Comparative Study of Scarf and Extended Chevron Osteotomies for Correction of Hallux Valgus

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Summary:
In our study, we compared the clinical and radiographic outcomes of the scarf and extended chevron osteotomy in patients with similarly severe bunion deformities. There was no statistical difference between the two surgeries with regards to correction of the HVA and IMA. Both techniques yielded similar patient outcomes in terms of stiffness, pain and satisfaction.

Introduction:
Scarf and extended chevron osteotomies are two described treatments used to correct hallux valgus deformity, but they have traditionally been employed for different levels of severity. In our study, we compared the clinical and radiographic outcomes of these two surgical techniques in patients with similarly severe bunion deformities who historically would only be candidates for proximal corrections. We hypothesized that there would be no statistically significant differences in results between these two treatments.

Methods:
This study is a retrospective review of 70 consecutive patients treated operatively for moderate and severe hallux valgus malalignment. The 70 patients were divided into two groups based on their operative treatment: scarf osteotomy (Group A) and extended chevron osteotomy (Group B). There were 52 patients in Group A and 18 patients in Group B. Preoperative and postoperative hallux valgus angle (HVA), intermetatarsal angle and distal metatarsal articular angle (DMAA) were measured at final follow up along with the postoperative rate of satisfaction, stiffness, and pain.

Results:
There were no statistically significant differences between Groups A and B with regard to the HVA preoperatively (33.6° versus 31.5°, p=0.4176) and postoperatively (6.6° versus 7.2°, p=0.5542). Preoperative IMA (14.9° for Group A versus 13.1° for Group B, p=0.0170) and postoperative (6.0° for Group A versus 4.3° for Group B, p=0.0008) were statistically significantly higher in the scarf group. The DMAA was statistically significantly higher for Group B both preoperatively (9.8° versus 8.2°, p=0.0403) and postoperatively (5.6° versus 3.2°, p<0.0001). The differences in HVA correction (27.2° for Group A versus 24.3° for Group B, p=0.2011) and IMA correction (8.9° for Group A versus 8.8° for Group B, p=0.9169) were not statistically significant. There were no statistically significant differences with regard to post-operative stiffness (23.1% versus 27.3%, p=0.689), pain (26.9% versus 33.3%, p=0.604), and satisfaction (90.4% versus 100%, p=0.172).

Conclusion:
The scarf and extended chevron osteotomies have high levels of satisfaction and low rates of pain and stiffness. Both are capable of adequately reducing the HVA and IMA in patients with moderate to severe hallux valgus. The scarf osteotomy is designed to permit greater correction of the IMA, but our results did not demonstrate this. Both techniques yielded similar patient outcomes in terms of stiffness, pain and satisfaction. This study demonstrates that both the scarf and extended chevron osteotomies are effective in correcting moderate to severe hallux valgus deformity. Based on this review of the data, we feel we can recommend either the scarf or extended chevron procedure for the treatment of moderate to severe hallux valgus in most patients.