

Fabrication of a Tooth Colored Inlay Using All Ceramic Restoration – A Case Report

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Abstract

In today's world esthetic restoration is a prime concern for everyone. Dental restorative team is the need to deliver high-strength restorative options without compromising the aesthetic outcome powered by ever-increasing patient demands. The availability of improved Ceramic inlays and onlays have become popular not only because of patient demand for aesthetic, durable restorative materials, but also because of recent advances in materials, manufacture events, and recent bonding system and controversy with amalgam safety have led to a revitalization of interest in ceramic inlays in dentistry over the past years.

Keywords: Esthetic inlay, All ceramic, Bonding system.

INTRODUCTION

The word esthetic means appreciation of beauty. And where esthetic is concerned, the dentist comes in mind and conservative dentistry gained popularity in the world of beauty. Reconstructing the original anatomy of the tooth resembling the natural appearance is a big challenge for the dentist.^[1] Good personalized smile comprises shade, shape, and surface texture of material. Studies are going on since the 1980s in search of a durable and tooth-colored restorative dental material, which strengthens the tooth with great aesthetic appearance.^[2] As restoration ceramic-based inlays offer excellent esthetics and strength. It keeps a healthier anatomy, displays improved peripheral integrity, and color steadiness in oral cavity. All ceramic-based inlays also strengthen the remaining dental hard tissue as they bond to the tooth with adhesive cement. Composite, amalgam, and gold restorations can be better replaced by all ceramic indirect restoration.^[3] All ceramic inlay is recently most useful for moderate to large size restorations. Many types of all ceramic constituents are available, midst them IPS E-Max is familiarized with high strength and excellent esthetic.^[4] Herewith we would like to report case treated with IPS E-Max inlay observed for 3 months.

CASE REPORT

A 35-years-old female patient came to the department of conservative dentistry and endodontics with the chief complaint of food lodgment in relation to the upper left back tooth region

of jaw with no pain and sensitivity (Figure 1). Patient was concerned in aesthetical strong restoration; it was planned to give all ceramic inlay as restoration. Cavity preparation was done with the principle of cavity preparation (Figure 2). Impressions were made after the cavity preparation and send to laboratory with all instruction, where IPS E-Max CAD Ceramic inlay was prepared. Image was scanned in laboratory from the cast and dye cutting was done, IPS E-Max CAD block (Ivoclar Vivadent, Europe) (Figure 3) was used for milling of ceramic inlay. After preparing the inlay, it was etched and silanated and cemented with RelyXTMU100 self-adhesive Universal Resin Cement. (3M ESPE USA). The patient was observed clinically after 7 days, 1 month for restoration for pain, sensitivity, marginal adaptation, crack formation, fracture, and discoloration (Figure 4). Clinical photograph and radiographs were done to correlate clinical and radiographic evaluation.

DISCUSSION

The primary emphasis for dentistry now is the preservation of tooth structure and reinforcement of tooth by reducing the

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Figure 1: Pre-operative view

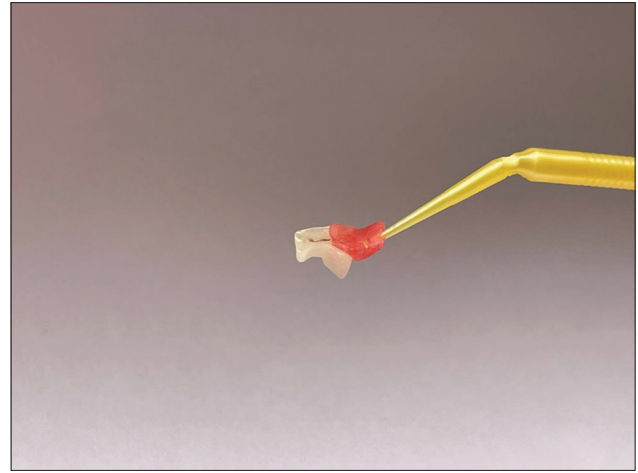


Figure 3: Fabricated inlay



Figure 2: After cavity preparation



Figure 4: Post-operative view

fracture incidence of restored tooth. Clinical study by R. T. Lange presented that indirectly fabricated Evopress ceramic inlays accomplished well than direct composite restorations in marginal integrity, shade match, and anatomy.^[5] In fact, preserving sound tissue using a minimally invasive bonded restoration resulted in less trauma and greater prognosis. These are the prime reasons which have brought the ceramic inlays in great demand and acceptance.^[6] The microstructure of the pressable lithium disilicate material consists of approximately 70% volume of lithium disilicate crystals that are crystallized in a glassy matrix. The crystals of both the IPS E-Max Press and IPS E-Max CAD are the similar in composition. Both contains 70% crystalline lithium disilicate crystals but with different crystal size and length. This is why material properties such as co-efficient of thermal expansion, modulus of elasticity, and chemical solubility are the similar, yet the flexural strength and fracture toughness are slightly higher for the IPS E-Max Press material. Metal ceramic restorations are difficult to fabricate and not good for esthetics. For full coverage restoration metal ceramic is generally used.^[7] A long-term clinical assessment of bonded composite inlays shows that composite inlay

elasticities high success rate in clinical practice that is not associated to size of lesion or tooth form. These verifies that bonded restoration always helps in strengthens of remaining tooth structure and increase survival rate of tooth.^[8]

CONCLUSION

All ceramic restorations overcome the weakness of other esthetic restorative materials such as glass ionomer, composite resin, and give good esthetic as well as function. For medium to large size carious lesion ceramic inlay proved to be excellent aesthetic restoration compared to direct and indirect composite resin restoration. Among different All ceramic material IPS E-Max lithium disilicate offers exciting new opportunities in restorative dentistry. Esthetically pleasing and durable restorations can be achieved by high strength and optical properties of material.

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