Use of Computerized Implant Planning in Head & Neck Oncology Patients: A case report

Z. Al Moman M. Patel, P. J. Nixon Restorative Department Leeds Dental Institute, Leeds, LS2 9LU, email: zmomani@hotmail.com

INTRODUCTION
Reconstruction in head and neck cancer patients continues to be a surgical, reconstructive, and prosthetic challenge.
The ablative nature of the surgery required to treat Head and Neck cancer patients leads to significant problems with facial aesthetics, mastication, and speech. One of the main challenges in dental implant rehabilitation of oncology patients is the difficulty of positioning of the implants within surgically altered oral anatomy.
Computer assisted implant placement may provide a means with which to control placement of implants with reasonable accuracy provided that this is carried out by an experienced clinician.
A clinical study showed a mean lateral deviation on coronal and apical ends of implants were 1.4mm and 1.6 mm respectively when using SimPlant system (materialise Dental, Leuven, Belgium). The aim of this poster is to describe computerized implant placement in dental implant rehabilitation of oncology patients.

CASE PRESENTATION
In February 2009, a 53 year old female was referred to LDI from Hull Royal Infirmary for implant assessment following resection and Radical Neck Dissection of SCC from Right alveolus.

C/I: patient was not happy with the appearance of her missing teeth and she had difficulties in speaking and eating. She had her surgery carried out in Oct 2008, and she did not have post operative chemoradiotherapy.

M/H: Crohn's disease
B/H: Non-smoker and drinks 2-3 units of alcohol per week
I/C: Good oral hygiene

- BPE 1 1 1
- Moderately restored dentition
  - The following teeth are missing L1, 2, 3, 4, 5, 6, 7, 8, and LL1.2.
  - Alveolar resection extended from LL2 to LR8 resulting in complete absence of sulci lingual and buccally.
  - The Occlusal Vertical Dimension (OVD) was maintained by the retained teeth in the lower left quadrant.

Radiographs: An OPT showed moderately restored dentition and reduced level of bone at the site of resection as expected due to surgical rim resection.

Diagnosis: Missing teeth post SCC resection in lower right alveolus

PBE-OPERATIVE PHOTOGRAPHS

Smile Line, reduced lower lip support
Anterior view of the edentulous area in relation to maxillary teeth
Occlusal view of the edentulous area

INVESTIGATION PHOTOGRAPHS

Radio-opaque stent made with the use of Ivoclar radio opaque teeth

Axial and sagittal CBCT views showing measurements of width and depth of bone in the LR1. Note the angle between bone and prosthetic teeth requiring angled implant abutment

Anterior and lateral views of 3D Reconstruction using Simplant system

TREATMENT PHOTOGRAPHS

Simplant surgical stent
Preparing Implant Osteotomy site using simplant surgical stent

POST-OPERATIVE PHOTOGRAPHS

Smile Line
Scanora showing implant positions
Anterior view of the implant supported bridge in occlusion
Occlusal views of implanted supported bridge

DISCUSSION
Dental implant rehabilitation in Head and Neck cancer patients is considered to be challenging due to surgically altered anatomy.

This poster illustrates how computerized implant planning may be useful in implant dental rehabilitation of oncology patients to produce a fixed prosthesis that will result in improving their overall quality of life.

REFERENCES