Treatment phases in management of a comprehensive restorative case. A case report

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يهدف هذت التقرير إلى التأكيد على أهمية مراحل تخطيط العلاج وتشجيع الزملاء على تطبيق هذه المراحل عند التخطيط لترميم الحالات السريرية المعقدة. يمتلك الأسلوب التقليدي لتخطيط العلاج مزايا معينة، لكن يمكن للأسلوب الجديد ان يحسن من مستوى صحة الفم أكثر من كونه استجابة للمشاكل الحالية. لذلك يجب أن يكون هدف طبيب الأسنان هو تحفيز المرضى غير المنتظمين للمراجعات ليصبحوا مرضى منتظمين من خلال خطة علاجية مبنية على اساس تحسين صحة الفم لديهم، والوقاية من الأمراض وتحسين الناحية الجمالية والتخلص من الألم والازعاج. تعرض هذه المقاله حاله لمريضه تبلغ من العمر ١٦ سنه تعاني من مشاكل سنية معقدة وضعت لها خطة علاجية شاملة قسمت إلى مراحل بأسلوب متدرج حيث تعتمد كل خطوة سريرية على الخطوة السابقة. استغرقت فترة المعالجة ثلاثة أشهر وكانت النتائج مرضية بالإضافة إلى زيادة وعي المريض وتعاونه وثقته بنفسه. متدرجة تضمنت عدة مراحل تسوسات وخراجات عديده بالأسنان.

The aim of this case report was to emphasize the value of preforming patient's treatment plan into phases of treatment and encouraging colleagues to apply such phases in the clinical practice for the management of complex restorative cases. Traditional approach to treatment planning has certain merits. However, new treatment approach should improve oral health rather than react to presenting problems and therefore, dentists should aim to convert their irregular attendee to a regular attendee with treatment plan directed to enhance oral health, prevent disease, improve esthetic and free the patient from pain and discomfort. In this report, a complex restorative case of a 16-year-old female patient was managed for comprehensive dental therapy in the form of treatment plan which was divided into phases by way of a "staircase" approach with one clinical step being dependent on the previous step. The whole treatment was completed in three months and the results were satisfactory and patient became a highly motivated person with more self-confidence.

INTRODUCTION

Dental caries is the main dental disease that affects the dentition of pre-adolescent and adolescent individuals.[1] Although type of diet and the level of oral hygiene maintenance are factors directly related to the severity of dental distraction,[1] patients subjected to similar circumstances may show differences in their susceptibly to dental caries.[1,2] In addition, the progress of dental caries can occur rather fast in some patients causing a major distraction of teeth and the underlying dental tissue. These cases often end up being complex and their management usually involves complicated, costly and time consuming dental procedures. In order to avoid failure in the management of such complex restorative cases, it is essential to achieve a proper diagnosis, be able to identify the contributing causative factors and work out a treatment strategy with the patient that is based on the understanding of the need for dental care, oral health maintenance and an anticipation of the short- and long-term outcome of the treatment.[3-5] Therefore, it is important to lay down a treatment plan that includes phases of treatment followed in their appropriate sequence.[6,7] The aim of this case report was to emphasize the application of treatment phases in the management of complex restorative cases and the appropriate sequence of their implementation. In the paper, a complex restorative case was clinically managed in treatment phases for delivering a comprehensive dental treatment.

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CASE REPORT

A 16-year-old female with no history of serious illnesses presented with chief complaints of poor dental esthetic, pain in several teeth, bleeding gum and recurrent previous extra oral swelling in multiple areas of the face. According to the patient, this had caused a major adverse effect on the patient's ability to chew food and on the quality of her social life. The patient was subjected to several improper attempts of comprehensive dental treatment including restorative filling, pulp extirpations and extraction of permanent teeth. During her treatment, she was never given oral

hygiene instructions and her diet was not analyzed. Upon clinical examination, the patient revealed no present extra oral swelling or lymph node involvement while intra orally, the gingiva showed generalized moderate to severe gingivitis with pocket depths ranging from 4 to 6 mm. The lips, palate, tongue, oropharynx and floor of mouth appeared within normal.

