Case Report

Atraumatic Extraction and Immediate Implant Installation

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Received: 02 December 2020; Accepted: 15 December 2020; Published: 28 December 2020


Abstract
There is an increased resorption of alveolar bone both in horizontal and vertical direction after the extraction of teeth in first 6 months thus affecting aesthetic value of prosthodontics treatment. Implant placement immediately after extraction can decrease resorption of alveolar bone. The clinical study discussed in this article describe the various steps used in atraumatic extraction technique, and then installation of dental implant immediately after extraction. This technique is quiet simple and can be performed easily in clinics and shows excellent results.

Keywords: Atraumatic Extraction; Prostheses and implants

1. Introduction
Most common causes of loss of teeth are caries, periodontal and gingival diseases and fracture of teeth. When the teeth are lost especially in anterior region, the apprehension and demand of patient increased dramatically because of aesthetic issues. So proper planning is required to meet the requirement of patient and maintain the health of oral tissues [1, 2]. There is increased resorption of the alveolar ridge both in horizontal and vertical direction after the extraction in first 3 months [3, 4]. In anterior teeth, decrease in gingival tissues and lot of aesthetic alterations that hinder the rehabilitation of teeth. There is decreased gingival thickness at margins, change in contour of gingiva and interdental papilla loss with the presence of black spaces [5, 6]. The atraumatic extractions [7], implant placement in socket of extracted tooth [8] is the
best alternative to maintain the thickness and color of gingival tissue and is less costly. It also reduces the time of treatment [9] as we have waited for more 3 months to get socket healed and then place the implant. Alveolar bone preservation at the time of tooth extraction, primary stability of the dental implant in alveolar socket in apical direction, the careful reflection of the flap, adaptation of the provisional crown on implant and health of peri-implant tissues are major factors for success of treatment [10, 11]. Maintenance of oral hygiene is a a major contributing factor for the success of immediate implants placement after atraumatic extraction [12]. In this paper a clinical case is presented where the tooth extraction was done using atraumatic extraction kit with immediate implant placement in a mandibular first premolar.

2. Clinical Case Presentation

A 48 year old male patient reported in the clinic for pain in left mandibular 1st premolar. On examination it was found that premolar had horizontal fracture at the level of the marginal gingiva. In X Ray examination, it was found that the premolar had a narrow root canal with little remaining tooth structure making it unsuitable for prosthetic rehabilitation (Figure 1). After thorough analysis and consideration of various option, it was planned extraction of premolar and installation of immediate dental implant. It was verified the systemic condition of the patient and planned atraumatic extraction of the root with ATRAUMATIC EXTRACTION KIT (COWELMEDI) (Figure 2). Atraumatic Extraction Kit is used for the immediate extraction of a tooth with simple procedures according to the type of tooth (e.g., root, apex, and molar) and its position (e.g., mesial and distal). This can also be applied to various cases. A extraction of root is possible by using the rest plate, extraction screw, etc without damaging the Alveolar bone. It is a very fast simple and easy method of tooth extraction as compared to the conventional methods or extraction by the use of periotomes (Figure 3).

1. All the coronal structure of tooth is removed by grinding the tooth and is smoothened A hole is created on the tooth to be extracted by using the drill. The Drill should follow the path of the root canal. Root Canal was drilled down to at least 10 mm because extraction is not possible if the screw was not penetrated deep in the root near apex. After connecting the extraction screw to the post driver, it is turned clockwise in order to fix it to the hole that was created. Recommended torque to fix the screw is 30 N/cm. The extraction screw is placed into the hole that was prepared by the extraction drill, and it was fixed to the root. The extraction screw position can be set according to the distal and mesial directions of the adjacent teeth and the position of the tooth to be extracted (Figure 4).

2. Torque Head is connected to Extraction screw. After considering the adjacent teeth, extraction screw is inserted into the rest position hole (Figure 5).

3. Post driver was connected to extraction screw and then torque wrench was turned in a clockwise direction in order to fix it in the hole.

4. The rest plate was connected between the extraction screw and the torque head to protect the adjacent teeth in order to prevent tooth damage. It gives a support to the elevator and torque wrench. - One side of plate is inclined at a 30-degree angle, so that it can provide a support depending on the removal direction. The holes are placed at a 5-mm interval in order to adjust the position of the extraction
screw according to the position and distance of the adjacent tooth.

5. Then elevator was connected it with the torque head and the tooth was extracted by applying force in a distal or mesial direction.

6. Alternatively Torque head can be rotated clockwise by using torque wrench to extract the root (Figure 7).

Figure 1: Pre Operative x Ray.

Figure 2: Atraumatic Extraction Kit.
Figure 3: Hole is drilled into root.

Figure 4: Extraction screw is connected to screw driver.
Figure 5: Torque head is placed on the Rest plate.

Figure 6: Extraction of root.
Figure 7: Rotation of Torque head with wrench cause extraction of root Implant installation-COWELMEDI INNO Taper 3.75 x 11.5.

Figure 8: Implant installation – COWELMEDI INNO Taper 3.75 x 11.5.
3. Discussion
The atraumatic extraction is a surgical technique that can present major clinical advantages in the final outcome of prosthetic rehabilitation. It provides greater preservation of alveolar bone and adjacent soft tissue [6, 7]. This technique reduces the chances of loss of thickness and contour of gingival tissues and, therefore satisfactory aesthetics can be achieved. This method can help in the preservation of the alveolar bone. Various techniques have been proposed for this purpose [8, 13-17] with the use of Atrumatic extraction kit is a method which allows in a simple way and with a minimum of trauma to extract the tooth while maintaining the integrity of alveolar bone. The atraumatic extraction may be done when there is fracture of tooth at gingival level and especially when there is a thin bone tissue around root. In the same way, implant installation is done immediately after removal of root to avoid resorption and breakdown of bone after extraction [11-18], and decrease treatment [19] time. The prognosis of the implanted tooth, the causes of loss of tooth, width and depth of alveolar bone beyond the area to be implanted, should be considered before using this technique. If immediate implant placement is done in aesthetic areas, there should be a minimum of 5 mm distance from alveolar crest to contact point for papillae that fill the interproximal space [19]. Thus, to have successful treatment of atraumatic extraction and immediate implant installation, there should be proper case selection, surgical planning and planning of prosthodontics rehabilitation. Postoperative care [2] off course should not be neglected.

4. Conclusion
From presentation of this case and after considering the review of literature, it is concluded that if there is proper case selection and surgical planning then atraumatic extraction with immediate installation of implant is best treatment option for replacement of broken tooth, root or carious tooth. This method can help in the preservation of the alveolar bone.
References


