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Introduction

The CONE BEAM (CB) technique allows three-dimensional (3D) imaging of the skull. The basic concept inheres cone-like x-rays traversing the object of interest, read by a 2D detector and finally reconstructed as 3D data sets.

Implant Surgery

- Implant planning
- Surgical guides
- Implant evaluation

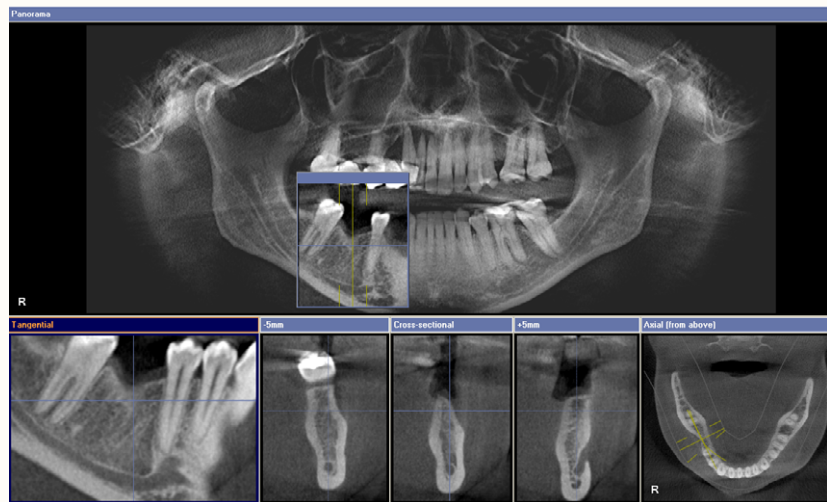
Oral Surgery

- Root resections
- Extraction of third molars

CMF-Surgery

- Trauma
- Orthognathic
- TMJ

The aim of this study was to identify and quantify possible influences from patients' parameters on the CB image quality.



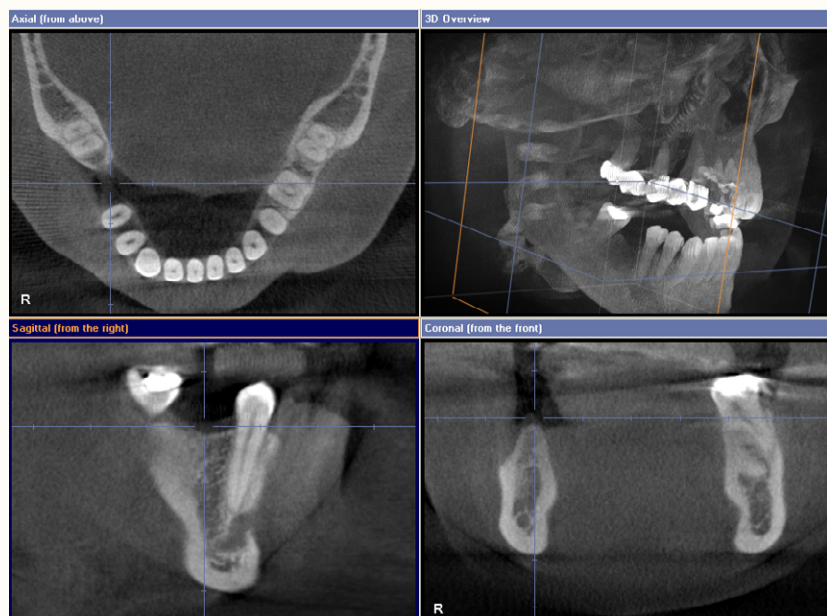
Materials and Methods

Image quality of 6 anatomic structures in 38 CB scans was evaluated:

- canalis mandibularis
- foramen mentale
- foramen incisivum
- TMJ
- nasal fossa
- sinus fossa floor

Five clinically experienced observers graded image quality with ratings from 1 (excellent) to 5 (insufficient). CB Scans were performed by a new 3D radiological device (Sirona GmbH, Bensheim, Germany).

Scan parameters were: 90 kV tube voltage and an energy dose of 28 mAs. Visualisation ranks were correlated on basis of Spearman's rho with patient's age, body-mass-index (BMI) and amount of metal in the oral cavity.



Results

The median rating for all investigated anatomic structures was between excellent (1) and good (2) (fig. 1).

A slight correlation between image quality of the investigated structures and patient's age could be found, with a tendency to better

visualisation of the younger people (fig. 2). The BMI and amount of metal material in the oral cavity had no significant influence on the visualisation of the evaluated anatomical structures (fig. 3 + 4).

