

ORTHOPANTOMOGRAM

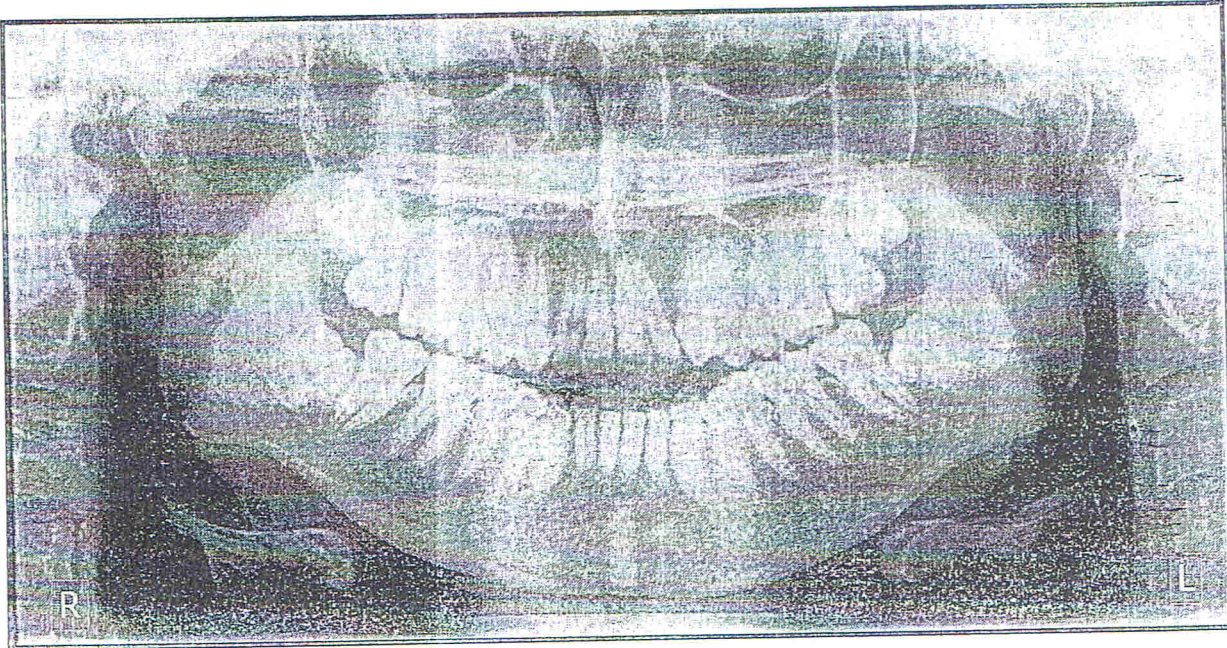


WHY RADIOGRAPHS?

Radiographs give the true picture regarding the underlying structure of the bone and associated structures. Radiographs are recommended for the following reasons:

1. Detection of pathologies associated with the teeth in particular and the jaws in general. These may include caries, periapical pathologies, odontomas, etc.
2. To determine the number, size and shape of the teeth.
3. To determine the exact eruption status, including path of eruption, of the succedaneous teeth.
4. For the calculation of total tooth material, i.e. the mesiodistal dimensions of the permanent teeth.

ORTHOPANTOMOGRAM



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ORTHOPANTOMOGRAM

- The orthopantomogram is considered an essential diagnostic aid and should be examined prior to undertaking any orthodontic treatment. It is not available routinely in dental clinics and the patient may require to be referred to special X-ray centers. The biggest advantage of this radiograph is that it provides visualization of a large area of interest to an orthodontist using a single radiograph.

- The orthopantomogram has an inherent disadvantage that it requires extra space and the equipment, which by itself is expensive, but the radiograph covers the complete dentition and the underlying skeletal structure with amazing clarity at a fraction of the radiation dose of a full-mouth IOPA protocol

