Long Oblique Osteotomy for Correction of Fifth Metatarsal Bowing in Tailor’s Bunion Deformity
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Statement of Purpose
The primary purpose of this retrospective review was to assess outcome of consecutive patients who underwent long oblique osteotomy for tailor's bunion deformity that is floated with a plantar base and demonstrate useful outcomes of the procedure.

Methodology and Hypothesis
This is a retrospective descriptive study of consecutive patients who underwent long oblique osteotomy for treatment of moderate to severe tailor’s bunion deformity by a board certified foot and ankle surgeon (TB).

Outcomes were included: age, gender, operative, extremity, preoperative and postoperative weight bearing (WB) with radiography illustrating abnormal metatarsal-first metatarsal joint angle and weight bearing, demonstrating full correction of deformity. Yellow is lateral overhang of dorsal cortex that is resected. (d) Location of osteotomy depends on apex of deformity.

Procedure
A dorsal curvilinear incision was made over the fifth metatarsal head and neck just lateral to the lateral malleolus. A longer incision was needed for midshaft osteotomy. The plantar and intrinsic muscles were worked to the plantar base of the toes and left floating in the subcutaneous fat. A dorsal incision was then performed to make the curve of the metatarsal taking care to avoid drooping into the intermetatarsal space. The fragile dorsal and lateral metatarsal peristeme was primarily elevated using a drill and burr to preserve the osteotomy and fixation. The fifth metatarsal neck is longitudinally and laterally, the medial and plantar cortex were left intact. A smooth 0.045 K-wire was placed from dorsal to plantar through the neck or midshaft of the metatarsal shaft which served to guide the saw at the desired angle. Intraoperative fluoroscopy was used to confirm that the plantar aspect of the osteotomy was preserved a base of plantar cortex.

Results
• Retrospective review of 39 feet in 34 consecutive patients (30 female and 4 male) from 2005 to 2015 by a boarded certified foot and ankle surgeon (TB) (Table 1).
• Data analysis was performed by an independent resident research funded grant.
• Multiple paired t-test were used to describe differences in mean values and postoperative weight bearing.
• Results were presented with a level of significance set at <0.05.
• Radiologic parameters include: LMA (range, 0 to 15), an increase of more than 10 degrees (6, range 7 to 17), postoperatively, mean change of increase of 1.9 degrees, and this change was statistically significant (p = 0.0002).
• Mean preoperative LMA was 3.6 (range, 0 to 12), decreasing postoperatively to mean of -10.6 (range, -19 to 12), mean change in LMA was a decrease of 14.2 degrees (range, 0.0 to -18), which was statistically significant (p < 0.0001).
• The average preoperative MO LMA was 9.9 (range -11 to 22), while the mean postoperative MO LMA was 5.6 (range -18 to 6) with a mean change of -15.5 degrees which was statistically significant (p < 0.0001).
• The mean difference preoperative and postoperative between TDA and MO LMA were -10.8 and -13.5 respectively and there were also strongly correlated (Pearson correlation coefficient = 0.53, p-value < 0.0001).
• The average MO IMA was 29.9 (range, 26.2 to 33.0) which was associated with the long 5th metatarsal osteotomy including; 2/39 (51.2%) hardware irritation or loosening, 1/39 (2.6%) angular deformity of the 5th, 1/39 (2.6%) painful scar, and 2/39 (5.1%) deep vein thrombosis (DVT).
• No patient experienced major complication including infection, nonunion, malunion, or any revision surgery other than removal of fixation.
• This data is presented in Tables 1 & 2.

Analysis and Discussion
The long oblique osteotomy is localized at the apex of the deformity provided correction in deformity in terms of TDA, TDA and MO LMA. Previous studies have shown that normal motion is regained with this technique utilizing a single osteotomy at the head and neck of the metatarsal.

Conclusion
This study showed similar results to previous studies by London et al. in terms of correction of the LMA with a mean decrease of 0.8 degrees which was statistically significant (4). Interestingly, this study showed a significant increase in the IMA of 1.9 degrees. This was measured on the AP radiograph. The authors do not routinely use this measurement as it is an inaccurate measurement of the deformity and can be misleading.

Table 1: Radiographic Outcomes in Terms of IMA, LMA, MO LMA and TDA LMA for 42 Consecutive Patients

<table>
<thead>
<tr>
<th>Procedure</th>
<th>IMA (°)</th>
<th>LMA (°)</th>
<th>MO LMA (°)</th>
<th>TDA LMA (°)</th>
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<tbody>
<tr>
<td>Pre</td>
<td>29.9</td>
<td>39.9</td>
<td>29.9</td>
<td>39.9</td>
</tr>
<tr>
<td>Change</td>
<td>-10.8</td>
<td>-13.5</td>
<td>-10.8</td>
<td>-13.5</td>
</tr>
<tr>
<td>p-value</td>
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<td>&lt; 0.0001</td>
<td>&lt; 0.0001</td>
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Table 2: Patient Demographics / Outcomes (N=39 feet in 34 patients)

<table>
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<tr>
<th>Procedure</th>
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<th>Mean</th>
<th>Range</th>
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<td>21.0</td>
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<tr>
<td>Change</td>
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<td>18.0</td>
<td>15.0-59.0</td>
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<td>p-value</td>
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<td></td>
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<td>0.05</td>
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References