

# Immediate Molar Implant Placement: A Private Practice Clinical Investigation

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## Abstract



**T**he success rate of immediately placed solid screw type implants into fresh molar sockets was described in the present private practice clinical investigation. Ninety-five patients, 42 female and 53

male began and completed the study. Age of patients ranged from 19 to 75 years, with a mean age of 50.5 years. Ninety-seven solid screw type implants were placed with 100% success rate over a 3 year range of treatment.

**KEY WORDS:** Immediate dental implants, molars, extraction, bone graft, success rate

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## INTRODUCTION

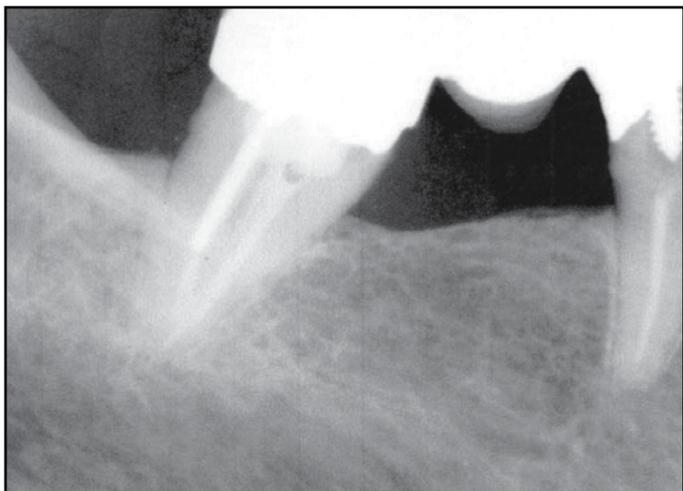
Immediate dental implant placement has been an acceptable procedure for at least the past two decades.<sup>1-4</sup> Commonly, immediate implants have been reserved for the single rooted anterior tooth and single or bi-rooted premolar tooth. Perhaps the most important aspect of any implant surgery in accordance with the successfulness<sup>5,6</sup> of the procedure is implant stability and bone to implant contact (BIC). Removal of molar teeth provides a challenging and intriguing dilemma due to multiple root morphology. In the case of extraction and immediate placement of dental implants preserving alveolar bone proper, particularly that of the labial and lingual plates of bone is essential in providing the optimal environment for maximizing BIC and implant stability. Also, the position of the final restoration must be considered, in relation to intra and inter arch position, occlusion, function and esthetics. Thus minimal alveolar bone removal should be considered and attained to aid in the above factors in order to provide an acceptable surgical site for successful placement of the dental implant. Finally, and perhaps most importantly when considering immediate molar implant placement, removal of the intra-alveolar septum or reduction of this structure should be avoided to aid in increasing BIC and allowing the attainment of initial implant stability at the time of placement.

## MATERIALS AND METHODS

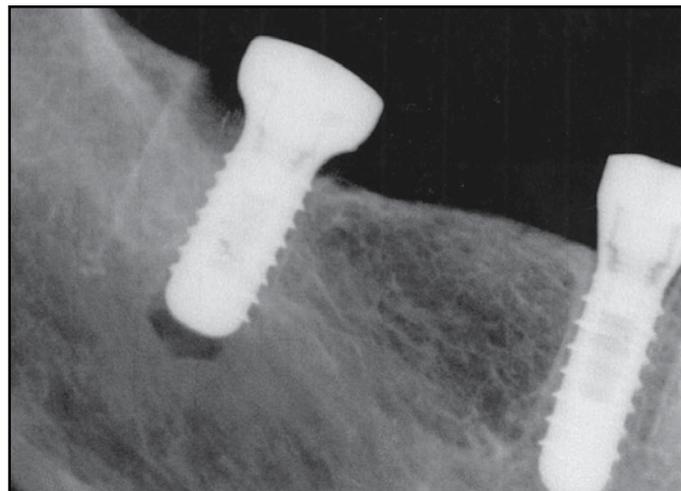
In the present investigation, 95 patients were treated for at least a single molar tooth removal and immediate implant placement of a single stage implant. More specifically, 42 female and 53 male patients began and completed the