The patient's oral hygiene was very poor with a plaque index of 90% and bleeding index of 80%. The lower incisors indicated tooth mobility of grade II. Radiographic evaluation (OPG, 20 CMS) revealed few missing teeth, impacted lower wisdoms teeth and multiple periapical radiolucencies involving several teeth. She gave a history of no complications with local anesthesia or extended bleeding following extraction. The case was diagnosed as generalized gingivitis with multiple caries leading to almost total crown destruction in many teeth and uncompleted root canal treatment with periapical pathosis in different areas (Figs. 1a, 8a, 9a and Table 1). The treatment of this case was completed in a total of three months and was carried out in four treatment phases.

Phase I

This phase started by presenting and discussing with the patient her dental problems and the serious consequences of her present dental status in relation to her oral and general health, if maintained untreated. Scaling and prophylaxis were performed on the patient. Oral hygiene instruction was thoroughly explained and patient was motivated to maintain good oral hygiene and to modify her dietary habits. After which caries control procedure was carried out in all affected teeth (Fig. 1b). Before the final restorative treatment plan were presented to the patient, consultations and discussion with other relevant dental specialties regarding their involvement in the treatment plan was obtained, The patient's oral hygiene were evaluated at the beginning of each dental visit using the disclosing solution and bleeding index was also recorded. This treatment phase lasted for two weeks before the start of the second phase.

Tooth number	Problem list
All teeth	Poor oral hygiene and multiple caries poor esthetic and generalized gingivitis
17	OM caries
27	Class V caries
16,14,13,12,11,21,22,23,36, 33,31,41,42,43,44,47,34,24, 35,45	Chronic periapical Pathosis
24,35,45	Rotated teeth
32	Missing
31,41	Grade II mobility
46	Tilted lingually

Table 1. System for tooth Numbering: FDI numbering system

Phase II

Permanent amalgam fillings and endodontic therapy were completed in two weeks in all affected teeth using lateral cold compaction gutta-percha technique (Fig. 2). Due to the extensive carious lesion, all affected teeth of the upper and lower jaw indicated insufficient remaining tooth structure for prosthodontic treatment to be carried out. Thus, the patient was referred to the periodontist to perform gingivectomy and gingivoplastic surgery in order to expose more tooth-structure of all affected teeth. Periodontal surgery was carried out for the upper and lower arches separately with one week interval between the two visits. Sutures were removed one week later for both arches and the level of oral hygiene was monitored (Figs. 3 a&b). The tissue was left for six weeks to heal before the third phase started.

All endodonticaly treated teeth were evaluated at each visit for any signs or symptoms that may arise such as pain, fistula, swelling or pus discharge.

Phase III

Cast post and cores were fabricated in one visit for all affected teeth using indirect impression technique for the

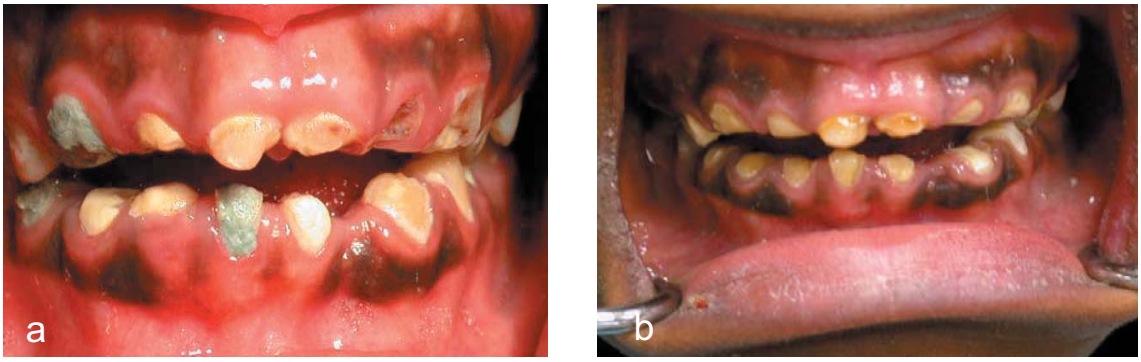

Fig. 1. (a) Multiple caries and total crown distraction. (b) Phase I caries control.

