

AN INTERDISCIPLINARY MEANS TO THE MANAGEMENT OF COMPLEX DENTAL CONDITIONS

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ABSTRACT

Interdisciplinary collaboration and careful treatment planning are needed to manage complex dental conditions. This case report describes the comprehensive treatment of a 27-year-old Saudi man with high caries risk factors, missing teeth, carious lesions, super-erupted teeth, and substandard root canal treatments. Key points include; Preventive therapy, evaluation of tooth restorability, extraction of hopeless teeth, diet analysis, Restoration of carious teeth, endodontic therapy, and pre-prosthetic surgical management which includes periodontal surgery and placement of dental implants. Definitive prosthodontic therapy was preceded by occlusal analysis and correction of the occlusal plane. Treatment objective include recognizing the necessary components involved with record gathering that precede treating a patient to optimal dental physiology. A multidisciplinary approach involving restorative dentistry, endodontics, prosthodontics, and periodontics restored oral health, function, and aesthetics. The successful outcome emphasizes the need for interdisciplinary collaboration and personalized treatment planning in complex dental cases. The collaboration helped treat the patient's generalized plaque-induced gingivitis, occlusal trauma, high caries risk, and multiple non-vital and non-restorable teeth, restoring oral health and function.

Key words: Interdisciplinary dentistry, Complex dental cases, Case study, Treatment planning, Dental physiology.

Introduction

Doctors must give patients the best current treatments. Sometimes we want to give our best, but the circumstances prevent it. Misdiagnosis and improper treatment may cause the most serious adverse treatment effects. Due to uncertainties and omissions, errors are common despite good intentions [1]. Understanding interdisciplinary concepts is crucial to full mouth rehabilitation's functional and aesthetic restorations. Each patient has a unique age, personality, and expectations, requiring a customized treatment plan. Understanding these interdisciplinary concepts opens up many treatment options and outcomes. In today's dental world, every practitioner must understand how different dental disciplines work together to create an aesthetic makeover based on conservatism and biological soundness [2].

The goal is to optimize diagnostics, treatment planning, and aesthetic and functional issues systematically. This involves making temporary restorations to guide the final restoration. Dental practitioners can navigate full mouth rehabilitation with precision and efficacy using interdisciplinary collaboration and expertise, meeting and exceeding patient expectations.

Understanding the patient's oral health, risk factors, and treatment goals is crucial to managing complex dental cases. Interdisciplinary collaboration is essential for solving complex problems and achieving success. This case report

describes the comprehensive treatment of a 27-year-old male patient with high caries risk and multiple dental issues.

Materials and Methods

Case report

A 27-year-old man complained of toothache, chewing difficulties, and a dissatisfied smile at the dental clinic. Clinical and radiological examination revealed several carious lesions, missing teeth, super-erupted molars, and poor root canal treatments (**Figures 1-3**). Poor oral hygiene increased the patient's caries risk despite his unremarkable medical history.

Objectives

Definitive management was fundamental with SBARD guidelines and treatment phases. Key points include; Preventive therapy, evaluation of tooth restorability, extraction of hopeless teeth, diet analysis, Restoration of carious teeth, endodontic therapy, and pre-prosthetic surgical management which includes periodontal surgery and placement of dental implants. Definitive prosthodontic therapy was preceded by occlusal analysis and correction of the occlusal plane.

Treatment objectives

1. Recognize the necessary components involved with record gathering that precede treating a patient to optimal dental physiology.

2. Appreciate the important diagnostic aspects that several different radiographic views provide.
3. Explain the six phases of treatment necessary to treat a patient to optimal dental physiology.
4. Develop an awareness of the state-of-the-art diagnostic and treatment modalities available to aid in treating a patient to optimal dental physiology.

Treatment sequencing

Phase 1 – Preventive

- Periodontal therapy
- Consultations
- Mounting of Diagnostic Casts / Diagnostic Wax-up
- Caries Assessment
- Caries control and evaluation of tooth restorability
- Diet analysis
- Extraction of hopeless teeth #17, 26, 27, 36,37, 48
- Temporization; restore occlusion, function, comfort, speech, and esthetics.
- Orthodontic Removable Appliance

Phase 2 – Operative

Composite Restorations of teeth # 32, 43, 44,

Phase 3 – Endodontic

Non-Surgical Root Canal Therapy of teeth # 14,13,12, 11,21, 23,33, 45, 46

Phase 4 – Pre-Prosthetic / Surgical

Cast post and core #24,25,45,46
 Fiber post and composite core #14,13,23,33
 Zirconium post tooth # 12, 11,21
 Crown lengthening of teeth #12,11,21,45,46
 Implant fixture area # 16,26,34,35,36