study. Age of patients ranged from 19 to 75 years (mean age 50.5 years). Patients were not excluded due to chronic illnesses except in the case of uncontrolled diabetes. A distinction of smokers or nonsmokers was not considered in this investigation. Patients on blood thinners were treated according to the most current guidelines<sup>7</sup> in order not to place the patient at any risk of bleeding. Acute or chronic infections either periodontal or periapical were not excluded. Only when labial or lingual plates of bone were completely resorbed due to the above types of infections, these sites would be excluded from the study.

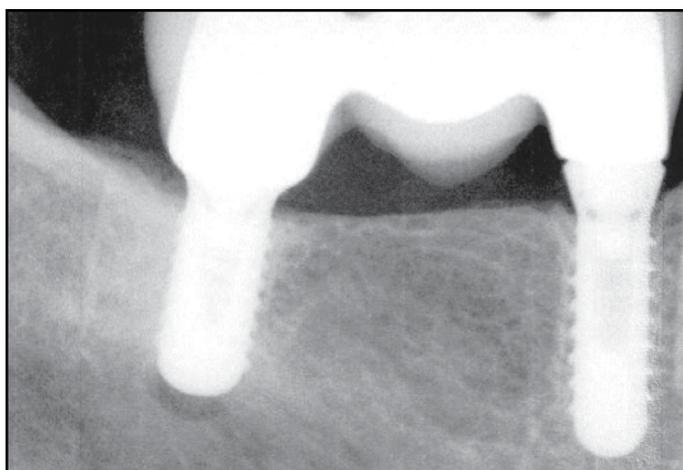
A total of 97 solid screw type implants were inserted, either Straumann (Straumann USA LLC, 60 Minuteman Rd. Andover, Massachusetts, USA) or Blue Sky Bio (Blue Sky Bio, LLC, 888 E. Belvidere Rd., Grayslake, Illinois, USA) brand. Each participant required a periapical film, panoramic radiograph and computerized tomography scan as necessary. Panoramic radiographs were utilized to evaluate position of maxillary sinus and mandibular canal. At the time of surgical extraction labial and lingual soft tissue flaps were avoided. Removal of a minimal amount of alveolar bone was always attempted to aid in maintaining maximum BIC. Thus, extraction was always done carefully with the use of elevators to remove molar roots without reducing intra-alveolar septum, interdental septum or labial or lingual bony plates. Careful probing of the socket was utilized to evaluate socket integrity.<sup>8</sup> Inflamed tissue was removed from the socket walls, but not intentionally removed from periapical lesions, if present. Following complete removal of root structures and inflamed soft tissues, the socket was inspected



**Figure 1a:** Pre-op radiograph.



**Figure 1b:** Implant placement.



**Figure 1c:** Final restoration.

to find the most ideal position for implant placement, and occlusion with the opposing arch, was also closely considered for implant position. Following placement of the single stage implant and implant stability found to be favorable, the socket labial and lingual marginal tissue borders were sutured over the blood clot or, mineralized bone was placed between the titanium implant surface and the interior walls of the socket.