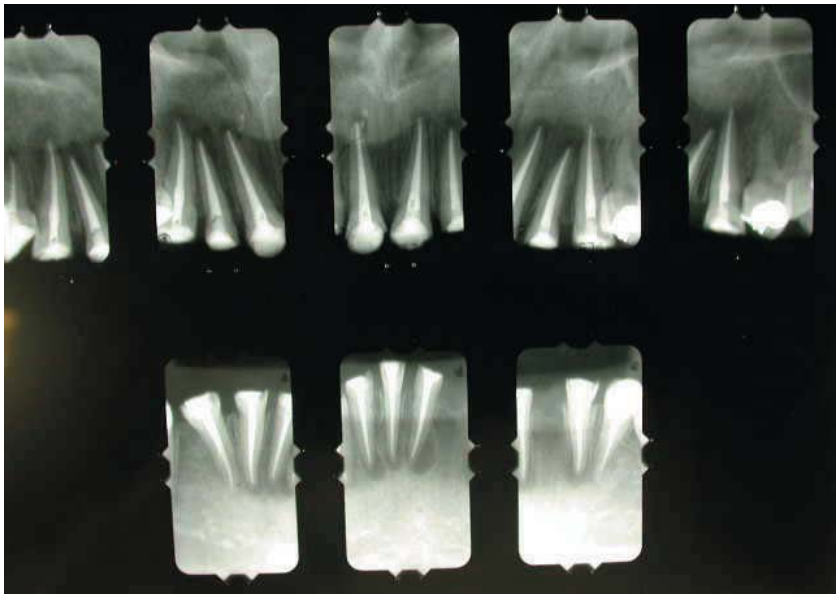

Fig. 2. Phase II - Completion of endodontic therapy.

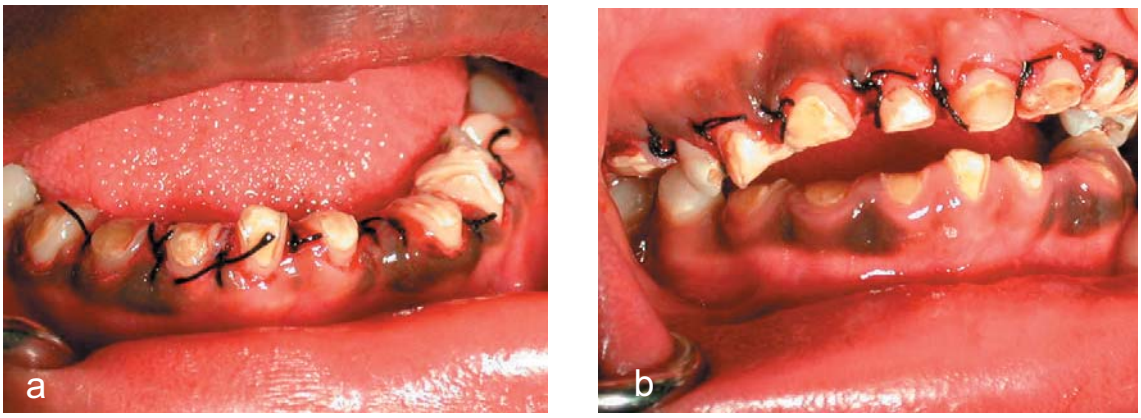

Fig. 3. Phase II - (a) Gingivectomy of lower arch and (b) upper arch.

