Dentoalveolar ankylosis interferes with the vertical growth of the alveolar process, which can lead to an open bite, an unesthetic smile, and occlusal disharmony. This case report presents a new treatment protocol for an ankylosed tooth with severe root resorption using a combined surgical orthodontic management protocol involving a single-tooth dento-osseous osteotomy and vertical alveolar distraction osteogenesis with intraoral elastics and mini-implant anchorage. After distraction and active orthodontic treatment, the patient's anterior open bite was corrected. A Class I dental relationship was achieved, overjet was decreased, and a normal incisor relationship was obtained.