All patients were prescribed an analgesic, chlorhexidine 0.12% mouth rinse and antibi-

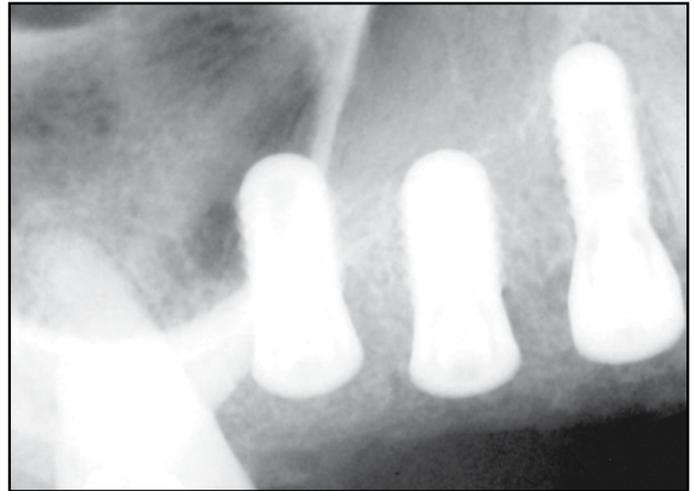
otic coverage for 5 days. Patients were advised to avoid chewing directly on the implant cover screw with any hard food substance for a period of 2 weeks. Patients were seen on follow-up at 1, 4, 12, and 16 weeks post-implant placement. As a general rule, implants underwent abutment placement and final torquing of 35 Ncm, at 12 or 16 weeks post-implant placement.

## RESULTS

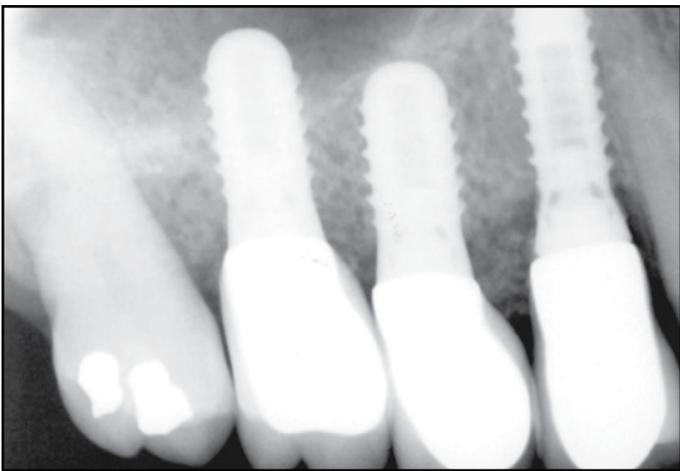
Ninety five total patients participated in the study with 42 female and 53 male patients. Age of patients ranged from 19 to 75 years (mean age 50.5 years). Following a 3 year range of treatment in the present clinical investigation, a survival rate of 100% was reported for all implants placed. Survival rate time range was 3–38 months post implant placement. Minimal post-operative discomfort and satisfactory wound healing was observed. Ceramic to metal full coverage restorations were placed at a minimum of 14 weeks post-implant placement by the restorative dentist. Five sample cases are shown in figure series 1–5.



**Figure 2a:** Pre-op radiograph.



**Figure 2b:** Implant placement.



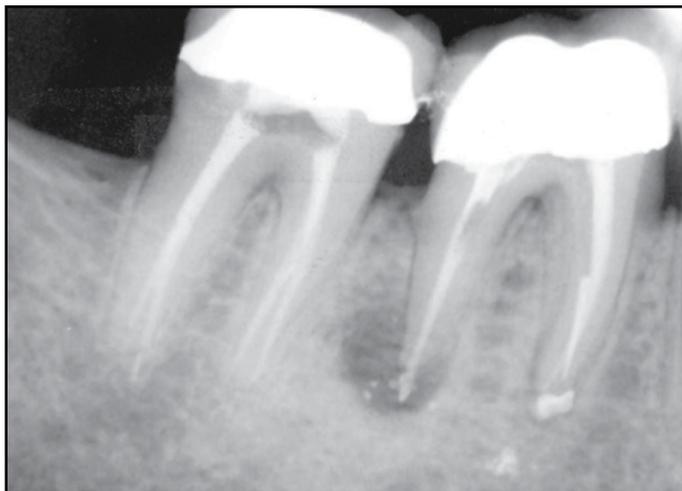
**Figure 2c:** Final restoration.

