Preoperative evaluation and surgical planning using three-dimensional MRI-CT fusion images for osteochondritis dissecans of the elbow

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Objective
For osteochondritis dissecans of the elbow (OCD), MRI and CT are widely used for evaluating pathological condition of the lesion before the operation. However, three dimensional evaluation is difficult for the case in which reconstruction of articular surface is needed, thereby we must rely on intraoperative findings. We developed a technique to construct 3D MRI-CT fusion images of OCD for preoperative evaluation and surgical simulation.

Results

<table>
<thead>
<tr>
<th>Predicted</th>
<th>Intra-op</th>
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<tbody>
<tr>
<td>Size of the lesion</td>
<td>13.8 x 12.9 mm</td>
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<tr>
<td>Articular cartilage shape</td>
<td>normal: 3 cases</td>
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<tr>
<td>Cartilage fissure</td>
<td>7 cases</td>
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<tr>
<td>Cartilage defect</td>
<td>5 cases</td>
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<tr>
<td>Subchondral loose fragment</td>
<td>5 cases</td>
</tr>
</tbody>
</table>

ICRS classification
predicted: Class II 1 case, III 2 cases, IV 4 cases
Correctly matched in all cases

Intra-op: Class II 1 case, III 2 cases, IV 4 cases
All the surgeries were performed as simulated
Drilling 2 cases; Freebody removal 1 case; Osteochondral autograft 4 cases

Discussion
A novel technique.

Conclusion
3D MRI-CT fusion images are useful for preoperative evaluation of OCD and its surgical simulation.