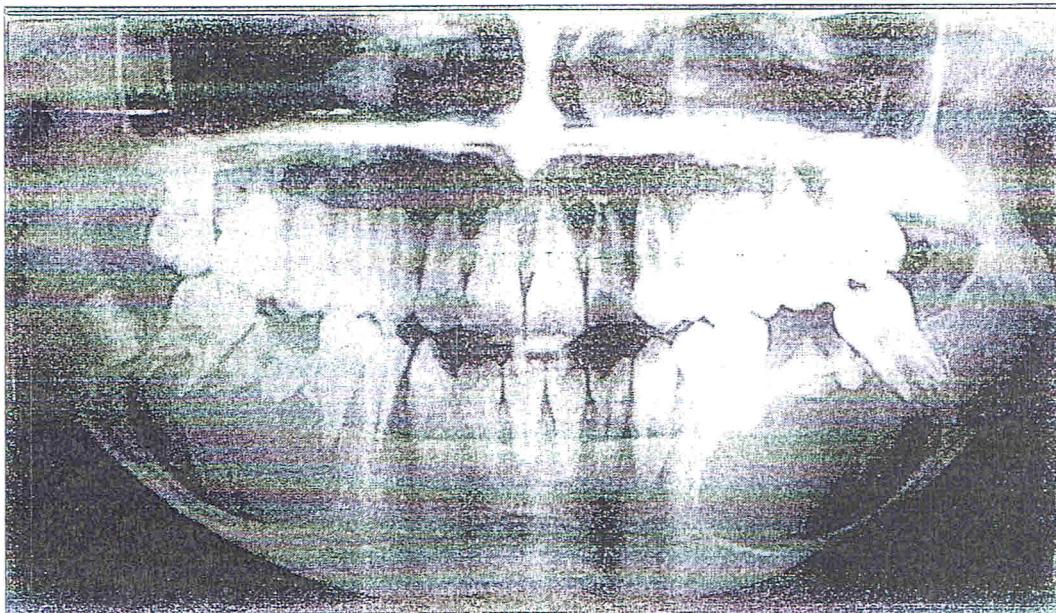
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INDICATION OF ORTHOPANTOMOGRAM

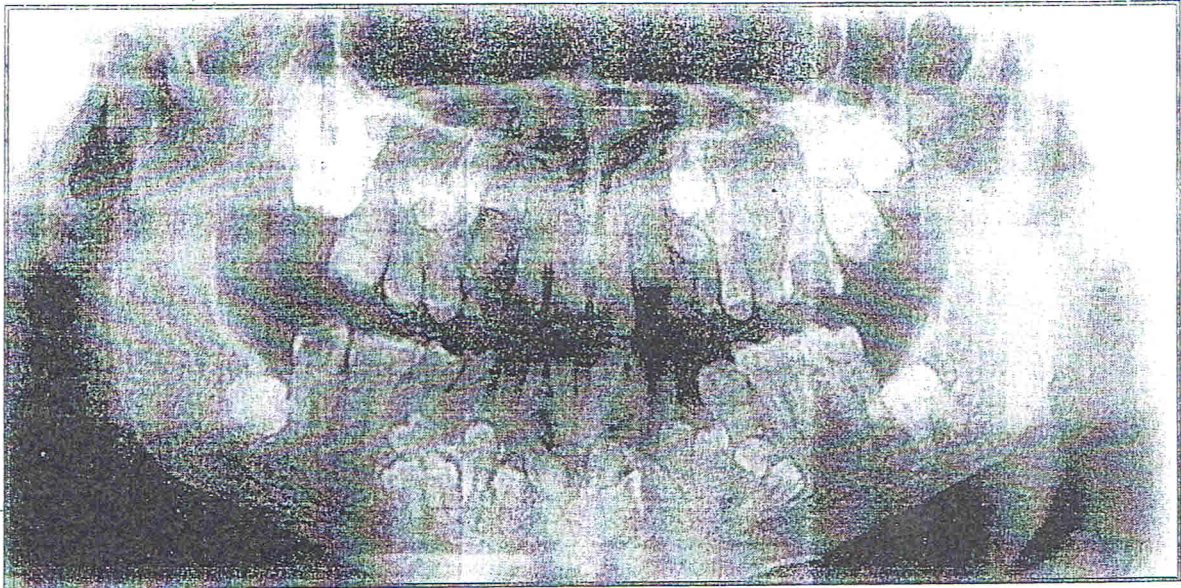
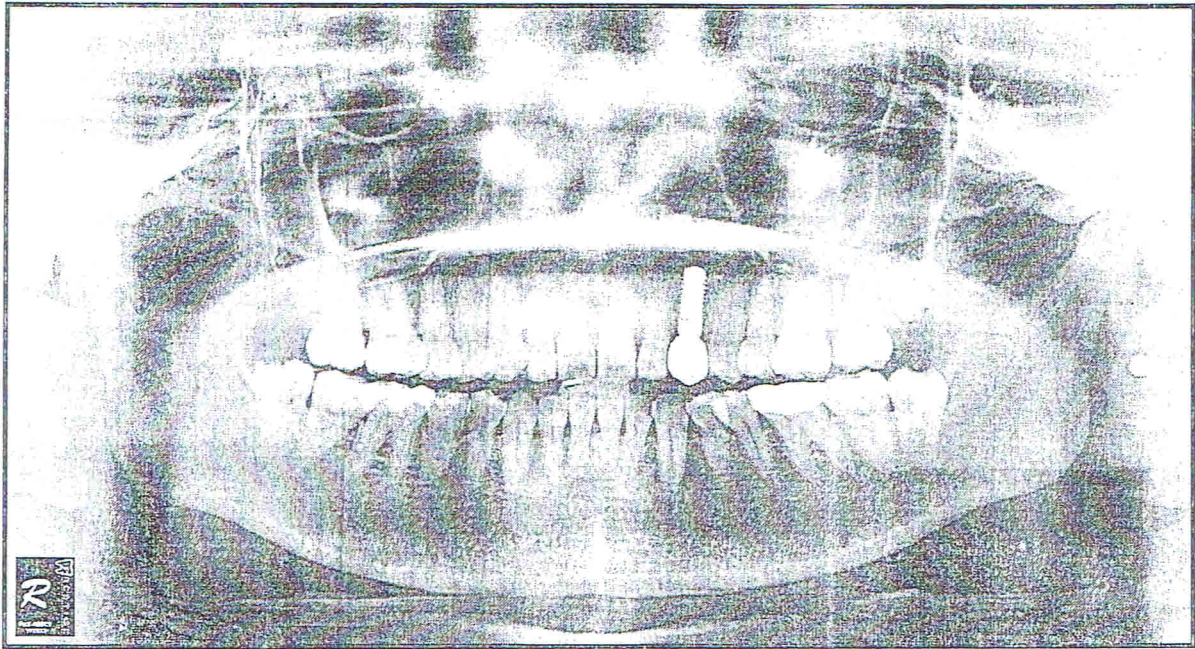
- To evaluate impacted teeth
- To evaluate eruption patterns, growth and development
- To detect diseases, lesions and conditions of the jaw
- To examine extent of large lesions
- To evaluate trauma, periodontal bone loss and periapical involvement.