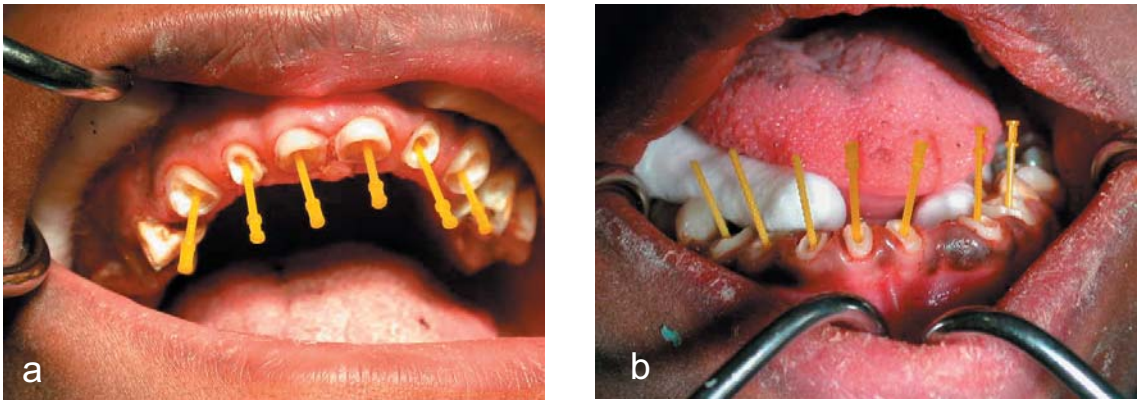

Fig. 4 a&b. Phase III - Post and core preparation of upper and lower arches using indirect technique.

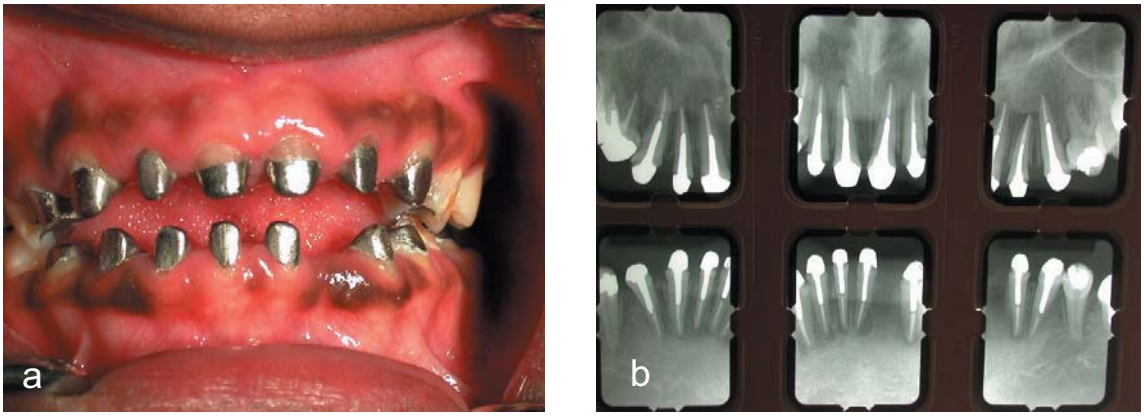

Fig. 5. (a) Post and cores cemented in upper and lower arches. (b) Radiographs of post and core.

