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An Aesthetic Rehabilitation Of A Single Missing Maxillary Anterior Tooth Using Socket Shield Technique With 2 Year Follow-Up

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Abstract- *The Socket shield technique is a clever procedure for post extraction embed situation. A few change of fractional extraction treatment and synchronous embed situation have been introduced since its beginning. Since its starting point, it has seen a few modification in the procedure of playing out the fractional extraction of the root and the synchronous embed position. This article make sense of the most contemporary bit by bit careful method of the Socket shield technique with itemized outlines and agent case, underlining readiness of the attachment safeguard deep down peak, and production of a s-shape prosthetic development profile to help maximal delicate tissue infill.*

Keywords- *Socket shield, implant, aesthetic rehabilitation*

INTRODUCTION-

The decrease of the alveolar edge width and level addresses a physiologic sequelae of teeth extraction, which would think twice about ideal prosthetic situating of the dental implants.[1] Prompt embed position, directed bone recovery, flapless embed arrangement, palatally situated inserts and stage exchanged inserts are a few procedures that have been accounted for in the writing to conquer the deficiency resorption.[2-6] Albeit these strategies showed variable levels of cortical bone safeguarding, not a solitary one of them totally forestalls the mid-facial downturn following quick embed situation, as the proposed comprehend of alveolar bone misfortune following teeth extraction is the deficiency of the harmonizing periodontal tendons, it appears to be coherent that root maintenance would deflect the resorption process.[7]

Casey and Lauciello[8] during the 1970s first applied the root submergence idea to save the edge aspects for full dental replacement manufacture. Hurzeler et al,[7] in 2010, hemi separated the third and fourth mandibular premolars in a beagle canine, holding the buccal section of the distal root 1 mm coronal to the buccal bone plate; presenting the attachment safeguard strategy. Gluckman et al,[9] in 2018, distributed a 5-year review assessment of 128 attachment safeguard cases in the tasteful zone and back locales, detailing an endurance pace of 96.1%. The most widely recognized confusions were the inward followed by the outer openings of the safeguards. A change of the first attachment safeguard method was presented in 2019 by Gluckman et al,[10] who underscored on lessening the level of the attachment safeguard deep down peak level to stay away from the inside safeguard openness and created temporary reclamations with an "S-molded" development profile to improve greatest delicate tissue infill.

Quick stacking has upset embed dentistry by satisfying the patients need for reclamation of the edentulous site absent a lot of postponement. Notwithstanding, the conclusive element for guaranteed stacking is an ideal

essential stability[11] which thusly is impacted generally by the surgeries and the nature of the bone. Keeping up with bone mass and thickness during insert site planning is fundamental for starting bone embed contact and biomechanical steadiness. Subsequently, to accomplish an ideal steadiness to consider quick stacking, a satisfactory volume of bone in the embed bed is fundamental. The difficulties for accomplishing essential security are many times found in maxilla where bone is lacking both regarding quality and amount. Another idea for osteotomy planning known as osseodensification (OD) uses specially crafted pods, which permit bone conservation and buildup through compaction autografting during osteotomy readiness, along these lines expanding essential stability.[12]

CASE REPORT –

A 46 years old female patient reported at the department of Prosthodontics at VYWS Dental College and Hospital, Amravati with the chief complaint of fractured teeth 11,12 (Figure 1) with a history of fall from bike before 1 day. On extra-oral examination, injury was found on lips and cheeks. Intraoral examination revealed that Ellis class VIII fracture with 11 and Ellis class III with 12. As there was enough ferrule around the 12, it was decided to perform root canal treatment with 12 and followed by post and core and crown with 12. 11 was fractured below CEJ and prognosis with 11 was not good. So it was decided to place implant with respect to 11 using socket shield technique as patient had high aesthetic expectation. The treatment plan was explained to patient and informed consent from patient was taken and further we proceeded with same plan. Preoperative cone beam computed tomography (CBCT) indicated sufficient width palatal to the planned facial root section to accommodate a 4.2 x 11.5 mm implant with the option for screw-retention (Figure 2).

