DMDI NEWS

dental & medical diagnostic imaging

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"The use of OPG and Lateral Ceph imaging in the treatment planning of sleep apnoea" a Professional Development session presented by Dr Les Janovic, B.D.Sc (Melb), L.D.Sc (Vic), at DMDI on 04 May 2011.

Dr Janovic has a special interest in Snoring, Sleep Apnoea and Temporo Mandibular Joint disorders; and receives referrals from specialists.

Radiographic analysis

Lateral Ceph Analysis – measurements of interest include (and shown on Figure 1)

Distance from Sella Turcica to Hyoid bone

- 110 to 120mm
- Greater than 120mm negative for MAS

- Mandibular Plane to Hyoid bone
  - Ideal distance 15mm
  - Greater than 25mm negative for MAS treatment
- Mandibular Angle
- Greater than 42° 100% failure

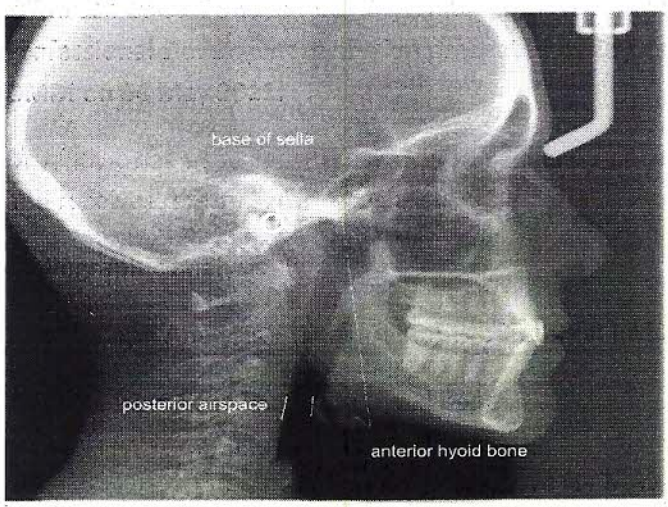

Figure 1 Lateral Ceph with notated anatomy shown (© DMDI)

OPG

- Dr Janovic explained he has encountered significant undiagnosed and untreated disease found on routine examination.
- He recommends all new patients have a routine OPG and repeat this every 5 years.

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Cephalometrics in Obstructive Sleep Apnoea (OSA) patients –

Advantages include that this imaging is easy and fast to perform; is non-invasive; low cost and standardised.

The limitations include that cephalometric imaging is two dimensional; static; no evaluation of the soft tissue is possible; and the patient is awake and usually upright.

Ephalometrics – the limitations thereof

Imaging is two dimensional ; static; no evaluation of the soft tissue is possible; and the patient is awake and usually upright.

Cephalometric craniofacial morphology in OSA patients includes -

Elongated soft palate; increased tongue size; decreased posterior airway space (normal 11 + or - 1mm); elongated pharynx; inferior hyoid bone position; and an extended and forward head posture.

Research -

(1) Cephalometric changes in adult morphology

Kollias and Krogstad research (1999) was conducted on 26 males and 24 females. They noted changes between 22 and 42 years. It was found that males demonstrated more caudally extended tongue mass; greater increase in tongue area; and a thicker soft palate.

(2) Cephalometric changes in adult pharyngeal morphology

Tourme's research (1991) concluded a latent descent of the hyoid bone, especially in males with increasing age. The research proposed that there is a compensatory mechanism to maintain upper airway patency as increase in tongue bulk.

Acknowledgements

- Margaret Skinner ;Chris Robertson ;
- Ruth Kingshott; David Jones and D Robin Taylor (refer to Dr Janovic for further details)

Possible action of Mandibular Advancement Splints (MAS)

MAS in situ subjects were able to obtain significant anterior superior elevation of the hyoid bone thus achieving a more normal hyoid bone position.

This suggests a significant improvement of AHI was achieved during sleep by raised hyoid position or maintaining the existing hypo pharyngeal dimension as measured while awake.

MAS as a treatment option

Rationale for use of MAS in Snoring and OSA

- Tongue, soft palate, lateral pharyngeal walls and mandible interact to control airway size, and mandibular advancement induces complex changes in these structures resulting in improved airway stability.
- Progressive mandibular advancement produces variable adaptive changes in the velopharyngeal and oropharyngeal regions.

Efficacy

- Reduces the number of obstructive breathing events in a significant number of patients with mild to moderate OSA.
- Significant improvement in both arterial oxygen saturation levels and arousal frequency during sleep.

- The impact of such treatment on symptomatic day time sleepiness is less well defined within the literature

Patient suitability for MAS in Snoring and OSA

- Patients with supine related problem will be most suitable because MAS opens up the airways in a lateral direction
- Women are more suitable for MAS than men

The benefits of MAS include its simplicity, portability, lack of noise and need for a power source, and potential lower cost.

MAS side effects

Short term side effects may include - excessive salvation; dry mouth; pain in teeth or muscles; tooth mobility; posterior or anterior open bite; pain in TMJ - Unilateral or Bilateral; soft tissue irritation; and allergic reactions.

MAS long term side effects may include tooth movement and bite changes.

What is a MAS success?

MAS success is defined when a patient is able to successfully use the appliance; patient wakes up refreshed and is not tired during the day; on a repeat sleep study the oxygen saturation does not fall below 90%; AHI falls by at least half from the initial sleep study and is below 10.

Dr Janovic's reported his success rate is 60-70% for mild Sleep Apnoea patients and 70-80% for snoring patients.

The future includes -

- Development of new devices which better control tongue position.
- Current tongue retaining devises are poorly tolerated and are not as effective as they could be.

DMDI future PD sessions include -

- **Dr David Figdor, Endodontist**, to be held on 03 August 2011. Title to be confirmed.
- One Volume Viewer (OVV) training. Updated software and program changes in the OVV to be explained and discussed. Watch this space for the date.
- **Dr James Lucas, Paediatric dentist**, to be held on 05 October 2011. Title to be confirmed.
- Case presentation Workshop(s) - Dentists and Dental Specialists to present challenging and/or different cases for discussion. Date to be confirmed. Please advise Pamela if you would like to participate and/or present at such a Workshop.