## DISCUSSION

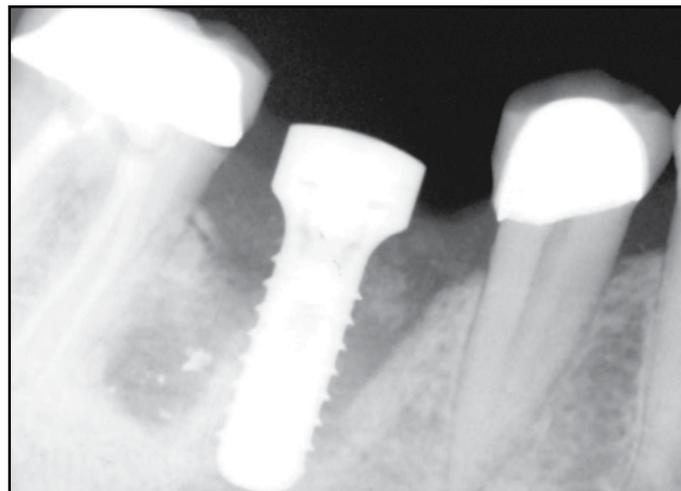
In the present investigation immediate molar implant wound healing progressed favorably. Implant survival rate, ranging from 3 to 38 months postimplant placement was 100%. None of the immediate implants were immediately loaded in the present investigation.<sup>9</sup> The term immediate implant placement refers to the placement of dental implants at the time of tooth

removal.<sup>10</sup> Immediate placement benefits include, reduction in surgical procedures, preserving esthetics, conserving bone height and width and improving patient comfort, acceptance and satisfaction.<sup>11-13</sup> Furthermore, the healing capability of the fresh extraction site and implant surface characteristics provide improved opportunity for osseointegration.<sup>14</sup>

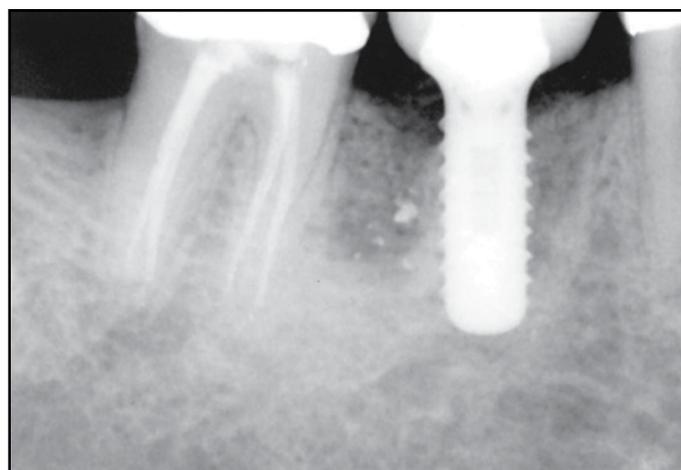
In the case of immediate molar placement into molar sites provide a larger challenge. This challenge mainly involves site anatomy, occlusion and biomechanical issues. According to Atieh et al.<sup>15</sup> the possibility of predictable outcomes with immediate molar sites is additionally compromised because of the larger extraction sockets, poor quality of bone particularly in the maxillary molar regions. In 2004, Hammerle et al.<sup>4</sup> suggests that implants should not be placed at the time of tooth extraction if the residual tooth socket morphology precludes attainment of primary stability. Further, the above authors advise against implant placement if the labial plate is completely resorbed, requiring augmentation and regeneration. In the



**Figure 3a:** Pre-op radiograph.



**Figure 3b:** Implant placement.



**Figure 3c:** Final restoration.

present investigation achieving primary stability was paramount, regardless of presence of infection, suppuration or apical periodontitis, or infection due to root fracture. Moreover, BIC was attempted to be maximized through minimal bone removal, thus aiding in implant stability.