Fig.1 Pre-operative photograph of patient

Fig 2. CBCT evaluation

Following local sedation of the treatment site, the absence of ferrule and supporting coronal tooth tissue of 11 could be valued. The root was then segmented in a mesiodistal bearing along its long hub as far apical as was conceivable utilizing a long knife root resection bramble (Komet Dental, Germany) coupled to a hydrated high velocity handpiece. Separating isolated the tooth root into facial and palatal parts fully intent on safeguarding the facial root area unmanipulated and connected to the tooth attachment.

Periotomes were then embedded between the palatal root segment and the alveolar attachment wall to cut off the PDL and this part of root was then painstakingly conveyed with so as not to upset the facial root area. The excess root segment was then diminished coronally to 1 mm over the alveolar peak, and diminished marginally

to a sunken shape via cautious application in an apico-coronal and mesiodistal heading with a long stabbed round jewel pod (Komet Dental, Germany). The tooth attachment's palatal wall and pinnacle were then curetted to eliminate any tissue or infective leftovers and the root segment was checked for idleness with a sharp test. With the arrangement steps total, the tooth root in the future was known as the attachment safeguard (SS). An osteotomy was then consecutively ready and a 4.2 x 11.5 mm inside hex association embed (Bioline embed framework) was embedded palatal to the SS.(Figure 3) The embed acquired essential steadiness from bone apical and palatal adequate to reestablish with a temporary rebuilding right away. A temporary crown was then developed chairside with a rise profile to help the coronal tissues while guaranteeing satisfactory room between the SS and the temporary, consequently making an "S-formed" rise (Figure 4). This is fundamental to permit the delicate tissue to develop between the temporary and the SS. Inability to do this would prompt a SS that isn't covered with delicate tissue. Mending was routine without any indications of contamination or other entanglement at the multi week and multi month follow up visits. Following 3 months of recuperating the patient returned for affirmation of osseointegration and to go on with the helpful period of the treatment. ISQ readings were 73M, 73D and dispassionately exhibited effective osseointegration. The embed was then reestablished by a screw-held metal-porcelain crown reclamation (Figure 5). The patient was happy with the stylish and practical results accomplished. At the 1 year follow up visit, the delicate tissue shapes at the embed reclamation stayed equivalent to the adjoining focal incisor and no perceptible tissue downturn nor other inconvenience could be noticed (Figure 6). The periapical radiograph outlined the bone level interproximal to the embed and tooth 21, and the connection between the SS and the embed (Figure 4).

Fig 3. Implant placed in the region of 11.

Fig 4. Radiograph showing implant placed 11.

Fig 5. Temporary crown placed with 11.

Fig 6. Permanent crown placed with 11 after 3 months.

Fig 7. 1 year follow up of socket shield case.