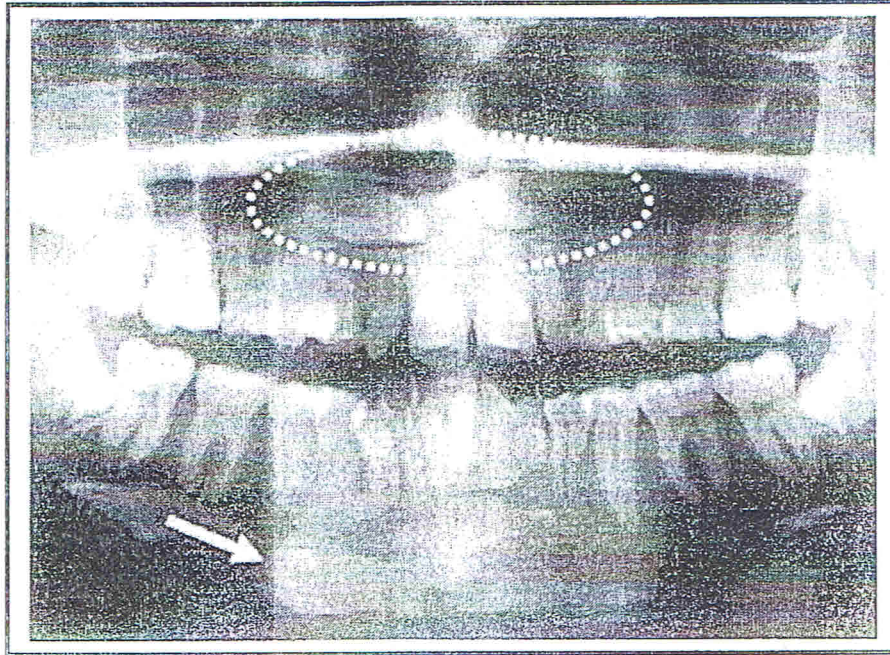
- patient education and case presentation
- Assessment for the placement of dental implants
- Orthodontic assessment. pre and post operative
- Caries detection especially in the inter-dental region.
- Diagnosis of developmental anomalies such as Cleido cranial dysplasia
- Carcinoma in relation to the jaws
- 12 • Temporo mandibular joint dysfunctions and ankylosis

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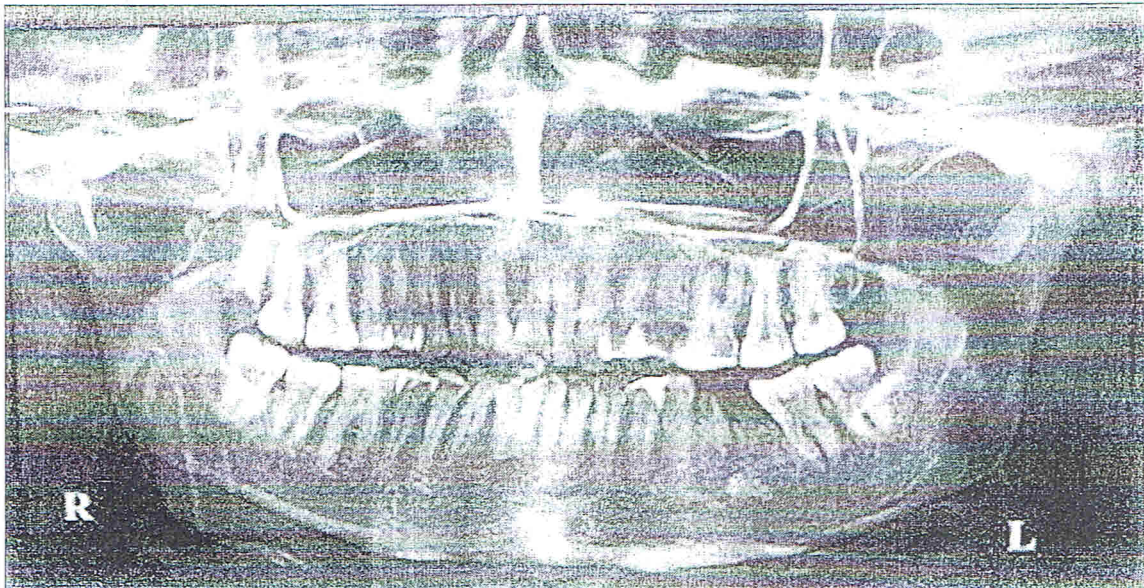