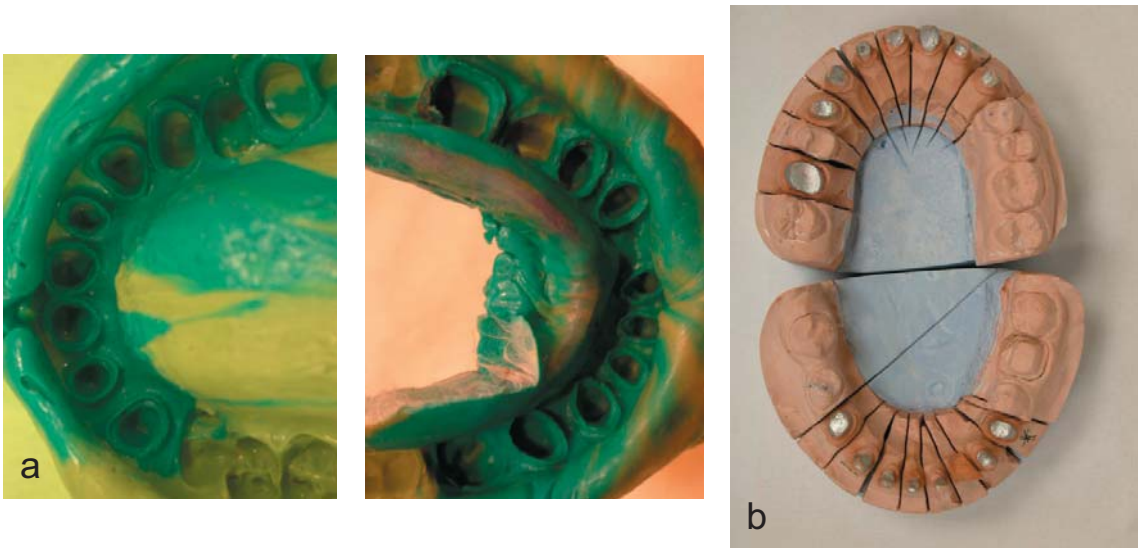

Fig. 6. (a) Final impressions of upper and lower arches (b) Stone casts of upper and lower arches.

upper and lower arch (Figs. 4 a&b). One week later the cast post and core were cemented using zinc phosphate cement (Figs. 5 a&b). All the teeth in the upper and lower arches were then prepared for porcelain fused to metal (PFM) crowns and final impression was taken in the same visit (Figs. 6 a&b). Prepared teeth were covered with temporary acrylic crowns which were cemented using Temp bond cement. Two weeks later, all PFM crowns were tried for proper fitting, Adjustment of any occlusal interference and polishing was completed before final cementation with zinc phosphate cement (Figs. 10 a&b). The level of oral hygiene was monitored throughout the treatment which indicated a plaque index of 10% and bleeding index of 7%. The patient was given additional oral hygiene instructions on how to cleanly maintain the prosthetic treatment. This phase was completed in one month, and the patient was scheduled to visit the clinic two to three times per week.

Phase IV

This phase aimed to monitor the treatment outcome. The patient was recalled once every month during the first three months in which oral hygiene status was evaluated (Figs. 7a&b). An OPG and 20 CMS radiographs were taken after three months to evaluate the healing of endodontically treated teeth (Figs. 8 a&b, 9 a&b). The patient was then recalled every three months for one year post-operatively. Pre-apical and bitewing radiographs were taken as well as photographs to evaluate treatment outcome one year post-operatively (Figs. 11, 12 a&b). During recall visits, an excellent healing of all periapical radiolucencies and excellent maintenance of oral hygiene with healthy gingiva were evident. The plaque index was 4% and bleeding index was 3 %.The patient was enthusiastic during the whole treatment period and she became a highly motivated person with promoted self- confidence.

DISCUSSION AND CONCLUSION

Treatment planning is not an exact science, rather it is an art underpinned by clinical experience tempered by scientific knowledge and understanding.[7] The treatment plan should offer definite health gain and long-term sustainable benefit to the patient. Dentist should aim in his treatment planning to enhance oral health, improve dental esthetic, prevent dental disease and free patient from pain and discomfort.[4,5] In this respect, patient motivation is an important prerequisite for treatment success. A strategy for dental care should provide a framework for treatment; it should include targets and contingency options which should be determined from a knowledge and understanding of the relevant medical and dental history. It should also include patients' expectations and aspirations in the context of their current attitudes and behavior and the cost consequences of treatment.[6] The plan may be divided into phases by way of a staircase approach with one clinical step being dependent upon the previous step.[5, 6] If difficulties occur in one of these steps or stages, a reappraisal of the treatment plan should be undertaken to assess its total viability. In this case report, the management of the patient's complex dental status was divided into phases which facilitated an understanding of the nature of the problem and the type and sequence of the treatment required for the most urgent treatment need to be attended first. All teeth that required endodontic treatment were completed prior to periodontal and prosthodontic procedures. This was in order to evaluate healing of endodontically treated teeth and the need for performing apicoectomy surgery on some endodontically treated teeth before proceeding with periodontal and crown lengthening surgery as previously planned.