DISCUSSION- The outcomes from the case revealed here are reliable with the first report by Hürzeler and collaborators, that maintenance of the buccofacial root segment at prompt embed situation accomplished osseointegration without resorptive reaction of the edge buccofacial to the implant.[7] The strategy offers a reasonable arrangement while dealing with the postextraction edge and its inconveniences related with quickly positioned inserts. Preceding the SS method, the embed specialist expectedly was to choose between a quick situation convention with an expansion of the leap hole, despite everything building of the buccofacial delicate tissues, or a postponed approach with extra careful intercession to address a current edge defect.[13] Overbuilding the edge buccal/facial to the embed by directed bone recovery and delicate tissue increase can incompletely redress. An abundance of writing upholds these edge the board strategies yet a measure of shrinkage with mending is not out of the ordinary. Besides, recuperating isn't without intricacy by contamination and complete disappointment with a more regrettable result is conceivable. Choices are consequently wanted and the advantages of the SS procedure can be valued. First detailed in 2010 the SS procedure had advanced from ideas presented during the 1950s that the maintenance of a tooth limits tissue changes following extraction. The submergence of tooth attaches was acquainted initially with safeguard alveolar edge volume underneath removable full prostheses.[14,15] Malmgren and colleagues had likewise over thirty years prior revealed fruitful tissue recovery around lowered tooth roots.[16] From there on, lowering a tooth pull for pontic site improvement has turned into an indisputable treatment. Salama and collaborators wrote about saving the whole of the connection contraption as well as complete conservation of the alveolar edge while creating pontic destinations underneath FPD.[17] This method normally decoronates the tooth at the bone peak or ideally 1 mm above it to safeguard the supracrestal filaments with epithelial and connective tissue connection. By correlation, edge conservation strategies might lessen how much edge resorption yet can't forestall the deficiency of interdental bone and papillae. Safeguarding of supracrestal strands anyway can all the more likely create pontic destinations by thus protecting the papillae. Also, consequently it has been shown that the maintenance of part of the tooth adjacent with the PDL, its filaments and reticulate vascularity interconnected with group bone, evades the physiological redesigning of an extraction attachment and the alveolar peak. These sensitive tissues can be protected - PDL, pack bone, buccofacial plate and overlying keratinized mucosa.[18] It very well may be hypothesized that maintenance of part of the tooth as a SS escapes the body from understanding the tooth has been extricated and dodges the typical occasions of physiological recuperating that would resorb the alveolar attachment. The resorption of a post-extraction attachment is the immediate consequence of injury deep down PDL-tooth complex. Group bone brought into the world from a practically stacked PDL is lost following extraction and sees a very nearly 100% downturn of remaining buccofacial tissues.[19] Complete support of edge volume after tooth extraction with safeguarding procedures using as of now accessible materials as an essential counteraction isn't yet possible.14 Notwithstanding, as expressed previously, the maintenance of tooth establishes in the alveolar cycle can save the edge tissues. Histologically this was exhibited by Hürzeler and coworkers.[7] Their report affirmed the held connection of the SS to the buccal plate through a physiologic PDL liberated from any provocative reaction. The buccal plate peak showed a shortfall of osteoclastic action - a shortfall of dynamic renovating. The coronal delicate tissue exhibited a physiologic junctional epithelium

likewise liberated from any incendiary reaction. The clinical result of Hürzeler and collaborators' report introduced the effective osseointegration of an embed put synchronous to the SS procedure and a rebuilding with style undefined from the neighboring maxillary focal incisor. While the creators detailed protection of the buccofacial tissues, it ought to be noticed that outright safeguarding has not yet been shown. The creators later detailed a mean of 1 mm flat misfortune after conclusive reclamation, Chen and colleagues revealed 0.72 mm of buccal resorption.[14,20] regardless of the histological and clinical discoveries to date and the possibilities of the SS strategy, to securely apply a recently presented treatment in regular practice information from longterm clinical examinations are required and at present this information isn't yet accessible. Just a single case series with a long term or more development of a critical number cases exists in the literature.[21] Nonetheless, that strategy contrasted essentially. The creators had arranged the embed osteotomy straightforwardly through the flawless tooth root and from that point arranged what they named the "root-film". All things considered, the review is a huge commitment to writing on these methods. Not many case reports as of now exist and this case revealed here to the creators' information is the 10th. Of the reports right now accessible most have additionally strayed from the first convention. The changed/proximal attachment safeguard detailed by Kan and Rungcharassaeng had the leap hole joined with a xenograft material, the facial delicate tissues expanded. [22] In their report the system further contrasts by segment the SS into mesial and distal areas with the end goal of papillae protection. Cherel and Etienne likewise detailed papillae safeguarding by a changed SS segmented in a comparative manner.[23] The system of this case report imitated the first strategy's functioning gatherings' update to unite the leap hole, while discarding the use of a veneer framework protein subsidiary.

CONCLUSION- The socket shield technique offers a promising answer for the hardships experienced while dealing with the post-extraction tissues. This case report of prompt situation concurrent to the SS strategy is among quick to exhibit with a 1 year follow up fruitful safeguarding of post-extraction tissues harmonizing with effective supportive embed treatment. The void in the writing giving an account of the method's drawn out progress requires reasonable cooperation of clinicians to add to the information base before the strategy can be regularly endorsed for edge safeguarding concurrent to prompt embed position. At present the strategy is exceptionally encouraging and holds huge potential for the field of stylish and helpful embed dentistry.

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Data availability- The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.
Author contribution- BW mainly done the clinical cases of this study**.** KW done the major contribution in writing the manuscript. All authors read and approved the final manuscript

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