Phase 5 – Prosthodontic

IPS-Empress 3 unit-bridge of teeth # 21-23
 IPS-Empress crowns for teeth # 13, 12,11, 33
 MCR (crown) of teeth # 16,15,14,24,25,26,36,35,34,45,46
 Labial veneer for lower anterior #32-44

Phase 6 – Recall & Maintenance

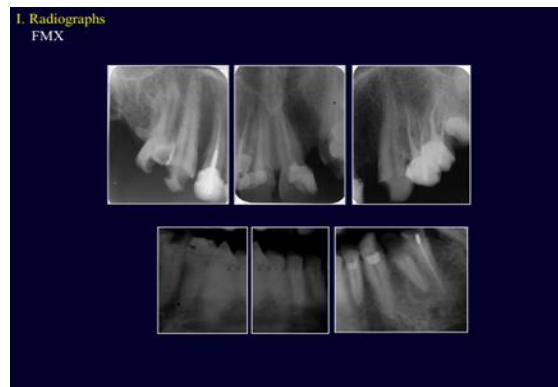


a)



b)

Figure 1. Pretreatment photographs



a)



b)

Figure 2. Pre-Treatment Radiographs

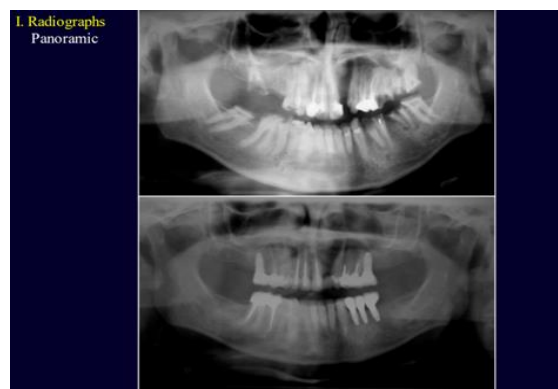


Figure 3. Post-Treatment Radiographs

Results and Discussion

Dentistry is constantly changing, and this special issue of *Medicine* highlights the remarkable innovations that are shaping oral health and clinical dentistry practice. This issue highlights a major dental trend toward a multidisciplinary, technology-driven approach that encompasses restorative dentistry, prosthodontics, oral surgery, implantology, pediatric dentistry, orthodontics, and temporomandibular disorders [3].

Dental and medical practice often requires an interdisciplinary approach that integrates the knowledge, skills, and experience of all disciplines into comprehensive treatment to maximize results. Rapid scientific and technological advances have made it difficult for dental and medical practitioners to stay current; therefore, an interdisciplinary approach is needed to reduce practitioner frustration and increase patient benefits. This report describes how a young patient with dental phobia and serious dental issues received therapy [4]. Optimal oral health is essential for older adults' function, comfort, and communication. Dental diseases like caries, periodontal disease, and oral cancer can cause pain, functional limitations, and lower quality of life. Healthy oral health outcomes often result from interprofessional collaboration between healthcare providers, patient families, and caregivers [2].

The present case illustrates the difficulties of treating complex dental conditions, which require interdisciplinary care. Generalized plaque-induced gingivitis, occlusal trauma, high caries risk, and multiple non-vital and non-restorable teeth necessitated interdisciplinary treatment.

Generalized plaque-induced gingivitis indicated poor oral hygiene and dental plaque accumulation, causing gingival inflammation. To reduce inflammation and restore periodontal health, meticulous oral hygiene, professional scaling, root planing, and regular periodontal maintenance were used.

Patients with occlusal trauma had pain during mastication and compromised occlusion. To stabilize occlusal issues and prevent periodontal and dentition trauma, prosthodontics, orthodontics, and periodontics were needed. To optimize occlusal function, occlusal analysis, adjustments, splint therapy, and orthodontic interventions may have been used.

The patient's high caries risk required a preventive strategy to manage and reduce risk. This included patient education on oral hygiene, diet, fluoride therapy, and regular dental checkups to detect and treat caries early. Restorative interventions also restored carious lesions and prevented decay [5].

