This retrospective radiographic study involved all patients who fulfilled the following criteria: (a) age less than or equal to 20 years who visited the author’s hospital from May 2003 to December 2014, (b) had undergone a surgery including a proximal femoral osteotomy with blade plate (BP) or locking compression plate (LCP), (c) had been followed up until 6 months after hardware removal, (d) had preoperative and immediate postoperative hip radiographs and follow-up radiographs until hardware removal, and (e) diagnosed with cerebral palsy, Legg–Calve–Perthes disease, DDH, or idiopathic increased femoral anteversion. The exclusion criteria were as follows (a) patients who had undergone an operation without BP or LCP or with additional other surgical fixation instruments, and (b) those who had inadequate radiographs for review. A total of 417 hips (251 patients) were included in the study. 384 of the 417 hips exhibited poor bone quality. 273 of the hips were treated with a BP. The remaining 144 hips were treated with an LCP. The mean age of the patients was 9.1 +/- 3.1 years (range 4.4-19.3) in the BP group and 9.8 +/- 3.7 years (range 3.3-19.7) in the LCP group. The mean time to hardware removal was 1.2 +/- 0.6 years (range 0.6-7.2) in the BP group and 1.1 +/- 0.6 years (range 0.6-6.3) in the LCP group. The mean follow up was 8.8 +/- 2.2 years (range 2.4-12.1) in the BP group and 3.5 +/- 1.9 years (range 1.2-8.2) in the LCP group.

Overall, complications in the two groups were not statistically different (p=0.74): 3.0% (5/167patients) in the BP group was vs. 3.6% (3/84 patients) in the LCP group. However, the characteristics of complications were different (loss of fixation BP vs. fracture/refracture LCP). There were 7 cases (5 patients) who lost fixation in the BP group. There were no other hardware complications in the BP group. In contrast, there were 3 femoral fractures in the LCP group, 1 early and 2 within 6 months after the plate was removed. All of the complications, in both groups, occurred in CP patients. The risk of complications increased with age (P=0.0002) but not sex, body side, plate type or ambulatory status. While proving excellent stability at the osteotomy site, the use of LCP can function as an aggravating factor in patients with osteoporotic fractures.