In support of the above, a study involving immediate implant placement after tooth extraction with signs of chronic periapical infections, pain, periapical radiolucency, fistula and suppuration demonstrated significant bone regeneration with a high rate of success.<sup>16,17</sup> Hypothetically, high success rates of immediate placed implants, whether in chronic or acute lesions may be explained by endodontic infections, dominated by a variety of anaerobic bacteria commonly found in the infected tooth canals.<sup>18</sup> Extraction of teeth associated with periapical infections with proper socket degranulation leads to eradication of microorganisms, which is beneficial in success rates of immediate implant placement in single root or multiple root sockets.<sup>19</sup> Novaes et al.<sup>14</sup> studied immediate implant placement

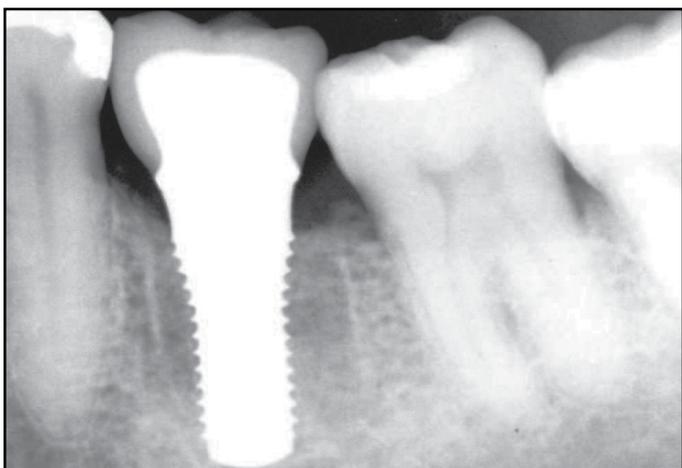
of implants in chronically infected sites and found, that this is not contraindicated if appropriate procedures such as, antibiotic is prescribed, meticulous debridement and alveolar bone preparation prior to implant placement. In support of the above study, Crespi et al.<sup>20</sup> found in recent investigation of 30 patients each receiving one immediate implant associated with a chronic periapical lesion did not demonstrate and increase rate of complications, but showed favorable soft and hard tissue



**Figure 4a:** Pre-op radiograph.



**Figure 4b:** Implant placement.



**Figure 4c:** Final restoration.

results. The authors strongly support further studies to evaluate the clinical and histological results of immediate implant placement in molar sockets whether or not infection exists. Most definitely, stability and proper surgical placement of the dental implant is paramount. ●



**Figure 5a:** Pre-op clinical photo.



**Figure 5b:** Extractions of teeth. Note bone preservation.



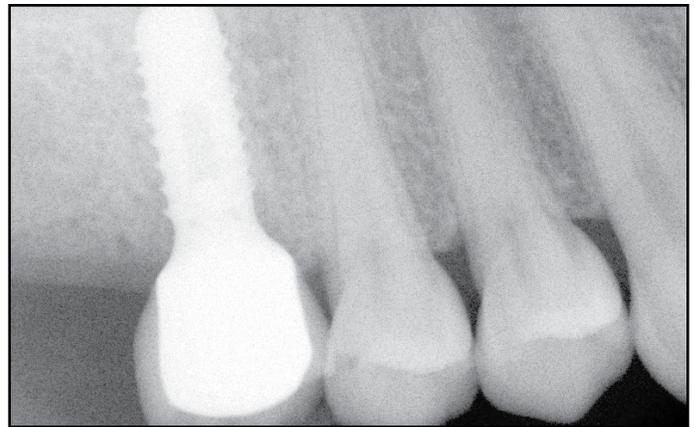
**Figure 5c:** Immediate implant placement.



**Figure 5d:** Three Weeks healing.



**Figure 5e:** Pre-op radiograph.



**Figure 5f:** Final restoration radiograph.

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### Disclosure

The authors reported no conflicts of interest with this article.

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