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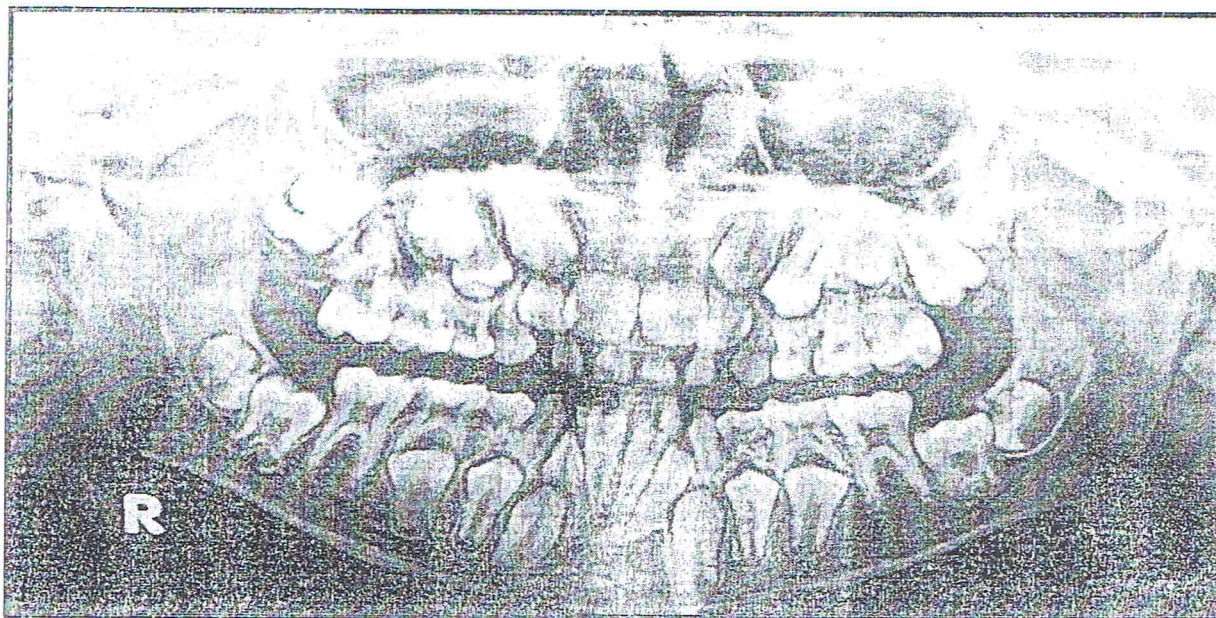




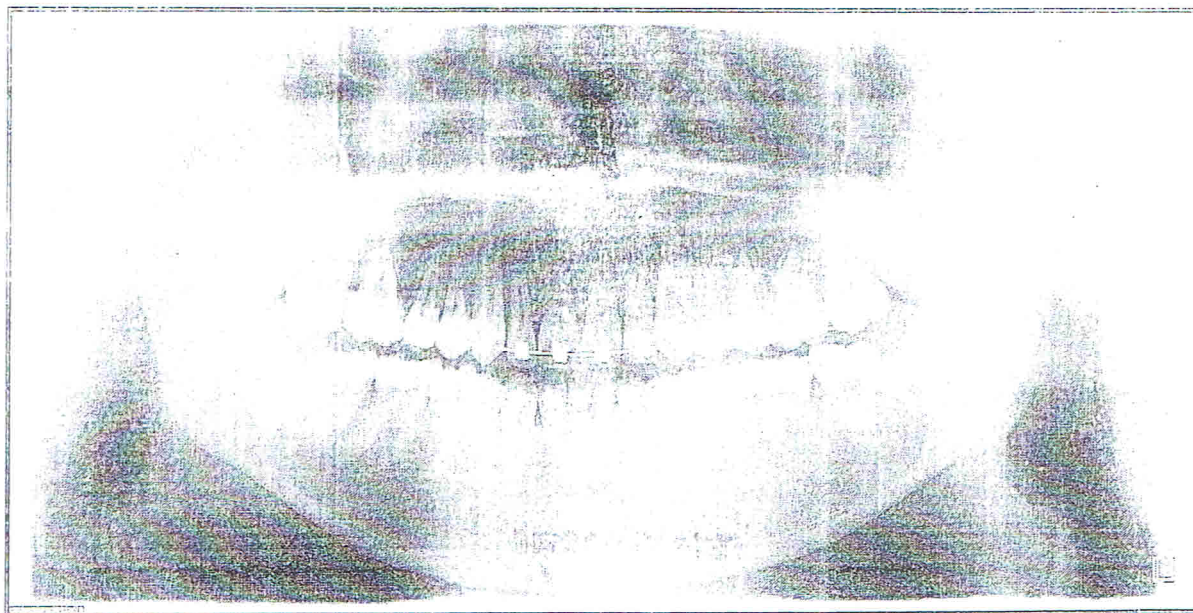
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ORTHOPANTOMOGRAM

