

原文題目(出處)：	A Method of Gauging Dental Radiographs during Treatment Planning for Dental Implants The journal of contemporary dental practice 2007 September ; (8)6:082~088
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內文：

#### << Introduction >>

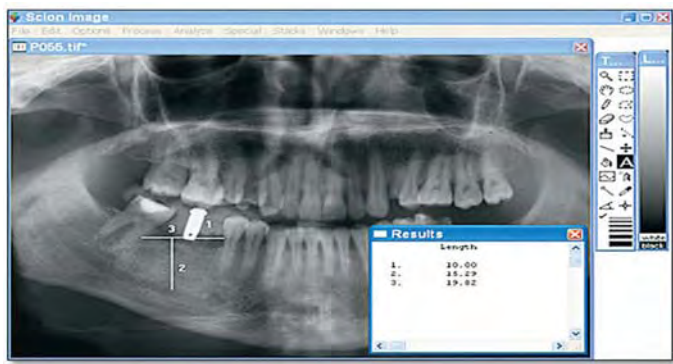
- Radiography examination is indispensable for comprehensive diagnosis and treatment planning of dental implant therapy.
  - ✓ Morphology & anatomical structure
  - ✓ Dimension, number & orientation of implant
- The goal of radiographic examination :
  - ✓ Appropriate radiographic equipment → more information about jawbones.
  - ✓ Minimal p't radiation & cost.
- 63.8% of dentists prescribed only panoramic & periapical radiographic for implant assessment.
  - provide preliminary evidence of the general data in M-D & vertical dimension.
  - inherent distortion : amount of alveolar bone in horizontal plane.
- Computer assisted analysis system : high level of accuracy & reliability
  - ✓ Convert the pixel size of the images to a linear scale based on the distortion factor computed from the known dimension of R-O object.
  - ✓ No cost & no special equipment is needed.
  - ✓ Conjunction with cross sectional CT → locate anatomical landmarks

#### << Methods & Materials >>

- Image Analysis Software :
  - ◇ Research services branch of national institutes of health of the United States.
    - ✓ Macintosh computer → NIH image
    - ✓ Windows → Scion image
  - ◇ Function :
    1. contrast enhancement
    2. density profiling
    3. smoothing & sharpening
    4. edge detection
    5. spatial convolution
    6. measure area, mean, centroid, length and angle
- Digitizing & calibrating conventional radiographs
  - ◇ Calibrate by using a radiopaque reference device of known dimension.
    - ✓ Extracted tooth or root, dummy implant, spherical metal ball( most recommended to avoid the distortion )



- ✧ Using a custom fabricated stent to hold it in place.
- ✧ Care should be taken to :
  1. Place the guide close to the implant site
  2. Perpendicular to the long axis of X-ray beam
- ✧ Placing more than one guide near the area of interest is advised.
- ✧ The amount of distortion for this guide will be used as the standard to measure the linear and area measurement in the pano and periapical radiographs.



- ✧ Applied to conventional tomographic images → anatomical landmarks & bone quantity in B-L dimension.



<< Discussion >>

- The rapid adoption of these sophisticated techniques into routine practice might lead to a significant increase in the radiation burden on patients without a proper risk-benefit analysis.
- European Association of Osseointegration :  
The use of cross-sectional imaging based on clearly identifiable needs & clinical requirements.
- To date, there's a lack of consensus regarding guidelines for pre-implant radiographic planning.
- Intraoral and panoramic radiography → Low radiation dose  
Computerized tomography → High radiation exposure

<< Summary >>

- The technique described here is useful to obtaining important information without additional cost or exposure to radiation.
  - inferior alveolar canal
  - floor of maxillary sinus
  - space between adjacent tooth roots
  - height & width of alveolar crest

題號	題目
1	關於mental foramen在X光片判讀之敘述，下列何者錯誤? (A) Mental foramen約位於齒槽脊到下顎骨下緣的中間 (B) Mental foramen約位於第二小白齒的根尖處 (C) 常會被誤認為第二小白齒的根尖的根尖病變 (D) Mental foramen周圍都是緻密的齒槽骨，故X光片上可看出完整的外型
答案(D)	出處：Oral Radiology Principles and Interpretation (fifth edition) P138.
題號	題目
2	有關環口攝影術鬼影(ghost image)的敘述下列何者正確? (A) 物體位於X光光源與旋轉中心之間 (B) 所造成的影像之比例通常近似原物體 (C) 成像位置較真實影像低 (D) 此種影像無法投射於X光片上
答案(A)	出處：Oral Radiology Principles and Interpretation (fifth edition) P 2 0 7~2 0 8