Multiligament Knee Injuries: Clinical Outcomes of Surgical Treatment

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DISCLOSURE

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I have no financial conflicts to disclose

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MULTILIGAMENT KNEE INJURY

Disruption of two o more ligament or ligament complex \(^{(1)}\)

- ACL
- PCL
- PMC
- PLC

Classified according to Schenck classification \(^{(2)}\)

(1) Burrus MT Diagnostic and Management Strategies for Multiligament Knee Injuries. A Critical Analysis Review. JBJS Reviews 2016;4(2)
INJURY MECHANISM

These injuries can be categorized according to mechanism\(^{(1)}\)

- High energy
- Low energy
- Ultra low energy

\(^{(1)}\) Burrus MT Diagnostic and Management Strategies for Multiligament Knee Injuries. A Critical Analysis Review. JBJS Reviews 2016;4(2)
OBJETIVE

Report the presentation, management, complications and results of surgically treated multiligamentous knee injuries (MLKI)
METHODS

- Retrospective cohort study of patients who underwent multiligament knee surgery at a Level I Trauma Center between 2016 – 2017

- Inclusion criteria

\[\text{Patients who underwent surgical stabilization of at least 2 of the four major knee ligament structures} \rightarrow \text{The same surgical team} \rightarrow \text{One-step surgery} \rightarrow \text{At least 6 months of follow-up}\]
METHODS

Data from electronic file was extracted

- ✔ Demographic variables
- ✔ It was categorized into high and low energy
- ✔ Classification according to Schenck
- ✔ Joint range at the end of follow-up
- ✔ Lysholm at the end of the follow-up
<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th></th>
<th>Women</th>
<th></th>
<th>Total(knee)</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>38</td>
<td>90,48%</td>
<td>4</td>
<td>9,52%</td>
<td>42</td>
<td>100</td>
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<tr>
<td>Age</td>
<td>38,4</td>
<td></td>
<td>46,5</td>
<td></td>
<td>39,2</td>
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<tr>
<td>High energy</td>
<td>32</td>
<td>76,19%</td>
<td>3</td>
<td>7,14%</td>
<td>35</td>
<td>83,3</td>
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<tr>
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<td>6</td>
<td>14,29%</td>
<td>1</td>
<td>2,38%</td>
<td>7</td>
<td>16,7</td>
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<tr>
<td>ACL+PLC</td>
<td>13</td>
<td>30,95%</td>
<td>0</td>
<td>0,00%</td>
<td>15</td>
<td>31,0</td>
</tr>
<tr>
<td>ACL+PMC</td>
<td>5</td>
<td>11,90%</td>
<td>2</td>
<td>4,76%</td>
<td>7</td>
<td>16,7</td>
</tr>
<tr>
<td>PCL+PLC</td>
<td>2</td>
<td>4,76%</td>
<td>0</td>
<td>0,00%</td>
<td>1</td>
<td>4,8</td>
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<tr>
<td>PCL+PMC</td>
<td>2</td>
<td>4,76%</td>
<td>0</td>
<td>0,00%</td>
<td>2</td>
<td>4,8</td>
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<tr>
<td>ACL+PCL + PMC</td>
<td>12</td>
<td>28,57%</td>
<td>1</td>
<td>2,38%</td>
<td>13</td>
<td>31,0</td>
</tr>
<tr>
<td>ACL+PCL+PLC</td>
<td>4</td>
<td>9,52%</td>
<td>1</td>
<td>2,38%</td>
<td>4</td>
<td>11,9</td>
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<tr>
<td>S.IV</td>
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<td>0,00%</td>
<td>0</td>
<td>0,00%</td>
<td>0</td>
<td>0</td>
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<tr>
<td>S.V</td>
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<td>0,00%</td>
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<td>Vascular injury</td>
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<td>Nerve injury</td>
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<td>9,5</td>
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<td>Flexion</td>
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<td>0</td>
<td></td>
<td></td>
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<tr>
<td>Lysholm</td>
<td>67,5</td>
<td>42,5%</td>
<td>42,5%</td>
<td></td>
<td>65,7</td>
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</tbody>
</table>
RESULTS

**Mechanism**
- High energy: 83%
- Low energy: 17%

**Injured ligaments**
- ACL+PLC: 31%
- ACL+PMC: 16%
- PCL+PLC: 5%
- PCL+PMC: 5%
- ACL+PCL+PMC: 16%
- ACL+PCL+PLC: 31%
RESULTS

- Two patients had an exposed lesion
- External fixation was necessary in 5 cases – 18 days (8-35)
- 2 Acute reparation of tibial avulsions (1 medial and 1 lateral)
RESULTS

2 ligaments were reconstructed in 27 knees

3 ligaments were reconstructed in 15 knees

In 98% of the reconstructions allograft was used

->Most frequent association was ACL + PLC (29%)
COMPLICATIONS

4 patients with joint stiffness, that required mobilization under anesthesia

1 patient with residual instability
CONCLUSION

Multiligamentary injuries are a challenge for the knee surgeon

This serie shows good results

Only 8 patients required reoperations

- 5 mobilizations under anesthesia
- 2 implant withdrawals
- 1 osteotomy

100% of patients would have surgery again or recommend this surgery