Advantages of an orthopantomogram

1. A large anatomic area is visualized
2. The radiation exposure is low, less than that for four IOPAs
3. Patient cooperation is rarely a problem
4. Inter-operator variation is minimal

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Disadvantages of an orthopantomogram

1. Specialized equipment is required
2. Distortions, magnifications and overlapping of structures are a problem
3. Definition of structures is not as good as in IOPAs
4. IOPAs may still be required

INTRAORAL RADIOGRAPHS

The most frequently used views include:

- Intraoral periapical radiographs (IOPA)
- Bitewing radiographs
- Occlusal radiographs.

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INTRAORAL PERIAPICAL RADIOGRAPHS

- A full set of ten IOPAs was recommended before the advent of the orthopantomogram. They covered all the present teeth and the adjacent teeth. They are still ideal for the detection of anomalies related to changes in the size, shape and content of the tooth structure and/or the laminadura and/or the periapical region.

- The main disadvantages of the IOPAs includes the increased radiation that a person has to undergo to cover the full complement of his/her teeth. Also at times the patient is not cooperative, and may not allow the repeated placement of films in the desired manner in his/her mouth.
- With the increased use of OPGs, the use of IOPAs has reduced considerably. Yet, they are ideal for localized views in relatively small areas of interest because of the excellent clarity that they allow.

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IOPAs are recommended for

1. Adult cases with periodontal disease
2. Evaluation of third molars before, during and after treatment
3. Detection of congenital absence of teeth or supernumerary teeth
4. Evaluation of the dental health of the deciduous and/or permanent teeth periapically
5. Detection of pathologic conditions in the early stage especially dental caries

IOPAs are recommended for

6. Assessment of traumatized teeth after an injury (especially root fractures)
7. Determination of the size, shape and relative position of unerupted permanent teeth
8. Determination of dental age of the patient by assessing the length of the roots of permanent unerupted teeth and the amount of resorption of primary teeth as in dental age analysis
9. Calculation of the total space analysis
10. Detection of root resorption, before during and after treatment.
11. Final appraisal of the dental health after orthodontic treatment

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BITEWING RADIOGRAPHS

Bitewing radiographs are used primarily to

1. Record the coronal portion of the maxillary and the mandibular posterior dentition.
2. They are ideal for the detection of proximal caries and the study of interdental bone height in these areas.
3. They may also help in the detection of the secondary caries under restorations
4. Detect the overhanging margins of proximal restorations.

