A Prospective Comparison between Two Ligament Reattachment Techniques for Chronic Ankle Instability in Athletes

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Byung-Ki Cho

My disclosure is in the Final Program Book and in the AOFAS database

I have no potential conflicts with this presentation
Chronic Lateral Ankle Instability

- Correlation between mechanical stability & clinical, functional results?
  - suture anchor vs bone-tunnel technique
  - single vs double anchor technique

Difference in mechanical stability...but.

Similar clinical results for short term f/u

- Difference of stability necessary to daily living and sports activity?
Chronic Lateral Ankle Instability in High-demand Athletes

- Delay of rehabilitation process: common
- Demand of the fast return to sports
- But... Afraid of the recurrence of injury

Ligament reattachment technique enabling early rehabilitation with strong stability?
Demographics

- 32 cases (32 patients) < 30 yrs with chronic lateral ankle instability
- Followed up > 2yr after MBP done by one surgeon
- Suture bridge group vs Bone tunnel group (18 / 14)
- Surgical technique randomly assigned
- Age / Sex: 23.8 yrs, M / F (27 / 5)
- Follow up: mean 30.6 months
- MRI & concomitant A/S procedure

Amateur athletes
- Track sports (16)
- Basketball (8)
- Soccer (5)
- Taekwondo (3)
Surgical procedure

Periosteal stripping & double suture anchor apply

Secured capsule & ATF ligament with suture anchor
Surgical procedure

- Reinforcement by crossed 4 strand of Fiberwires
- Suture bridge technique by Pushlock knotless anchor
Clinical results

<table>
<thead>
<tr>
<th>Group</th>
<th>Preop</th>
<th>POD(3Mo)</th>
<th>POD(6Mo)</th>
<th>POD(1yr)</th>
<th>Final F/U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone tunnel</td>
<td>46.8</td>
<td>73.7</td>
<td>85.9</td>
<td>88.6</td>
<td>88.4</td>
</tr>
<tr>
<td>Suture bridge</td>
<td>45.5</td>
<td>76.9</td>
<td>88.2</td>
<td>90.8</td>
<td>91.6</td>
</tr>
</tbody>
</table>

**Karlsson scale**

- Satisfaction rate by Sefton grading system → 86% in Bone tunnel group / 89% in Suture bridge group

Complications

- Skin irritation by suture materials → 4 cases in Bone tunnel group
- Suture anchor breakage intraoperatively → 2 cases in Suture bridge group
Radiological results

<table>
<thead>
<tr>
<th>Talar tilt angle</th>
<th>Preop</th>
<th>POD(3Mo)</th>
<th>POD(6Mo)</th>
<th>POD(1yr)</th>
<th>Final F/U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone tunnel</td>
<td>15.8°</td>
<td>6.1°</td>
<td>6.4°</td>
<td>5.9°</td>
<td>6.3°</td>
</tr>
<tr>
<td>Suture bridge</td>
<td>16.3°</td>
<td>4.7°</td>
<td>4.3°</td>
<td>5.4°</td>
<td>5.5°</td>
</tr>
<tr>
<td>\textit{P-value}</td>
<td>0.498</td>
<td>0.026</td>
<td>0.014</td>
<td>0.655</td>
<td>0.271</td>
</tr>
</tbody>
</table>

Stress radiograph
Functional results

<table>
<thead>
<tr>
<th>Category</th>
<th>Bone tunnel</th>
<th>Suture bridge</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jogging</td>
<td>8.9 wks</td>
<td>8.4 wks</td>
<td>0.884</td>
</tr>
<tr>
<td>Spurt running</td>
<td>14.8 wks</td>
<td>12.5 wks</td>
<td>0.115</td>
</tr>
<tr>
<td>Jumping</td>
<td>12.2 wks</td>
<td>10.5 wks</td>
<td>0.282</td>
</tr>
<tr>
<td>One leg standing ( &gt;1min)</td>
<td>9.4 wks</td>
<td>9.2 wks</td>
<td>0.913</td>
</tr>
<tr>
<td>Walking on uneven ground</td>
<td>10.2 wks</td>
<td>10.6 wks</td>
<td>0.872</td>
</tr>
<tr>
<td>Going-down stairs</td>
<td>14.4 wks</td>
<td>11.2 wks</td>
<td>0.041</td>
</tr>
</tbody>
</table>

( Mann-Whitney test )
Conclusion

- Comparable short-term clinical & functional results
- Advantage of more mechanical stability in early postoperative rehabilitation period
- Effective Tx. method for high-demand athletes
- Alternative option of reconstruction using allograft

Modified Brostrom Procedures using Bone tunnel vs. Suture bridge technique

Both are effective treatment methods for high-demand athletes
< References >

