Effect of the number of interference screws for the fixation of an intra-articular cranial cruciate ligament prosthesis in dogs: Biomechanical study.

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UHMWPE intra-articular ligament fixed with four interference screws is proved to be able to withstand normal walking and trotting condition in the immediate postoperative period. This technique could be reconsidered as an option for treatment of ruptured CCL in large dogs.

<table>
<thead>
<tr>
<th></th>
<th>Failure Load N Mean (SD)</th>
<th>Initial Failure N Mean (SD)</th>
<th>Stiffness Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural ligament</td>
<td>888 (201)</td>
<td>614 (297)</td>
<td>224 (30)</td>
</tr>
<tr>
<td>4 screws</td>
<td>690 (115)</td>
<td>347 (54)</td>
<td>132 (41)</td>
</tr>
<tr>
<td>3 screws</td>
<td>466 (150) *</td>
<td>292 (87)</td>
<td>116 (22)</td>
</tr>
<tr>
<td>2 screws</td>
<td>335 (59) * *</td>
<td>287 (60)</td>
<td>102 (38)</td>
</tr>
</tbody>
</table>

Table 1 Results, * relates significant difference to sound CCL; ° relates significant difference to 4 screws.
Biomechanical analysis of a ligament fixation system for CCL reconstruction in a canine cadaver model

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The values of the maximum strength between the native ligament and the Novalig 8000 implanted with 4 interference screws have no statistical difference (ttest, \(p = 0.87\)).
Biomechanical analysis of a ligament fixation system for CCL reconstruction in a canine cadaver model

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**Cyclic loading mechanical testing**:
The dynamic rate was fixed at 0.58Hz during all the 100.000 cycles. The boundary limits were fixed at 100N of minimum pre-load, and a maximum of 210N (195N + 15N of safety) corresponding to the ground reaction force recorded for a 30 kg dog during trotting (Kim et al. 2012).

15 & 17 D ✔️

16 D ❌ - Interference screw implanted in the growth cartilage

**Conclusion**: Regarding these results, the biomechanical performance of the fixation system allows intra-articular stabilization of the stifle with four interference screws.