THE ADDED VALUE OF AN AKIN OSTEOTOMY IN HALLUX VALGUS CORRECTIVE SURGERY?: AN ANALYSIS OF PATIENT-CENTERED OUTCOMES FROM 92 SUBJECTS

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Statement of Purpose

To examine whether patients who underwent hallux valgus surgery that included an Akin osteotomy experienced better patient-centered outcomes at one year postoperatively compared to those that did not have an Akin osteotomy.

Literature Review

- Hallux abductovalgus is one of the most common deformities addressed by foot and ankle surgeons [1].
- Proximal phalangeal osteotomies of the hallux was first introduced by Akin in 1925 [1].
- The osteotomy is best used when deformity is only in the hallux itself and was originally described as a medial closing wedge osteotomy in the metaphysis of the hallux proximal phalanx.
- However, the goal of the Akin osteotomy is not only to correct abduction in the toe and create a more rectus appearing toe, but also to medialize the long flexor and extensor tendons in the toe which may improve function and improve longevity of the repair [2-5].
- Looking at a retrospective cohort of 154 patients undergoing hallux valgus surgery with or without Akin osteotomy, Shibuya and colleagues [6] did not find any added value with respect to final radiographic position and early recurrence at approx. 1 year.
- However, there have not been any studies to this point looking at whether patient-centered assessments of function and pain might be improved when an Akin osteotomy is concomitantly performed during hallux valgus surgery.

Methodology

- Our institutional database was reviewed for patients who underwent bunion surgery by way of scarf (**Figure 1**) or scarf/Akin osteotomies (**Figure 2**) from Jan 2013 to Dec. 2015 with pre and postoperative Foot and Ankle Outcome Score (FAOS) data on file preoperatively and at least 1 year postoperatively.
- IRB review and exempt determination with waiver of consent was granted prior to initiating this work.
- FAOS is a validated patient-centered outcome measure used in hallux valgus surgery with 5 subscales (pain, symptoms, function/sports & recreation, function/ADLs, and quality of life).
- Procedures: Independent t-test was used to examine for between group differences. A paired t-test was used to test for within group differences. P values less than 0.05 were considered significant.

Results

- 92 patients (92 feet) were included, 66 in the Scarf/Akin group, and 26 in the Scarf only group.
- The mean follow up was not different between groups, and was 57.4 ± 11.7 weeks for the cohort.
- 24 patients had additional lesser metatarsal osteotomies, and these were all in the Scarf/Akin group.
- Both groups saw statistically significant improvements in all 5 subscales postoperatively ($p<0.05$ for all).
- The preoperative FAOS scores were not different for any of the subscales among the two groups ($p>0.05$ for all). The postoperative FAOS scores also did not differ between groups at final follow up ($p>0.05$ for all, **Table 1**). This was true even when the analysis was repeated excluding the 24 subjects who underwent concomitant lesser metatarsal osteotomies.

Table 1. Outcomes at 1 year Stratified by Bunionectomy Procedure (n=92).

	Scarf osteotomy n=26	Scarf plus Akin n=66	p-value
FAOS Subscale *			
Pain	89.6 ± 12.5	86.1 ± 14.6	0.247
Symptoms	89.1 ± 13.2	86.8 ± 12.4	0.450
Function, Daily Activities	93.9 ± 13.6	93.5 ± 9.6	0.903
Function, Sports	92.0 ± 10.5	87.0 ± 17.5	0.179
Quality of Life	81.3 ± 22.8	76.4 ± 23.0	0.362

Values are presented as mean ± sd. Independent t-test used for comparisons.
*** FAOS scores are reported on a 100 point scale, with higher scores indicative of better function.**

Figures

Figure 1)

Figure 2)

Figure 1) Pre and Post-op radiographs of a Scarf bunionectomy
Figure 2) Pre and Post-op radiographs of a Scarf + Akin bunionectomy

Discussion

- While previous studies suggest that radiographic correction in hallux abductus angle and sesamoid position are not notably different in patients undergoing hallux valgus repair with versus without Akin osteotomies, our study is the first to examine the effects of an Akin osteotomy on patient-centered outcomes.
- We found no clearly observed benefit in those subjects undergoing an Akin osteotomy versus those that did not in our sample of 92 patients where approximately 1/3rd did not have the concomitant Akin osteotomy.
- The limitations to our study include incomplete radiographic follow up, so there was no attempt to correlate angles with FAOS scores. Also, longer follow up than 1 year will be required to see if there might be any long term benefits in function and pain when Akin osteotomies are also performed.
- While we routinely perform Akin osteotomies in our practice, this is usually done to provide a more appeal cosmetic result for our patients rather than to prevent recurrence or improve function.
- Future work will want to examine whether shoe gear options and patient satisfaction are perhaps improved with the addition of an Akin osteotomy.

Conclusion

This study supports the notion that there may little added benefit beyond aesthetics when adding an Akin osteotomy in most hallux valgus corrective surgery. We maintain that, for many patients, this is still a worthwhile pursuit.

References

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