

Maxillomandibular Fixation Screws for Management of Mandible Fractures Utilizing a Non-Traditional Fixation Scheme

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This prospective randomized pilot study has documented the performance of MMF screws when placed in the interradicular regions of the jaws to secure intermaxillary fixation for adult patients with mandibular fractures. Screw insertional torque (IT), placement time, screw failure (screw removal before end of treatment), fracture healing and postoperative occlusion were assessed. Cone-beam computed tomography (CBCT) scans were performed to assess screw proximity to roots. Patients were randomly assigned to a closed treatment group and an open treatment group. The closed group was maintained in MMF for 5-6 weeks and the open group was placed in MMF intra-operatively for fixation plate and screw placement only.

Fifty-six MMF screws were placed in nine patients. The average time for screw placement in each patient was 4 minutes and 17 seconds. IT was highest in the posterior mandible but this did not have a clear effect on screw non-failure. There were 15 screw failures, 8 in the maxilla and 7 in the mandible. Most screw failures were in the closed treatment group. All patients displayed adequate long-term fracture healing and an acceptable occlusion. Most screws were found to be approximating the root surfaces with two screws displaying root penetration.

MMF screws have performed to an acceptable level despite some screw failures. MMF screws may be better suited for open treatment of mandible fractures. Longer-term force placed on the screws for closed treatment likely contributed to a higher failure rate. Factors other than IT, which is a key parameter used to assess biomechanical performance, play a role in screw failures. Intraoperative time savings with MMF screws is substantial compared to the traditional Erich arch bars. The long-term effect on periodontium and roots is unknown. More long-term CBCT data is needed to assess this.