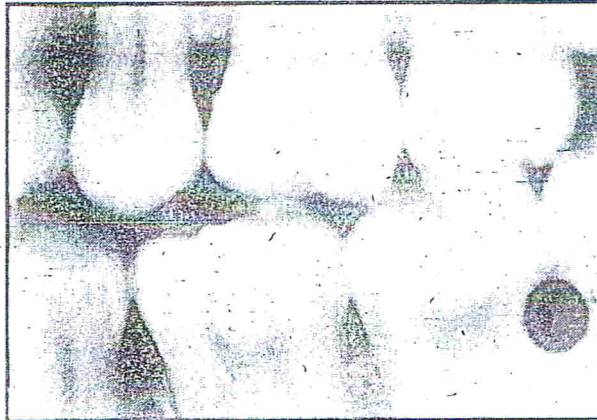


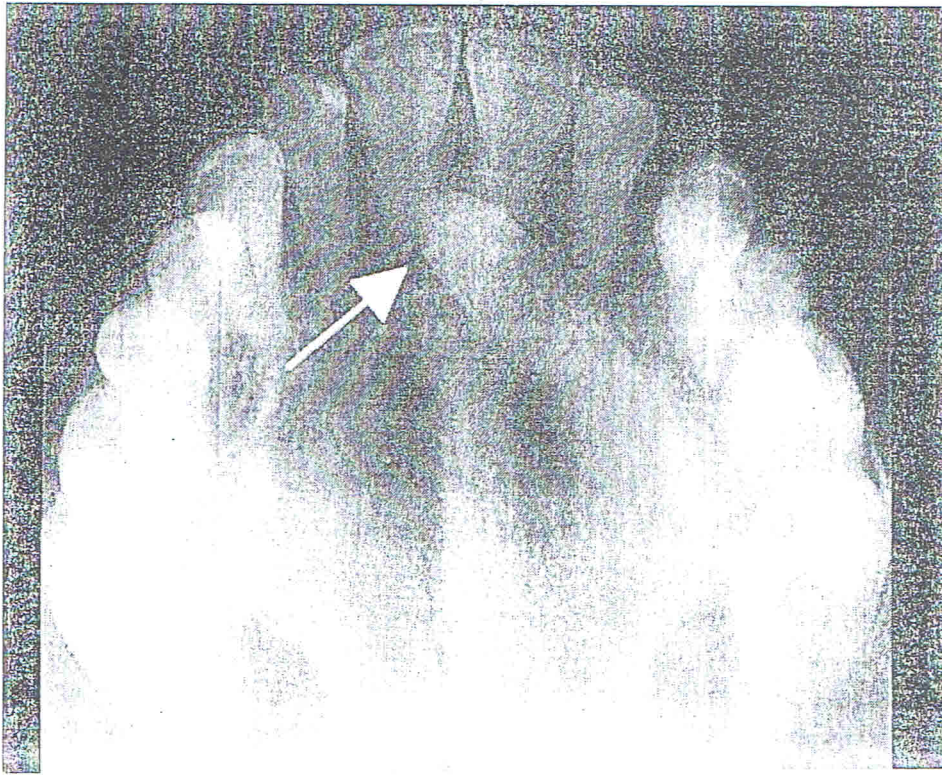
Fig. 10.3: Bitewing radiograph

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OCCLUSAL RADIOGRAPHS

Intraoral occlusal radiographs are of special interest to an orthodontist when

1. Dealing with impacted teeth
2. For the study of the labio-lingual position of the root apices in the anterior segments of the maxillary and the mandibular dentition.



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FACIAL PHOTOGRAPHS

Facial photographs are the easiest to store, occupy the least amount of space and provide immense information to the clinician as well as the patient. Photographs can be,

- Extraoral photographs
- Intraoral photographs

EXTRAORAL PHOTOGRAPHS

- Extraoral photographs are considered essential records and should be taken before starting treatment and after completion of treatment. The information provided by these photographs is invaluable and this is one record that the patient can really relate to. American Board of Orthodontics has laid down guidelines for these photographs as far back as 1993

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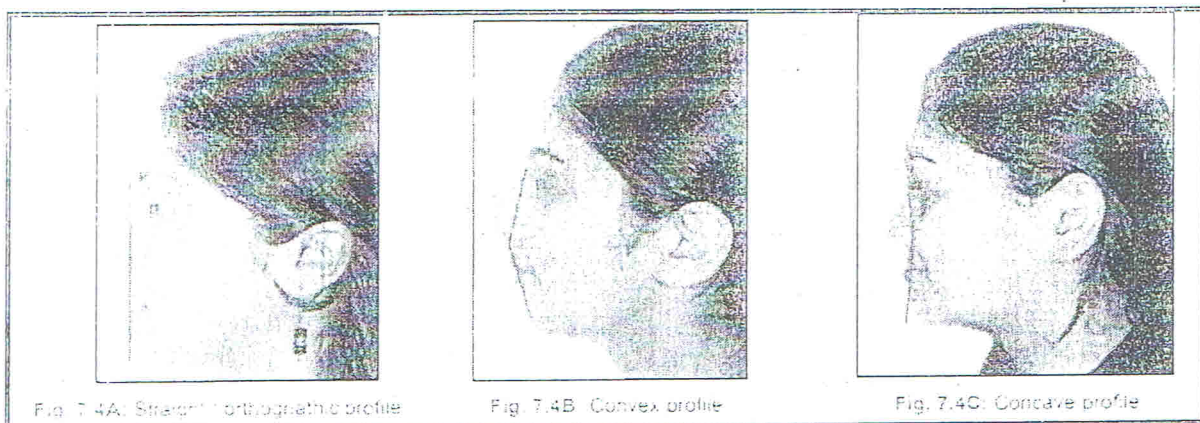
Uses of extraoral photographs

1. Evaluation of craniofacial relationships and proportions before and after treatment
2. Assessment of soft tissue profile
3. Proportional facial analysis
4. Identifying patients
5. Monitoring of treatment progress
7. Invaluable for longitudinal study of treatment and post retention follow-up
8. Detection and recording muscle imbalances
9. Detecting and recording facial asymmetry

