Comparison of two preoperative protocols for mandibular symphyseal distraction osteogenesis to reduce the risk of tooth damage.

Two techniques to separate the lower incisors prior to mandibular symphyseal distraction osteogenesis (MSDO) were evaluated with respect to avoiding tooth damage. Fifty patients (20.2 ± 7.0 years) requiring MSDO were treated with a tooth-borne appliance by utilizing two preoperative protocols to separate the central incisors: i) brackets and a V-bent wire with an open coil spring (two-step; TS; n = 24) and ii) a wire attached from the appliance to the central incisors with subsequent dento-alveolar expansion prior to surgery (one-step; OS; n = 26). The distance between the lower incisors was measured preoperatively on radiographs and measurements at the cast models were performed. Complications and radiographs were analyzed. The mean distance (±SD) between the lower central incisors for OS and TS prior to surgery was 3.44 ± 1.05 and 3.18 ± 1.13 mm, respectively. The mean expansion for OS and TS was 4.3 ± 2.9 and 4.3 ± 2.7 mm at the dental level and 3.8 ± 3.2 and 4.0 ± 2.1 mm at the bone level, respectively. Four patients undergoing the TS and one patient undergoing the OS showed transient dental complications. Pre-surgical dento-alveolar expansion by utilizing a one-step technique to separate the lower central incisors reduces the risk of permanent tooth damage and weakens the mandibular bone in the midline.