Prosthodontic treatment was carried out for all the affected teeth simultaneously instead of dealing with one single tooth at

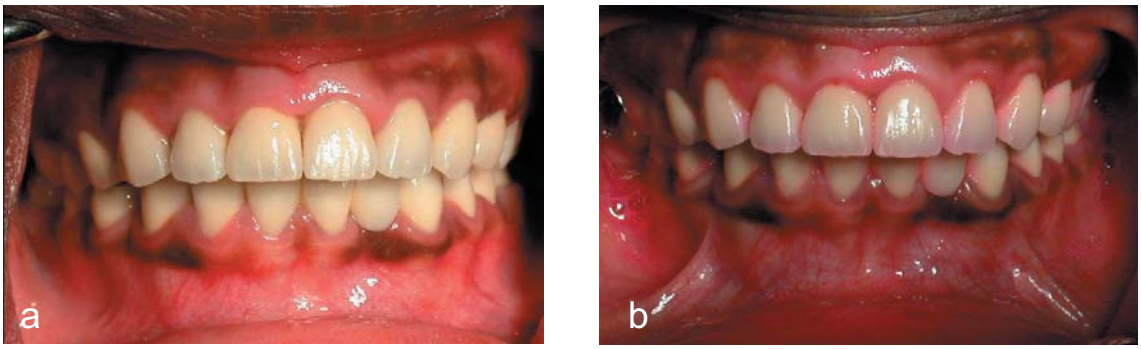

Fig . 7. Phase IV - Recall and maintenance. (a). One month recall. (b). Three- month recall.

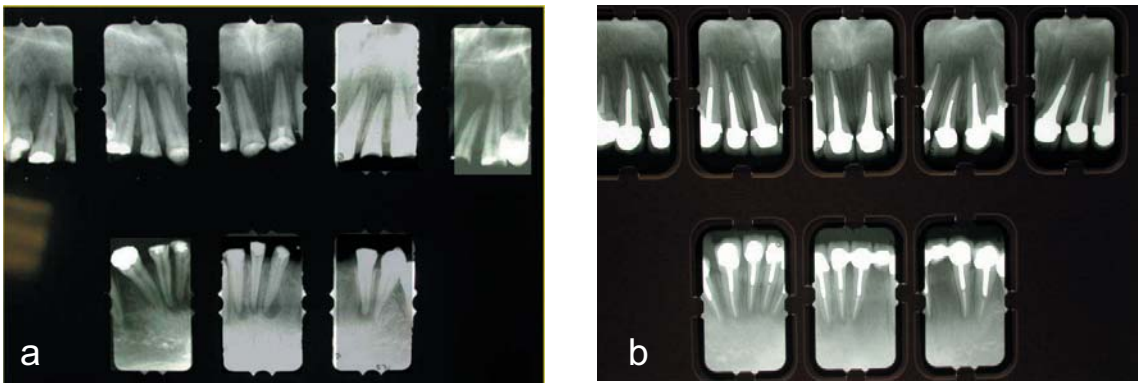

Fig. 8 a&b. Radiographs of upper and lower teeth before and after treatment.

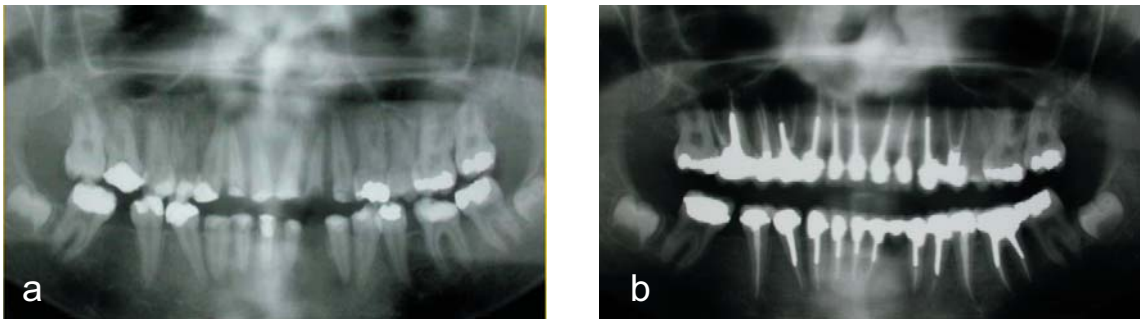

Fig. 9 a&b. OPG radiographs before and after treatment.

