

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

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## 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<sup>1</sup>

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<sup>2</sup>

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)<sup>3</sup>  
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/O: 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  
S/H: Non smoker and drinks 2-3 units of alcohol/week  
I/O: Good oral hygiene

- BPE

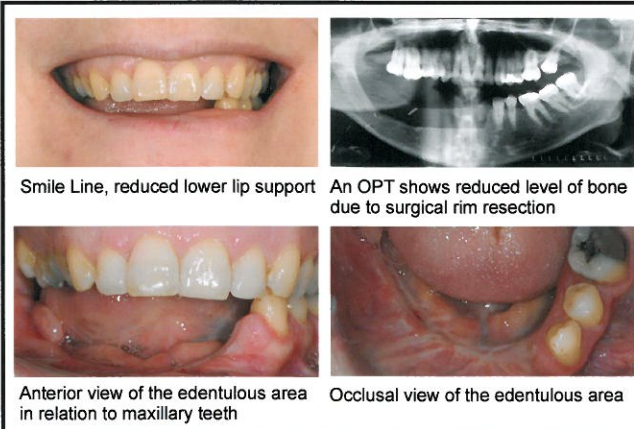
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- Moderately restored dentition  
- The following teeth are missing LR1,2,3,4,5,6,7,8, and LL1,2  
- Alveolar resection extended from LL2 to LR8 resulting in complete absence of sulci lingual and buccally  
The Occlusal Vertical Dimension (OVD) was 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

## PRE-OPERATIVE PHOTOGRAPHS



## MANAGEMENT

The following treatment options were discussed with the patients:  
1. A Cr-Co lower partial denture  
2. Implant supported bridge, including free gingival graft  
Patient opted the latter option

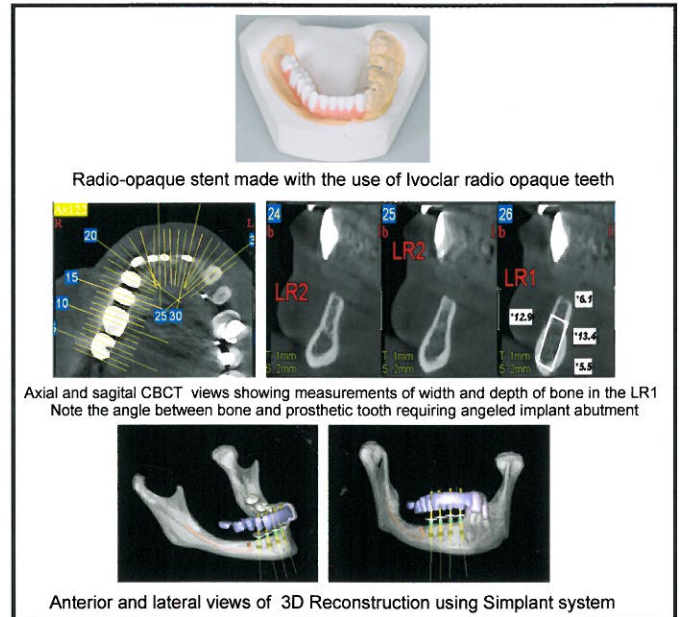
In management of this patient the implant treatment included the following:

Articulated study models  
Radio-opaque stent made with the use of Ivoclar radio opaque teeth  
A CBCT was carried out with the radio-opaque stent in situ  
Free gingival graft

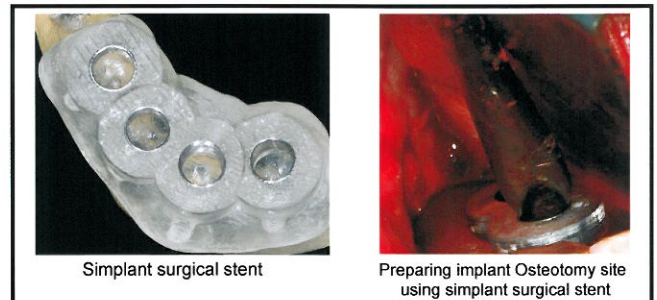
Details of CBCT analysis was transferred to Simplant program then 2D and 3D reconstruction was carried out

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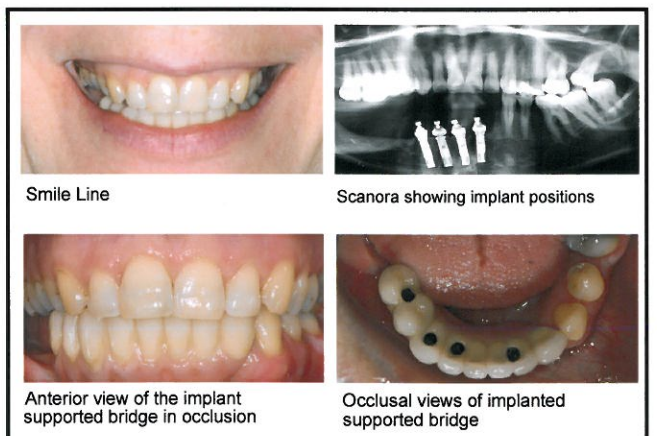
## INVESTIGATION PHOTOGRAPHS



## TREATMENT PHOTOGRAPHS



## POST-OPERATIVE PHOTOGRAPHS



## 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

- 1) MA McGhee, SJ Stern, D Callan, et al: Osseointegrated implants in the head and neck cancer patient. Head Neck(1997) 19:659-665
- 2) M Sielegger, B. Schneider, R. Mischkowski, et al: Use of an image-guided navigation system in dental implant surgery in anatomically complex operation sites. J Craniomaxillofac Surg (2001) 29, 276-281
- 3) F. Valente, G. Schirolli, A. Sbrenna: Accuracy of Computer-Aided Oral Implant Surgery: A Clinical and Radiographic Study. Quintessence Int. 2009;24(2):234-242