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SOCKET SHIELD TECHNIQUE - AN INNOVATIVE AND LESS INVASIVE APPROACH IN IMPLANT DENTISTRY

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Abstract:

Socket shield technique is a recent advancement in implant dentistry for the preservation of ridge, mainly the buccal/labial tissues. In this technique, buccal part of hopeless tooth remains within the socket. This article mainly discusses about the procedure involved in socket shield technique, and how it improves the implant placement.

Introduction

Implant dentistry is developing day by day. There is tremendous development in all aspects of implant dentistry, especially regarding their surface texture, threads and abutments; like the implant abutment interface, angulations etc. This article mainly deals with an innovative approach in the placement of implant- 'SOCKET SHIELD TECHNIQUE' Success of the implant placement depends on many factors such as bone density, periodontal factors, oral hygiene status, smoking and systemic disorders. Implant placement is very difficult in resorbed ridge especially in anterior tooth. If there is insufficient bone height on the buccal aspect it will be unaesthetic and also there is high risk of implant failure[1]. After the extraction of a tooth, dimensional changes will occur in alveolar ridge. The study done by Amler et al in 1960[2], Pitrokovski and Massler in 1967[3] suggested that resorption occur in alveolar ridge after the tooth extraction. The study done by Pitrokovski and Masslerin 1967[1] and Lindhe in 2005 suggested that the resorption is more pronounced on the buccal aspect than on the lingual aspect of the extraction socket[2]. In order to overcome the negative consequences of extraction, several methods have been implicated in implant dentistry. They include immediate implant placement, graft materials, barrier membrane etc. Most of the studies concluded socket preservation as a suitable method for the preservation of ridge dimension. However, complete preservation of extraction socket has not been documented yet[1]. In 1963 Björn confirmed that regeneration of alveolar bone along the endodontically treated tooth will occur at sites that were submerged and covered with surgical flap[3]. A study conducted by O'Neal et al in 1978 showed both histological and radiographical evidence that new cementum and connective tissue will be formed over the coronal surfaces of submerged roots superficial to dentine from the new bone[4]. On the basis of the above studies, Hurzeler et al in 2010 introduced a new

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method, the socket shield technique which is a less invasive method for ridge preservation[1]. A tooth might be extracted due to several reason which include endodontic involvement, root fracture, resorption, periapical pathology, root perforation etc. The socket shield technology can be advantageous in such situation where extraction site involve little or no periodontal bone loss.[5]

Procedure

In this technique before going for surgical procedure ie extraction, patient consent should be taken and antibiotic prophylaxis should start two days prior to the procedure. Prophylactic procedures also include taking 2g of antibiotic one hour before surgery and rinsing his/her mouth with 0.2% chlorhexidine solution[6].

1. Step one – shield preparation Shield preparation means preservation of buccal/labial part of the root as a shield for preservation of buccal cortical bone for implant placement. The tooth is decoronated with coarsed-grained diamond bur and the shield was segmented and prepared by osteotomy drills. The osteotomy drills sections the tooth into two parts namely buccal and palatal where the palatal part is removed by elevator[6] This procedure should be less traumatic to bone so that we can maintain ridge dimension after the extraction procedure. Socket debridment and saline rinse can also be done.[6]

2. Step two- implant placement Implant can be placed immediately into the socket that has been prepared. The implant is positioned slightly apical to the preserved root fragment and also the gap between the shield and implant surface was left to enable blood clot formation[7,8]. The socket was partially closed by a minor partial-thickness pouch flap elevated at the buccal side and a Figure-of– eight sutures. The patient should be given comprehensive postoperative instruction and should advise to take medication which includes antibiotics (amoxicilline or amoxicilline clavulanic acid combination), analgesics (ibuprofen) and a chlorhexidine mouth rinse.

3. Step three – Temporization In case of socket shield technique we can give tempcap which is a combination of healing cap and temporisation abutment. Tempcap has an all- metal construction with a threaded section to permit threading into implant body and it contains 2 to 3 retentive pins projection. Tempcaps are available in different widths and heights, to correspond with implant body diameters and required thickness to preserve the gingival architectures. The function of the tempcap is to allow for optimal gingival healing, prevent contamination of surgical field, minimise forces and micro-vibrations on the implant body and facilitate the simple yet successful temporisation of the dental implant[9,10]

4. Step four – follow up and final restoration. After 4 months, the soft tissue around the implant healed uneventfully. It is represented by shallow depth on probing and after thorough check up we can give final restoration. Usually after five months of implant placement, implant impression was made. The final crown, made of lithium disilicate, was inserted with screw retention or cemented on the custom zirconia abutment with glass ionomer luting cement. This procedure cannot be given in all conditions for rigde preservation. It is contraindicated in conditions such as presence of pus, lack of bone beyond the apex, close proximity to anatomical vital structures, clinical conditions preventing primary closure

Conclusion

The conclusion drawn based on the study is that retaining the buccal aspect of the root along with immediate implant placement is an acceptable technique to achieve osseointegration without any inflammative and resorptive responses in the site of implant placement. To completely judge the reaction of the tissues in humans, a long-term clinical study and a human histological dissection are needed. Within the limitations, socket shield technique offers a feasible treatment option.

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