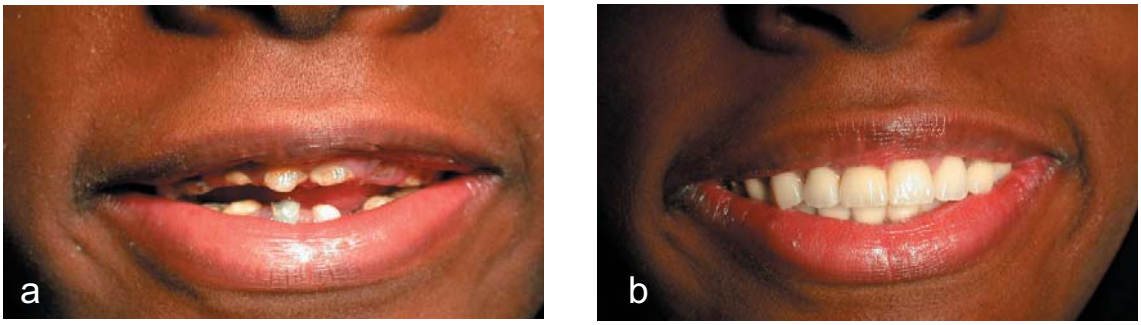

Fig. 10 a&b. Patient's smile before and after treatment.

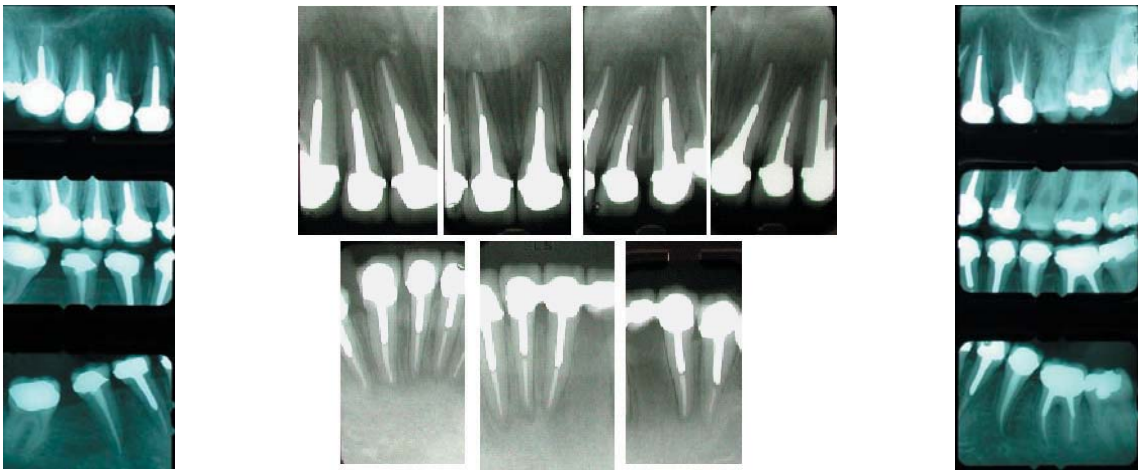

Fig. 11. Radiographs at one year recall.

Fig. 12. Intraoral and patient smile photographs at one year recall.

a time. This saved time and effort during the preparation for the cast post and core, and for obtaining final impression as well as during the completion of the laboratory work. In this case report, it was found that the implementation of treatment phases added more prediction and success rate of treatment outcome for both patient and the clinician.

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