



BACKGROUND

Detailed planning of any surgery is critical if a successful outcome is expected. Different methods have been reported in the literature for planning implant surgeries that involve bone reduction and immediate loading. Conventional treatment planning, Digital or a mix of both have provided a tool for the prosthodontist and the surgeon to carefully plan and execute any surgery.

OBJECTIVE

The purpose of this report is to demonstrate a digital technique for planning implant surgery and immediate loading for a patient that as a conventional denture and requires extensive bone reduction.

CASE HISTORY/TECHNICAL STEPS

A 52 year old female presents with complete edentulous maxilla, lower natural dentition #17-31. Patient is skeletal Class II with a high smile line. Patient was wearing a temporary complete upper denture (Fig 4.B). An old photo of the patient (Fig 4. A) demonstrates high smile line. No bone reduction was done after extraction of upper teeth.

A CBCT was taken for the patient and the denture. The denture was also scanned using an intra-oral scanner (Fig 1.A). A Digital wax up was done on the existing denture using Exocad software (Fig 1.A&B), prototype denture was 3D printed and tried in patient's mouth prior to the surgery to evaluate esthetics and function (Fig 4.C).

Implant surgery was planned digitally using Co-Diagnostic software (Fig 1.4), a stackable surgical guide and temporary PMMA prosthesis was fabricated (Fig 2). After surgical removal of the bone and placement of implants by the surgeon, Multi-unit abutments and temporary cylinder were seated. Temporary PMMA prosthesis was seated on the guide and picked up using PMMA Material (chairside).

The prosthesis was removed from patient's mouth and adjusted, finished and polished in the lab to provide smooth surfaces. The prosthesis was then delivered. Access openings were closed with cotton and pink composite. Occlusion was checked and adjusted, as necessary.

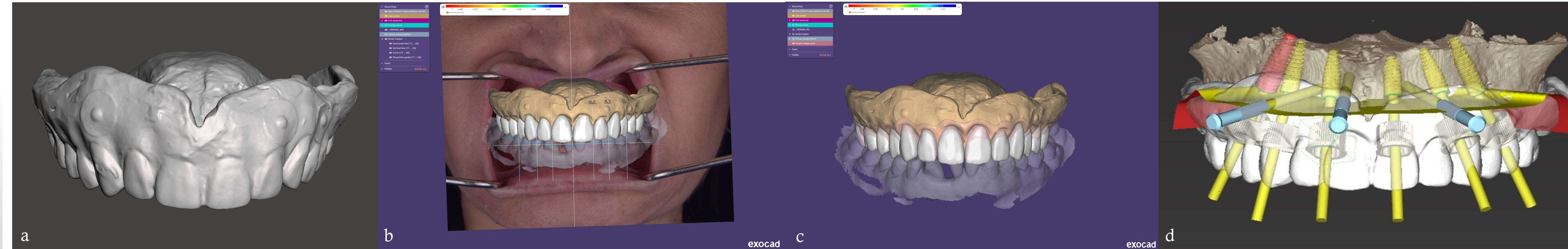


Fig 1. Digital wax-up and treatment planning of the implant surgery

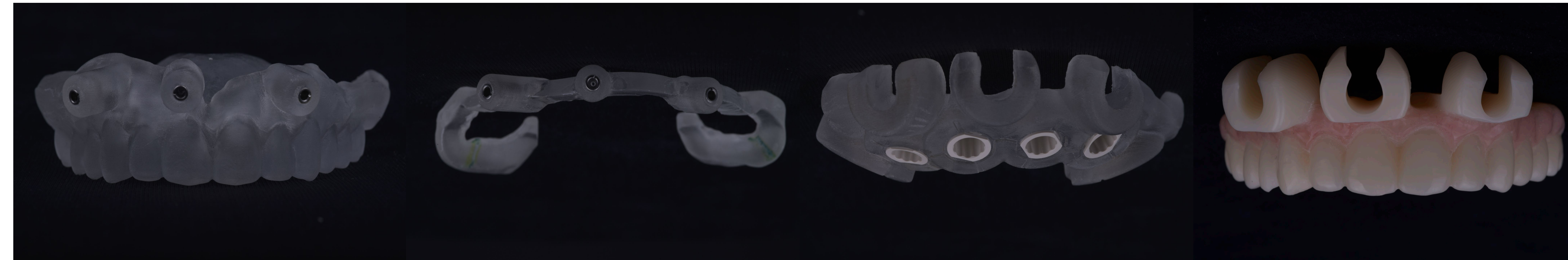


Fig 2. Stackable guide and prosthesis fabricated using 3D printer and milling machine

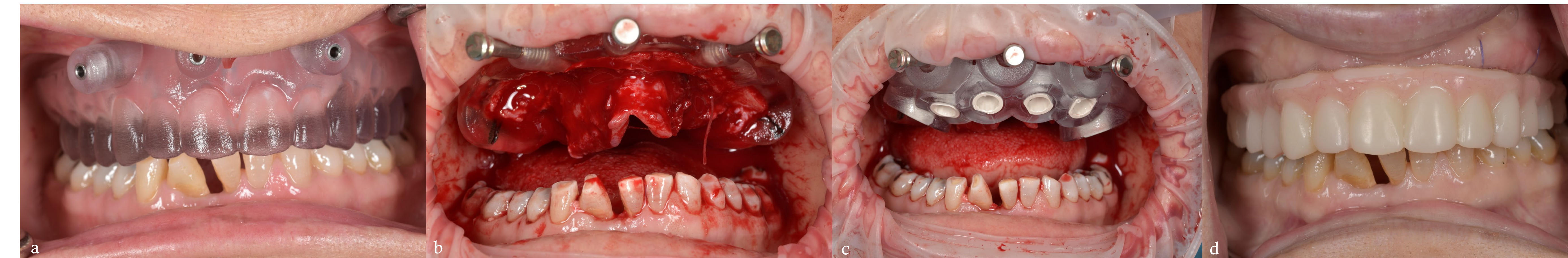


Fig 3. Implant surgery



Fig4. Portrait photos natural dentition, existing denture, prototype prosthesis and temporary fixed prosthesis.

DISCUSSION

An existing conventional denture with poorly arranged teeth can still be used as a reference to quickly fabricate a more esthetic prototype using digital technology. The prototype can be tried in patient's mouth to verify function and esthetics in addition to obtaining patient's feedback.

A stackable surgical guide can then be designed using an implant planning software. A milling machine or a 3D printer can be used to fabricate the guide and prosthesis.

Digital technology can facilitate any surgical procedure. However, the surgeon must be aware of its limitations and proper handling to avoid any damage to the anatomical structures and to acquire better outcomes.

SUMMARY

A case report of Implant surgery and immediate loading using digital technology was presented. Several software programs were used to facilitate the process of planning and performing the surgery.

ACKNOWLEDGMENT

Thank you to Implant Genius for their help and support. They provided the printed surgical guide and milled PMMA prosthesis.

References:

Please scan QR code below for references

