Evaluation of Implant Survival Following Immediate Placement and Immediate Provisionalization - A Literature Review

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...there is enough clinical evidence based on case reports to support the immediate implant placement and provisionalization protocol...

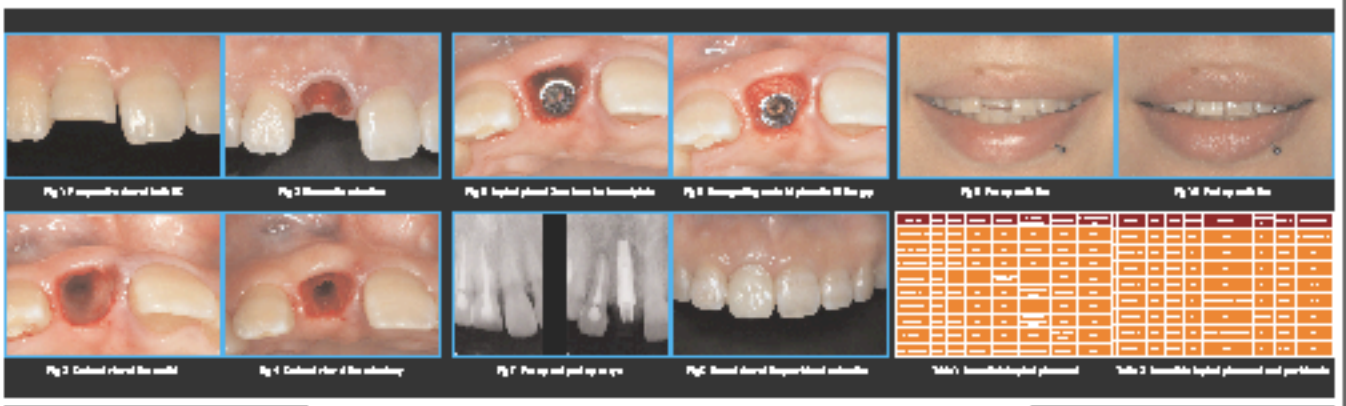

Fig 1 Preoperative clinical photo #12

Fig 2 Immediate extraction

Fig 3 Implant placed 3mm below the bone/plate

Fig 4 Immediately loaded Provisional Bridge

Fig 5 Postoperative

Fig 6 Postoperative

Fig 7 Extraction of the molar

Fig 8 Extraction of the molar

Fig 9 Periapical radiograph

Fig 10 Second clinical Case Implant placement extraction

Table 1 Immediate Implant placement

Table 2 Immediate Implant placement and provisionalization

INTRODUCTION

Dental implants have been used successfully over the past 30 years, in most partially and fully edentulous patients. (1,2). The traditional protocol recommended healing of the extraction socket for a period of 4-12 months following tooth extraction, before placing an implant. In addition, the implant has been prosthetically loaded after a healing period of the implant placement (3,4,5). To decrease the healing time (3-24 months), protocols were established for immediate implant placement and immediate loading following tooth extraction. Placing an implant in the same visit with the tooth extraction has been demonstrated as a predictable treatment modality (6,7). Considering the impact of implant placement on soft tissue contour, clinicians are attempting to preserve the dimensions of implant sites (8).

The advantages of immediate implant placement compared to the traditional delayed protocol include a reduction in treatment time such as surgical access, (9,10,11), and improved esthetics due to the preservation of the implant site (9,10,12).

The disadvantages of immediate implant placement compared to the traditional delayed protocol include a reduction in primary stability, (13) a reduction in the implant bone healing, (14) complete removal of the healing granulation tissue at the extraction of the premolar extraction (11,12), (15) and soft tissue failure.

The purpose of this literature review was to evaluate the survival rate of immediate implant placement and immediate provisionalization of implants in extraction sites, and to compare the survival rate of implants placed and provisionalized immediately following tooth extraction.

MATERIALS AND METHODS

This manuscript is based on a review of 70 articles that were published in English from January 2004 to January 2009, and has been performed by using MEDLINE in the Mirlyn Library of the New York University College of Dentistry Kaiser Dental Center. The keywords used were "immediate implant placement" (201 results), "immediate implant placement and provisionalization" (20 results), "dental implantation" (6 results) and "implant provisionalization" (14 results).

Clinical Studies, case reports, cohort studies, or implant functions (30) in New York University College of Dentistry (41%) (24). The studies were selected with the "Mirlyn" search engine, the Kaiser Dental Center of Dentistry in the Ashman Department of Periodontology and Implant Dentistry in New York University College of Dentistry. The study was approved by the Office of Quality Assurance in New York University College of Dentistry. The study was approved by the Health Insurance Portability and Accountability Act (HIPAA) requirements.

RESULTS

With the immediate implant placement protocol, the survival rate of implants ranged from 93.4% - 98.1% (Table 1). With the immediate implant placement and provisionalization protocol, the survival rate ranged from 94.3% - 100% (Table 2).

DISCUSSION

The advantages of immediate provisionalization include the possibility to avoid the psychological impact of an interim or temporary removable prosthesis (30).

Immediate Implant Placement (IP)

Several studies, for IP in molar sites, have shown a higher survival rate of delayed implant placement (DIP) 93.4-98.9% - 91.7-96.8% (13).

Several studies have reported a higher survival rate for immediate implant placement following tooth extraction. Kan et al (13), in a retrospective study, reported a higher survival rate in anterior sites, from 2.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). Chen et al (14), in a retrospective study, reported a higher survival rate in anterior sites, from 1.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). Chen et al (15), in a retrospective study, reported a higher survival rate in anterior sites, from 1.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). Chen et al (16), in a retrospective study, reported a higher survival rate in anterior sites, from 1.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). Chen et al (17), in a retrospective study, reported a higher survival rate in anterior sites, from 1.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). Chen et al (18), in a retrospective study, reported a higher survival rate in anterior sites, from 1.3-4.6% (3-4 mm) to 0.8-1.6% (6 mm). 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CONCLUSIONS

In conclusion, it appears that there is enough clinical evidence based on case reports to support the immediate implant placement and provisionalization protocol. However, there is a lack of controlled prospective studies, to assess the long-term implant success and survival rate of the immediate implant placement. Furthermore, more research and clinical studies are necessary to assess long-term esthetic outcomes and patient satisfaction. The IP protocol should be used in cases of delayed implant placement. However, in order to achieve the most predictable long-term outcome, the following guidelines should be followed:

1. Proper case selection and patient education should be done.
2. Atraumatic extraction and healing dimensions
3. Implant placement following an ideal bicortical, Apicocoronal and Oral-Facial dimensions to promote the primary stability
4. Fill a gap of 1-2mm, around the apical part of the implant, with bone or synthetic implant material
5. Fill a gap of 1-2mm, around the apical part of the implant, with a soft tissue graft and use a non-resorbable material or a bone graft
6. The temporary restoration was always done, the use of removable gingival supports like the normal tooth in order to support the tissue and maintain esthetics and support the papillae between adjacent teeth

REFERENCES

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