



Restoration of Fractured Maxillary Incisors With Edge to Edge Bite - Not Just Esthetic But Biological Challenge – A Case Report

KEYWORDS

fractured maxillary anterior, end to end bite, INCERAM zirconia crowns.

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ABSTRACT Restoration of fractured maxillary incisors with edge to edge bite - not just esthetic but biological challenge .

A situation that negatively affects dento facial harmony is the presence of fractured anterior teeth .The treatment becomes more complex when the situation does not confirm to the class 1 relationship. The focus of the treatment should not just be on treatment of the problem but also on fulfilling the demands of better aesthetics along with improved function. Recent advances in technology and dental materials have prompted the development of all-ceramic systems for fabrication of full coverage restoration. These crowns are clinically more acceptable due to their enhanced aesthetic, biocompatibility and inertness and they are replacing metal as a core material for crown. This case report presents the aesthetic and biofunctional management of fractured anterior teeth.

Introduction

One of the primary reasons of fracture of upper anterior teeth is due to trauma after a fall. The need for its treatment is primarily for aesthetics and the restoration is easy to accomplish if the occlusion conforms to simple class 1 relation. But in cases with an end to end bite or a class 2 relation the treatment is complex and challenging as it should not just be aesthetic it should also be in harmony with the patients existing occlusion. An end to end occlusion is very often treated as a malocclusion and in most of the cases it is tried to change it into a class 1 relation .This is not an acceptable reason for altering any occlusion and does not justify changing an end to end relation to a restricted overlap relation.

If restoration is a necessity on end to end anterior teeth, their anterior guidance function can be improved greatly with subtle changes in contour. Minimal changes in incisal edge position can affect gross improvements in anterior function. Moving the upper incisal edges forward and the lower edges inward can extend the protrusive contact by a couple of millimeters or more . In combination with the downward movement of the protruding condyle , this 2mm to 3mm of added anterior guidance should be sufficient to disclude the Posterior teeth.

A strong warning should be noted here against the steepening end to end anterior guidance angles. The guidance should remain as flat as possible and improvement s should be made in the form of extending the guidance and not steepening it. This case report presents the restoration of fractured anterior teeth with all ceramic crowns while maintain their end to end relation.

Case History:

A 23 yr old male patient reported to MGV dental college and hospital, Nashik with the chief complaint of fractured upper front teeth and poor aesthetics. Patient gave a h/o trauma and fracture of front teeth after a fall. Following which root canal treatment was carried out of the fractured teeth. Extra oral examination suggested an average smile line with a divergent profile. Intra oral examination revealed an anterior end to end relationship with fractured

11,12 and 21 and their subsequent grayish discoloration. The fracture line was at the junction of middle and cervical third in 11, in the incisal third in 12 and in the middle third in 21. Lack of treatment had led to the supraeruption of mandibular incisors. Radiographic examination showed satisfactory root canal treatment with respect to 21. Slight radiolucency was observed periapically w.r.t 11, 21 . The patient was kept on a 2 week observation period and it was ascertained that the teeth were asymptomatic.

Treatment plan:

After a thorough oral prophylaxis, the following steps were taken to ensure proper rehabilitation of the patient.

Step 1 : Ensure that the endodontic therapy was satisfactory .

Step 2 : Diagnostic wax up – to check and establish a flat anterior guidance

Step 3 : Post (fiber post) and core w.r.t 12 and 21.

Step 4: Crown preparation of 11, 12 , 21 and Enameloplasty of mandibular incisors

Step 5: Temporization (protemp -4), using the diagnostic wax up as a reference.

Step 6: Modification of the preparation to a deep chamfer .

Step7: Gingival retraction, followed by final impressions using addition polysilicone (aquasil- DENTSPLY). Impression was sent to the laboratory for the fabrication of all ceramic crown (INCERAM – zirconia). The shade of the tooth was determined with a Vitapan Classic shade guide.

step 7: Relining of provisional restoration using protemp-4(3M ESPE) and their cementation using non eugenol temporary cement .

step 8: After a week, temporary crown was removed and all ceramic crown was cemented with self etch Unicem lut-

ing cement (3M ESPE) after doing minor intraoral adjustments.

Discussion:

In a long standing end to end relationship, the stresses are so confined to the long axis that the periodontal fibers and the bone trabeculae are not aligned to resist lateral stresses. Suddenly changing a tooth's contour to subject it to lateral forces can produce unwanted tenderness or hyper mobility .Until the fibers realign and the bone becomes more resistant to the lateral forces. The guidance should remain as flat as possible and improvement should be made in the form of extending anterior guidance contact, not steeping it.

Anterior end to end relationships may be very stable if they are in harmony with centric relation and there is absence of wear or hyper mobility. Great care should be taken to avoid contours that will direct the stresses off the long axis. If restorations are a necessity on end to end anterior teeth, their anterior guidance function can be improved greatly with subtle changes in contour. The use of glass fiber post and all ceramic restoration helped achieve a satisfactory result in terms of aesthetics as well as function.

INCERAM because of its high strength, good marginal adaptability and low porosity was the perfect system for restoration .A disadvantage of this system is that because of opaque Alumina core, the translucency of the final restoration may not be as life like as with other systems, but in this case it acted as an advantage by helping mask the grayish discoloration of the teeth.

The irony of an anterior end to end occlusion is that although many dentists believe that it should be "corrected", most patients believe it is the ideal relationship. In the absence of noxious habit patterns, that destroy the incisal plane relationship, an anterior end to end occlusion often results in a beautiful smile. It rarely needs to be altered for aesthetic reasons. The present case report demonstrates that a balance of aesthetics and function is necessary to achieve satisfactory results.

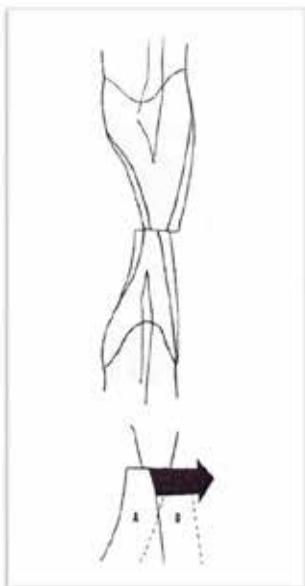


Figure 1- Effect on anterior guidance with minimal changes in incisal edge position.



Figure 2- preoperative photograph of the patient



Figure 3 - preoperative radiograph



Figure 4-Placement of fiber post 12, 21



Figure 5- composite core build up with final tooth preparation



Figure 6- cementation of all ceramic restoration



Figure 7- preoperative and post operative photograph of the patient

REFERENCE

1. Dawson PE (2007) Functional occlusion: from TMJ to smile design. Elsevier publication. 493-49. | 2. McLaren EA, et al. (2005) Zirconia based ceramic : Material properties, aesthetics and layering techniques of a new veneering porcelain, VM9. Quintessence dent Quintessence Technol 2005; 28:99-111 |