Multiple non-vital and non-restorable teeth complicated treatment planning. Endodontic retreatment, surgical

endodontics, or extraction and prosthetic rehabilitation may have helped these teeth. Successfully restoring function and aesthetics required collaboration between endodontics, restorative dentistry, and prosthodontics.

Interdisciplinary collaboration between periodontics, endodontics, prosthodontics, orthodontics, and restorative dentistry was needed to treat the patient's complex dental conditions. Teamwork enabled systematic treatment planning for all patient oral health needs.

Gathering the patient's dental and medical history, clinical examination findings, radiographic images, and diagnostic models is crucial before starting treatment. This information helps plan treatment by revealing the patient's oral health, conditions, and needs. Radiographic imaging is essential for dental diagnosis and treatment. Periapical, panoramic, and CBCT scans reveal dental anatomy, pathology, and treatment outcomes. Clinicians can make better diagnostic and treatment decisions by understanding imaging modality strengths and weaknesses [6].

It was determined in the previous case report that the patient most likely had a hypomature form of AI. The right mandibular first molar of the patient had been removed. Despite the patient's solid understanding of proper dental hygiene, the initial visit revealed indications of gingivitis, making oral hygiene unsatisfactory. The patient said that his 29-year-old sibling also suffered from the same condition. Owing to the patient's intricate requirements, an interdisciplinary strategy was employed. The treatment plan that was developed comprised interventions to improve aesthetics, restore masticatory function, and minimize the reported sensitivity. To modify the height of the cervical line, gingivectomy, and gingivoplasty were carried out near the maxillary right central incisor. We let the areas take two weeks to heal. To alter the occlusion, resin composite restorations were placed on the mandibular left premolars, the maxillary premolars, the maxillary right first molar, and the right first premolar. At the one-year recall, there was no pathology related to the rehabilitation or degradation of the restorations, and the patient's functional and aesthetic expectations were met.

The maxillary premolars and maxillary right first molar were repaired using a resin composite material (Charisma A1, Heraeus Kulzer, Hanau, Germany) to enhance their look. Following the vital operations, the patient's dental sensitivity fully subsided, and adequate function and aesthetics were restored. For nine months, the patient was observed every three months. There were no indications of degradation on the restorations. The patient has good dental hygiene. There was no crazing, discoloration, or carious lesions on the restorations [3].

“Oral rehabilitation” encompasses several levels of oral therapy combined with artistic expression based on creativity, imagination, and scientific guidelines. This case

shows that extensive dental treatment should be proposed with an interdisciplinary team approach for continuity and shared therapy decisions. Every Restorative Dentistry clinician faces the biggest challenge of full-mouth rehabilitation. It takes efficient diagnosis and ornate treatment planning to develop ordered occlusal contacts and harmonious articulation to optimize stomatognathic function, health, and esthetics, which improves patient comfort and satisfaction. Multiple decayed, missing teeth and posterior tooth collapse reduce the vertical dimension of occlusion and normal occlusal plane [7].

Optimal dental care requires staying current on diagnostic and treatment methods. Modern technologies like digital radiography, intraoral scanners, CAD/CAM systems, and 3D printing improve precision, efficiency, and patient comfort. Clinicians can improve patient outcomes, care quality, and workflow by adopting these innovations.

This case report describes the full mouth rehabilitation of a 27-year-old patient using a systematic approach to optimize diagnostic, treatment planning, and esthetic and functional demands in provisional, which is the blueprint for final restorative restorations. In full mouth rehabilitation, understanding interdisciplinary concepts is crucial to functional and esthetic restorations. Our knowledge of interdisciplinary concepts can open up a wide range of treatment options and outcomes for each patient, who has unique age, personality, and expectations. Today, every dentist must understand how these disciplines work together to create an esthetic makeover with the most conservative and biologically sound interdisciplinary treatment plan. Provisional treatment, which is the blueprint for restorative treatment, should be optimized diagnostically, treated systematically, and resolved esthetically and functionally. A 27-year-old medically fit man complained of decayed and missing dentition, pain when masticating, and a desire to smile and function. A clinical examination found malignancy, necrotic and infected pulp, severely decaying and missing teeth, insufficient inter-arch space for restorations, and widespread gingival irritation and bleeding upon probing. The vertical dimension of the patient was ascertained through the utilization of mandibular jaw resting postures, facial measurements, and anatomic landmarks. Reduced VDO and poor occlusion were discovered. The freeway space exceeded the 2-3 mm physiologic space. The patient had generalized plaque-induced gingivitis with occlusion trauma, high caries risk, and multiple non-vital and un-restorable teeth, according to clinical and radiographic evidence. We recognize the factors involved in record gathering before treating a patient to optimal dental physiology. There was the diagnostic value of multiple radiographic views and an explanation of the six treatment phases needed to optimize dental physiology.

