Difference in carpal alignment between scapholunate dissociation and Kienbock disease

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[Background] The primary stabilizer of the scapholunate joint is the scapholunate interosseous ligament (SLIL).

Scapholunate dissociation (SLD) is the most frequent type of wrist instability, and if untreated, can lead to early wrist osteoarthritis (OA), known as scapholunate advanced collapse (SLAC).

Kienbock disease (KD) can also lead to wrist OA.

Lunate resection and vascularized pisiform transfer (LRVP) is one treatment option for advanced KD. This procedure sacrifices the SLIL, but the long-term results are good and there is a little progression of severe wrist OA.

Purpose: assessment of the carpal alignment in KD/SLD. Hypothesis: the malalignment of SLD is different from KD.

Materials and Methods

Retrospectively review SLD (only Geissler grade 4): 17 patients
KD (only Lichtmen grade 4): 14 patients

Carpal alignments: affected side (pre- and postop)/unaffected side radiographs.
radio-lunate angle (RLA), radio-scaphoid angle (RSA), carpal height ratio (CHR)
the scaphoid and capitate locations by plain radiographs and CT/MRI.

Results

The results are summarized in the table. All assessed parameters on non-affected sides were similar in both groups.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SLD</th>
<th>KD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLA</td>
<td>14</td>
<td>16</td>
<td>0.49</td>
</tr>
<tr>
<td>RSA</td>
<td>14</td>
<td>16</td>
<td>0.49</td>
</tr>
<tr>
<td>CHR</td>
<td>14</td>
<td>16</td>
<td>0.49</td>
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The pre-operative RSA showed no significant differences between groups, but the RLA was significantly lower in SLD and the CHR was significantly lower in KD. Post-operative radiographs revealed a lower CHR/higher RSA in KD, but the CHR in KD showed NO progression. The scaphoid and capitate were located dorsally in SLD compared to KD.

Eleven of 17 (65%) SLD cases and no KD cases showed scaphoid dorsal subluxation. No case of KD showed subluxation of the scaphoid before or after LRVP.

There was NO radiographic progression of OA in either group at final follow-up.

Case presentation

The LRVP sacrificed the SLIL and preserved the dorsal capsule for KD, but it did not cause SLAC. KD showed no dorsal subluxation of the scaphoid.

The carpal malalignment of SLD is definitely different from KD.

A sacrifice the scapholunate interosseous ligament does not always cause a scapholunate dissociation.