22/11/2017</td>
<td>Oblique</td>
<td>Yes</td>
<td>No</td>
<td>Uniting</td>
</tr>
<tr>
<td>45</td>
<td>15/11/2017</td>
<td>Transverse</td>
<td>No</td>
<td>Yes</td>
<td>** Non union</td>
</tr>
<tr>
<td>53</td>
<td>03/05/2017</td>
<td>Oblique</td>
<td>Yes</td>
<td>No</td>
<td>Uniting</td>
</tr>
<tr>
<td>74</td>
<td>07/12/2016</td>
<td>Oblique</td>
<td>Yes</td>
<td>No</td>
<td>Lost to follow-up</td>
</tr>
<tr>
<td>48</td>
<td>14/09/2017</td>
<td>Oblique</td>
<td>Yes</td>
<td>Yes</td>
<td>*** United</td>
</tr>
</tbody>
</table>

At the time of poster preparation:
* X-rays showed a paucity of callus and likelihood of impending Non-union.
** Awaiting CT imaging to confirm delayed union.
*** X-rays showed no cortical contact at osteotomy site and no callus. Non-union.
**** X-rays showed complete union at 8 weeks post-op. Patient discharged.

Results:
In three patients there was a problem with the extraction of the tension bolt resulting in added operating time, and in one case, inadequate compression. By the time of writing of this abstract 4 osteotomies were uniting and 1 united at an average of eight weeks. So far no loss of fixation has been noted or any other complication. In all but one of the patients good bony compression was achieved using this system. The patient that didn’t get intraoperative compression went on to non-union and will need revision surgery.

Conclusion:
We have flagged up the problem with the tension bolt, both to the company HQ as well as to the local reps. The head of the tension bolt is vulnerable to stripping with relative ease, making its removal difficult. This could lead to significant intraoperative problems as without removing the tension bolt one cannot remove the jig from the plate. We have already suggested alternatives to the tension bolt. We are happy with the compression and the shortening that we can achieve using this system and we believe that is a reliable alternative for ulnar shortening osteotomies.

References:
2. Medartis Ulna Shortening System 2.5 Surgical Technique

Disclaimer: No financial or any other support was received by any company or individual for the preparation of this poster.