American board of orthodontist's requirements for extraoral photographs

- Quality, standardized facial photographs either black and white or color prints
- Patients head oriented accurately in all three planes of space and in FH plane
- One lateral view, facing right, serious expression, lips closed lightly to reveal muscle imbalance and disharmony
- One frontal view, serious expression
- Optional—one lateral/profile view and/or frontal view with lips apart
- Optional—one frontal view, smiling
- Background free of distractions
- Quality lightening revealing facial contours with no shadows in the background
- Ears exposed for purpose of orientation
- Eyes open and looking straight ahead glasses removed

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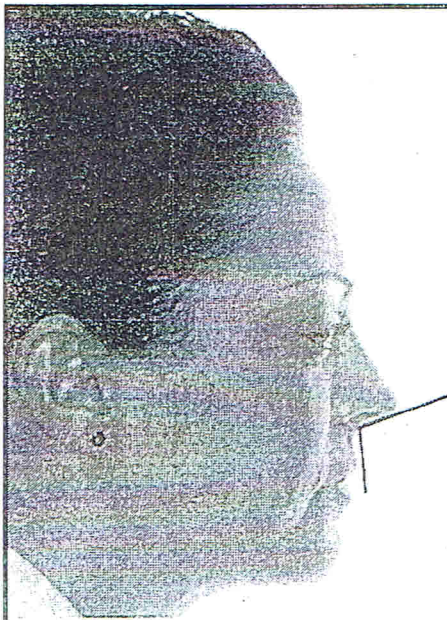


Figure 6.8 Normal nasolabial angle.

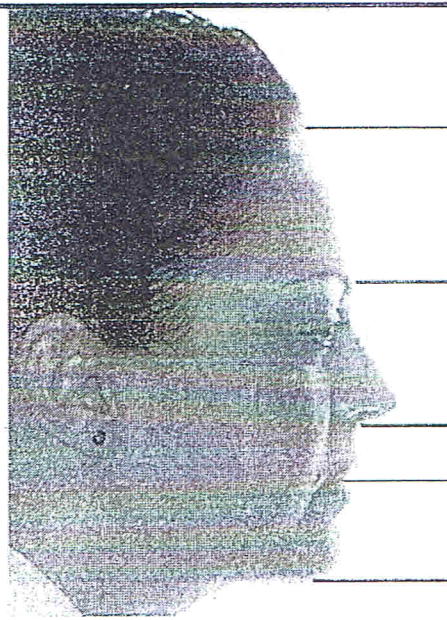


Figure 6.9 Facial profile divided into thirds.

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Fig. 7.3. Facial asymmetry

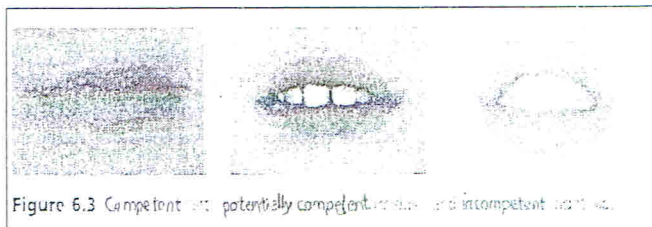
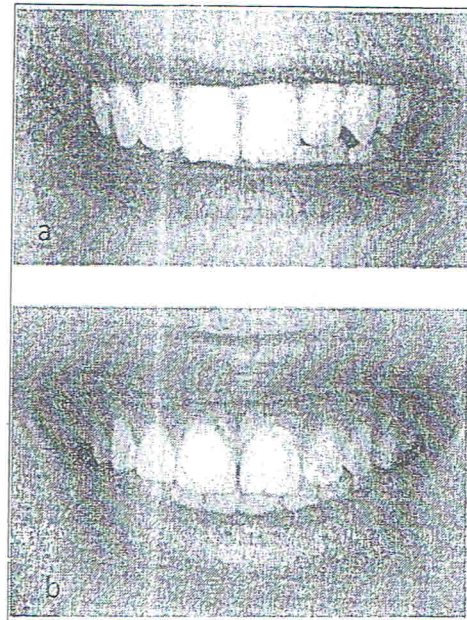


Figure 6.3 Competent lips, potentially competent lips, and incompetent lips.

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- a. Normal upper incisors shown on smiling
- b. increased upper incisors shown on smiling

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For facial deformity cases or cases likely to undergo orthognathic correction it is recommended that all the four photographs mentioned above should be complemented with the following:

- Frontal facial in maximum intercuspal position, lips sealed
- Left and right, facial profile in maximum intercuspation, lips sealed
- Left and right, facial profile, lips relaxed
- Left and right three-quarter view, smiling or frontal facial, smiling.

