This is a radiographic analysis of an opening wedge osteotomy of the proximal first metatarsal for bunion correction using a specialized plate. The results show good overall healing of the osteotomy with a low rate of delayed union and no malunions. The plate provides good correction without shortening of the metatarsal.

Hallux valgus is a commonly occurring disorder of the first ray. A number of metatarsal osteotomies have been described for its treatment. Large deviations in the intermetatarsal angle require a more proximal osteotomy to provide adequate angular correction. Common complications of proximal osteotomies include delayed or nonunion and relative shortening of the first ray. Shortening of the first ray is a known cause of transfer metatarsalgia. We report the results of a proximally-based opening wedge osteotomy that is rigidly fixed using a low profile plate with wedges of varying widths to maintain the alignment of the osteotomy. We hypothesize that the plate provides reliable fixation and correction while minimizing the potential for shortening of the metatarsal. A consecutive series of 28 patients were treated with 36 osteotomies. Twenty-four patients were female and 4 were male. Twenty right feet and 16 left feet were treated. The average age was 55 years. There were 3 revision bunionectomy cases. An incomplete transverse proximal osteotomy was performed 1 cm distal to the tarsometatarsal joint. Special precaution was taken not to violate the lateral cortex of the metatarsal and to maintain the surrounding periosteum. All patients were treated using plates with wedges between 3 and 5.5mm. The defect created by the opening wedge was filled with autologous bone graft taken from the medial eminence. A distal soft tissue procedure was also performed with release of the lateral structures and embrication of the medial collateral ligament. The surgery was performed in an outpatient setting, and patients were allowed to weight bear as tolerated immediately postoperatively in a stiff soled shoe. At six weeks, 33/36 patients had clinical and radiographic healing of their osteotomies. Two patients went on to heal at 10 weeks. The delay in union was attributed to a technical error of placing the osteotomy too close to the tarsometatarsal joint. One final patient required revision to locked plating with bone grafting to achieve union. No infections or wound complications were noted. One patient required hardware removal for symptomatic hardware. The first metatarsal length was increased on average by 0.6% (range -4% to +6%). The forefoot was narrowed by an average of 7.0mm (range 0-17). The average correction in the hallux valgus angle was 17.64 degrees (range 6-31). The average correction in the IM 1-2 angle was 9.44 degrees (range 3-19). The average IM angular correction was 2.2 degrees per millimeter of plate wedge thickness (range 0.8 to 4.8). We believe this opening wedge, proximally based osteotomy provides both good clinical and radiographic correction of the 1-2 IM angle as well as a high union rate. It can be used for large deviations in the intermetatarsal angle. It is simple to perform, reliable and has a very low complication rate. This procedure should be considered when a proximally-based osteotomy is required for symptomatic hallux valgus.