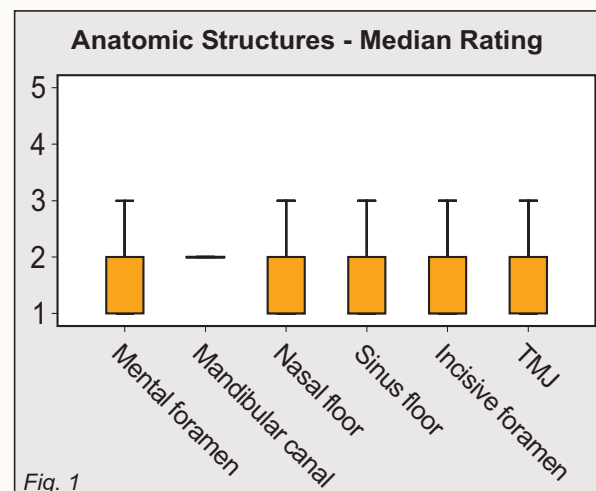


Fig. 1

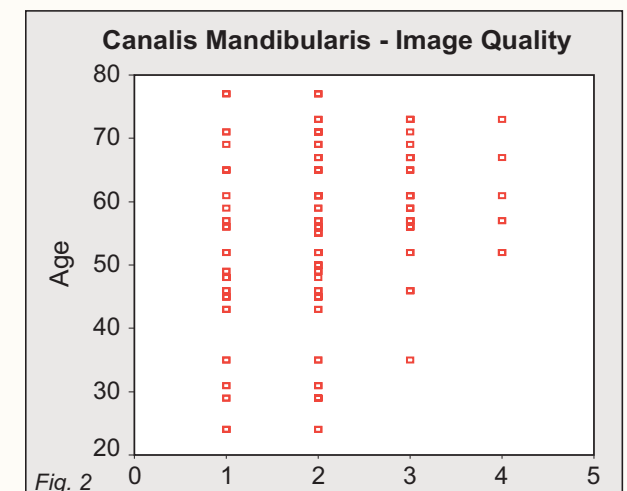


Fig. 2

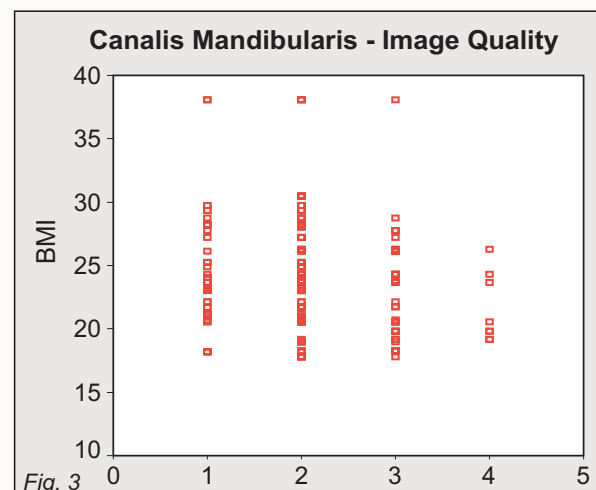


Fig. 3

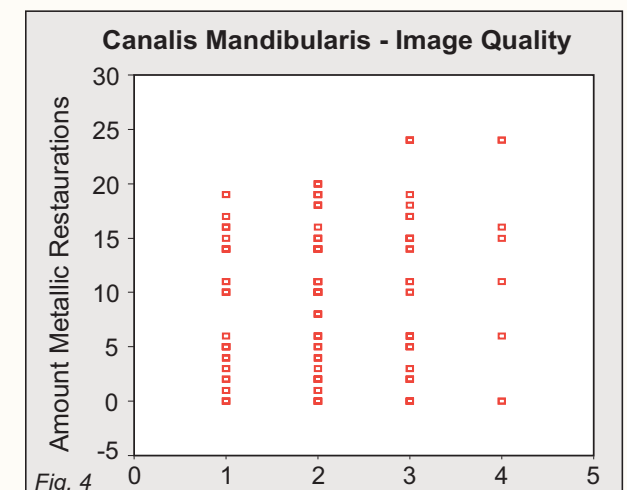
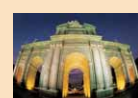
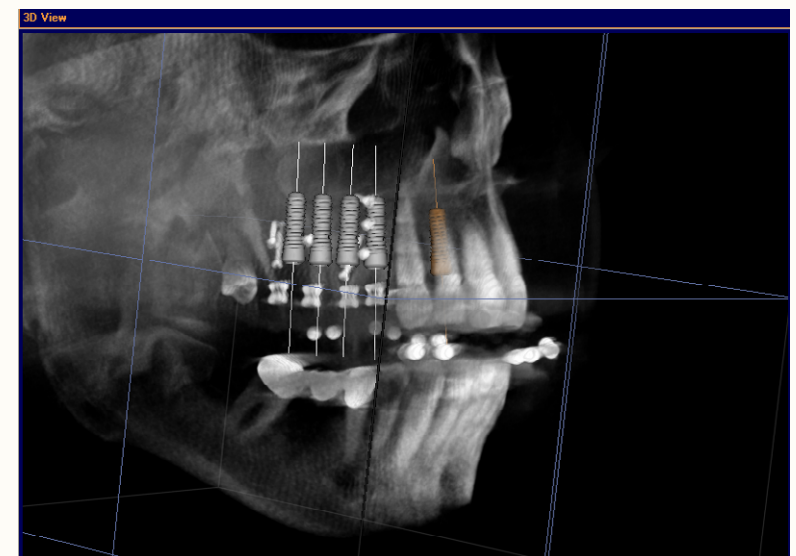


Fig. 4

Conclusion

For the investigated structures, CB imaging quality is independent from patients BMI and metallic dental restoration status. Image quality can become slightly decreased in elder patients, with no diagnostic limitations.

Radiographic CB imaging allows evaluation of anatomical structures for implant prosthetic planning independently from BMI and the amount of metallic dental restorations.



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