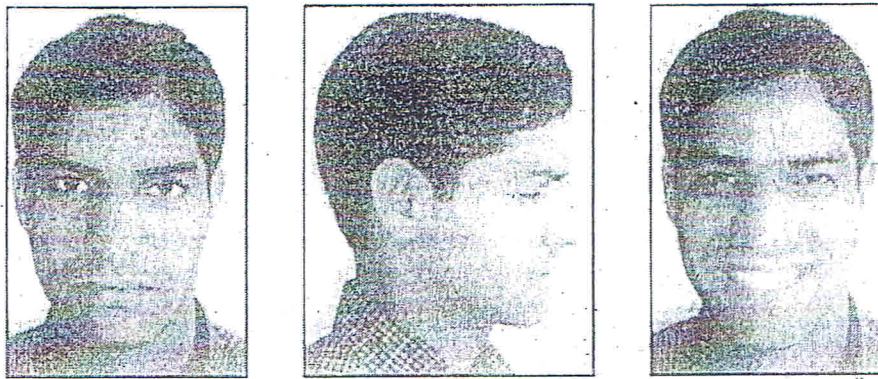


Fig. 10.5A: Extraoral photographs—frontal, profile and frontal smiling

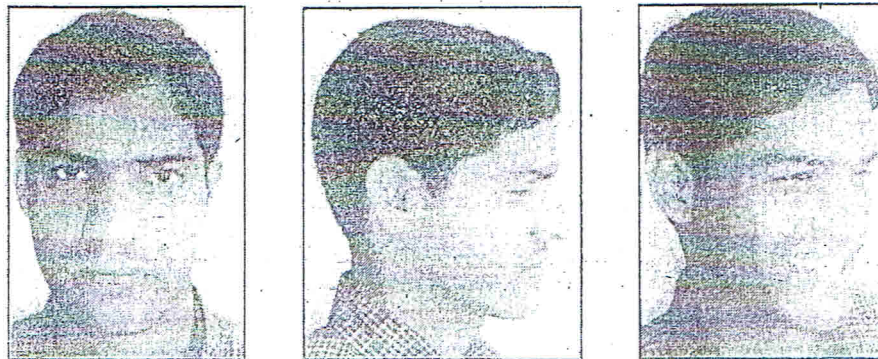
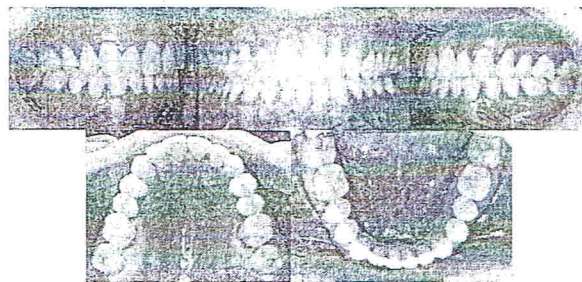


Fig. 10.5B: Extraoral photographs—frontal, profile and three-fourth smiling

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INTRAORAL PHOTOGRAPHS



Uses of intraoral photographs

1. Record the structure and color of enamel
2. Patient motivation
3. Assessing and recording health or disease of the teeth and soft tissue structures
4. Monitoring of treatment progress
5. Study of relationships before, immediately following and several years after treatment, to improve treatment planning

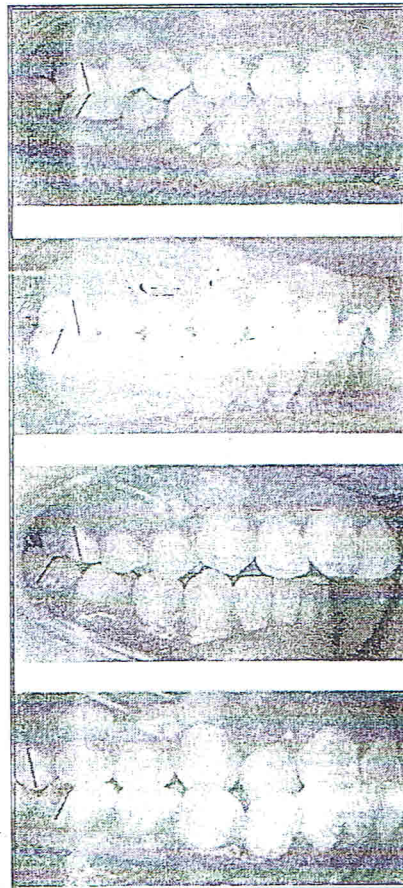
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The American board of orthodontist's guidelines for intraoral photographs

1. Quality, standardized intraoral color prints
2. Photographs should be oriented accurately in all three planes of the space
3. One frontal photograph in maximum intercuspation
4. Two lateral views—right and left
5. Optional—two occlusal views—maxillary and mandibular
6. Free of distractions—retractors, labels etc.
7. Quality lightening revealing anatomical contours and free of shadows
8. Tongue should be retracted posteriorly
9. Free of saliva and/or bubbles
10. Clean dentition



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