Double Level Osteotomy is less invasive than total knee arthroplasty

Manabu Akagawa¹,³, Hidetomo Saito²,³, Kimio Saito²,³, Yoshiaki Kimura¹,³, Naohisa Miyakoshi², Yoichi Shimada²,³

¹ Akita city hospital, Department of orthopedic surgery  
² Akita University Graduate School of Medicine/Department of Orthopedic Surgery  
³ Akita Sports Arthroscopy Knee Group : ASAKG
I have no financial conflicts to disclosure.
Around the Knee Osteotomy: AKO

- With the development of locking plate, results of around the knee osteotomy for osteoarthritis (OA) have improved.
Recent years, combined osteotomies such as Double Level Osteotomy (DLO) and Double Level Triple Osteotomy (DLTO) have been safely performed for advanced knee OA.

However, we don’t know how invasive these procedures are.
To investigate surgical invasiveness of combined osteotomy compared to arthroplasty.
Objectives

Inclusion criteria (Apr 2010 - Jan 2017)

- Patients who underwent combined osteotomy or arthroplasty.

Exclusion criteria

- Inflammatory arthritis
- Simultaneous bilateral procedures
- Simultaneous other procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWHTO + TCVO</td>
<td>10</td>
</tr>
<tr>
<td>OWHTO + DFO</td>
<td>2</td>
</tr>
<tr>
<td>TCVO + DFO</td>
<td>3</td>
</tr>
<tr>
<td>DLTO (OWHTO+TCVO+DFO)</td>
<td>5</td>
</tr>
<tr>
<td>TKA</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42</strong></td>
</tr>
</tbody>
</table>

Total 42 knees
Evaluations

- Operation time (OT)
- Total volume of Blood Loss (BL)

Trends in the following data up to 2 weeks after surgery

- Hemoglobin: Hb
- White Blood Cells: WBC
- Creatine Kinase: CK
- C Reactive Protein: CRP
Results

▸ OT of DLTO was significantly longer than TKA.

▸ There was no significant difference between the groups in BL.
Results

- There was no significant difference between the groups in WBC, Hb, and CK.
In TKA, CRP was significantly higher than DLO in each time point.
In the present study, CRP was significantly higher in TKA than in DLO.

As previously reported, CRP can be used to quantify the degree of tissue damage\(^1\) and surgical trauma\(^2\).

These represent that DLO is less invasive than TKA.
Discussion

- Low invasiveness is useful for early functional recovery.

- Combined osteotomy may be useful surgical option for advanced knee OA in active elderly.
Conclusion

- From the results of this study, DLO is less invasive than TKA.

- Combined osteotomies may be useful for advanced knee OA.

References