Osteochondral Autograft Transplantation for Articular Defects in the Hand and Wrist

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Objective and subjective data of patients undergoing OATS procedure

<table>
<thead>
<tr>
<th>Patient</th>
<th>Sex</th>
<th>Injury</th>
<th>Stage</th>
<th>Age</th>
<th>Osteochondral Defect</th>
<th>Flex Post</th>
<th>Flex Pre</th>
<th>Ext Post</th>
<th>Ext Pre</th>
<th>Subjective</th>
<th>Time to Return to Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.D.</td>
<td>M</td>
<td>Osteochondral defect proximal lunate, prior OSTAR debridement</td>
<td>R</td>
<td>20</td>
<td>College student</td>
<td>60/50</td>
<td>60/50</td>
<td>60/50</td>
<td>60/50</td>
<td>No crepitus or pain. No knee symptoms. Returned to hockey.</td>
<td>1</td>
</tr>
<tr>
<td>K.H.</td>
<td>M</td>
<td>Osteochondral defect proximal lunate, prior OSTAR debridement</td>
<td>R</td>
<td>36</td>
<td>Financial advisor</td>
<td>50/40</td>
<td>50/40</td>
<td>50/40</td>
<td>50/40</td>
<td>No crepitus or pain. Mild knee stiffness.</td>
<td>4</td>
</tr>
<tr>
<td>A.B.</td>
<td>M</td>
<td>Osteochondral defect index metacarpal head and base</td>
<td>R</td>
<td>23</td>
<td>Minor league 3rd baseman</td>
<td>-</td>
<td>60/0</td>
<td>80/0</td>
<td>75/40</td>
<td>90/100</td>
<td>No crepitus or pain. No knee symptoms. Returned to prior level of play. Named to AAA All-Star team.</td>
</tr>
<tr>
<td>N.P.</td>
<td>M</td>
<td>Osteochondral defect proximal lunate, prior OSTAR debridement</td>
<td>R</td>
<td>40</td>
<td>Chief financial officer</td>
<td>40/40</td>
<td>50/40</td>
<td>50/40</td>
<td>50/40</td>
<td>No crepitus or pain. No knee symptoms. Returned to golf and hockey.</td>
<td>3</td>
</tr>
</tbody>
</table>

**METHODS**

We performed a retrospective chart review of four male patients who were treated with an OATS procedure for an articular defect of their hand or wrist between May 2010 and February 2011. The average age was 30 years old and all had failed months to years of conservative management.

Injuries consisted of osteochondral defects in:
- proximal lunate (2)
- proximal scaphoid
- index metacarpal head

Outcome variables:
- four month postoperative grip strength
- range of motion
- time to return to normal activity
- radiographic evidence of osteochondral plug in-growth.

**RESULTS**

- The average time from injury to surgery was 29 months, with an average follow-up of 5 months.
- Using our technique, we had no significant complications.
- The average gain of wrist motion was 6°.
- Grip strength increased an average of 18 PSI.
- Radiographic evidence of adequate graft position with an improved articular surface was seen in all cases at final follow-up.
- All patients resumed their sporting careers, including minor league baseball, golfing, and ice hockey.

**CONCLUSIONS**

- The OATS procedure represents an appropriate treatment option for the treatment of hand and wrist injuries in young, active patients who have failed conservative management.
- The OATS procedure is technically demanding, but is a reasonable treatment option for focal osteochondral defects in high demand individuals as it incorporates hyaline cartilage into the defect site.
- One can expect a successful outcome after a congruent articular surface is achieved and a motivated patient is able to complete an appropriate course of occupational hand therapy.