The past study reports a case of AI of the hypoplastic rough type connected with a set of dental defects in the previous case report and details the patient's prosthetic care. Teeth

discoloration was the main complaint of a 26-year-old female patient. The patient's radiological and clinical examinations supported the rough pattern of hypoplastic AI diagnosis. A full-mouth porcelain fixed bridge with metal reinforcement was used to treat the patient. After four months of closely monitoring the temporomandibular joints and masticatory muscles for adaptation, the patient showed good tolerance for her new vertical dimension. The patient was advised on how to clean the interproximal and subpontic regions. Two follow-up appointments were set for three and six months apart. After the follow-up period, no functional or aesthetic issues were observed [4].

The previous report provides an example of how the treatment was organized for a young kid with serious dental issues and a fear of the dentist. The most recent developments in pharmacology, medical technology, and dentistry methods and materials are emphasized. It demonstrates how team members cooperate and communicate with the patient and guardians as well as with each other. A patient's quality of life improved as a result of a medical professional in an unrelated field making a perceptive remark [8].

The child in the previous research had undergone cardiac surgery when she was only 10 days old, and she subsequently had further surgery, including the placement of a pacemaker and a porcine valve. During the test, the allergist found that the youngster had a significant gag reflex and oral anxiety, which may have been linked to several major surgical operations and heart issues. He had also been continually sucking sweets since he was ten years old. Upon examination of the oral cavity, the allergist saw significant dentition degradation. The patient objected, but his parents persuaded him to see a dentist right away, and they recommended him to one of the authors for an evaluation [1].

The previous article describes an integrated approach to the diagnosis and treatment of anterior dental aesthetics. The writers are dentists who specialize in periodontics, orthodontics, and treatment. That being said, this team has been a member of an interdisciplinary dentistry research group that has been studying a broad range of dental issues for more than 20 years. In any dental practice, the patient undergoing complicated reconstruction is named a type IV patient. Several visits spread out across months or even years, contingent upon the patient's demands for orthodontics, periodontics, endodontics, surgery, and restorative care, are characteristic of this patient. The doctor has to modify the rates to account for the time commitment due to the rise in appointments and laboratory costs. According to the study's findings, treatment planning in the multidisciplinary field of dentistry nowadays must start with well-defined aesthetic goals. By starting with aesthetics and then considering the influence of the planned treatment on function, structure, and biology, the dentist will

be able to utilize the numerous dental disciplines to provide each patient with the best possible dental care [9].

Treatment outcome

Dental problems are often multi-factorial, and may not be satisfactorily resolved by the restorative treatment alone. Creating the perfect smile along with health is a challenging procedure that requires a multidisciplinary approach, and meticulous treatment planning. Emphasis was given on occlusal adjustments in both temporary and final restoration since occlusal rehabilitation is the key to the long-term success of restorations and oral health. Creating a beautiful smile and ensuring oral health and function requires a holistic approach beyond restorative dentistry. A multidisciplinary approach involving prosthodontics, periodontics, endodontics, orthodontics, and oral surgery is used. Dental professionals must carefully plan treatment to assess the patient's needs, consider all contributing factors, and create a comprehensive treatment plan that addresses both aesthetic and functional concerns. Occlusal adjustments in temporary and final restorations are essential for tooth alignment and function.

The long-term success of restorative treatments and oral health depends on occlusal rehabilitation, which involves bite and occlusal surface adjustments. Clinicians can prolong restoration life and stability by optimizing occlusion to reduce the risk of premature wear, fracture, and temporomandibular joint disorders.

Complex dental cases require a multidisciplinary approach, meticulous treatment planning, and occlusal rehabilitation to achieve esthetic and functional outcomes. Dental professionals can help patients achieve a beautiful smile, optimal oral health, and overall well-being by addressing the root causes of dental problems and providing comprehensive care.

Conclusion

A complicated case often requires an interdisciplinary approach. However, such an approach makes it difficult for the practitioner to offer optimum patient treatment unless communication and cooperation of all team members exist. The collaboration helped treat the patient's generalized plaque-induced gingivitis, occlusal trauma, high caries risk,

and multiple non-vital and non-restorable teeth, restoring oral health and function.

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