Purpose: Locking screw deformation is common in nailing of comminuted tibia fractures. The aim is to compare five different proximal locking screws bending resistance in tibia nailing system. Methods: 50 screws were divided into five groups. A stainless steel tube which has a 34 mm internal diameter was prepared representing the proximal tibia. A 3-point bending tests were performed on locking screws for determining their yield points with 3 different dimensions (4.5 mm, 5 mm and 5.5 mm) and with 2 different screw thread (low threaded and unthreaded). Results: The mean yield point values of smooth 4.5 mm and threaded 5 mm low locking screws were statistically significant less than that of smooth 5 mm, low threaded 5.5 mm and smooth 5.5 mm(P=0.000). Conclusions: To avoid proximal locking screw deformation, using of smooth 4.5 mm and low threaded 5 mm locking screws should be avoided in nailing of comminuted tibia fractures of unreliable persons. Smooth 5 mm, low threaded 5.5 mm and smooth screws 5.5 mm may be used safely.