4:50 pm:

**Biomechanical Analysis of the Calcaneocuboid Joint Pressure after Sequential Lengthening of the Lateral Column**

**Presenting:**
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<th>Image 72x566 to 123x629</th>
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<td>Image 0x0 to 708x364</td>
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**Summary:**
The purpose of this study was to evaluate the change of the pressure across the calcaneocuboid joint after sequential lengthening of the lateral column. A dynamic cadaveric model of flatfoot deformity was used in which selective ligament section was performed to simulate the deformity. The peak pressures across the calcaneocuboid joint were measured and compared in the normal foot, flatfoot, and corrected foot with sequential lengthening of the lateral column.

**Introduction:**
Lengthening of the lateral column by means of the Evans osteotomy is commonly used for reconstruction of adult and pediatric flatfoot. However, some reports have shown that the Evans osteotomy is linked with increased calcaneocuboid joint pressures and an increased risk of arthritis in the joint. The purpose of this study was to measure the pressure across the calcaneocuboid joint and demonstrate the changing trends of the pressure within the calcaneocuboid joint after sequential lengthening of the lateral column.

**Methods:**
Six cadaver specimens were physiologically loaded and the peak pressure of the calcaneocuboid joint was measured under the following conditions: (1) normal foot, (2) flatfoot, and (3) sequential lengthening of the lateral column by means of the Evans procedure (from 4 mm to 12 mm, in 2 mm increments).

**Results:**
Peak pressures across the joint increased significantly from baseline in the flatfoot (P < .05). In the corrected foot, with the increment of the graft, the peak pressure decreased initially and then increased. The pressure reached its minimum value (11.04 ± 1.15 kg/cm²) with 8 mm lengthening of the lateral column. The differences were significant compared to the flatfoot (P < .05) and corrected foot with the other sizes of grafts (P < .05), but differences were not significant compared to the intact foot (P = .143).

**Conclusion:**
Lateral column lengthening within a certain extent will decrease the pressure in calcaneocuboid joint with a flatfoot deformity. Clinical Relevance: Performing the procedure with an 8 mm lengthening may reduce the risk of the secondary calcaneocuboid osteoarthritis.