

DENTAL PHOTOGRAPHY*

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Dental photography in Queensland is going through an exciting period with more awareness by the dental profession of the importance of high quality photographic records in their everyday practice. They are recognising the value of photographs in diagnosis, legal protection, patient education, teaching and as permanent before and after records.

Dental photography is included in the postgraduate courses conducted by the Dental School in Brisbane and I receive many requests from practising dentists for advice and assistance with their photographic equipment.

Camera System

The camera system used consists of a 35 mm single lens reflex camera body (NIKONF), a Novaflex Bal-s bellows, a 105 mm short-mount automatic lens operated by a twin cable release and two Mecablitz 180 flash units. (Fig. 1).

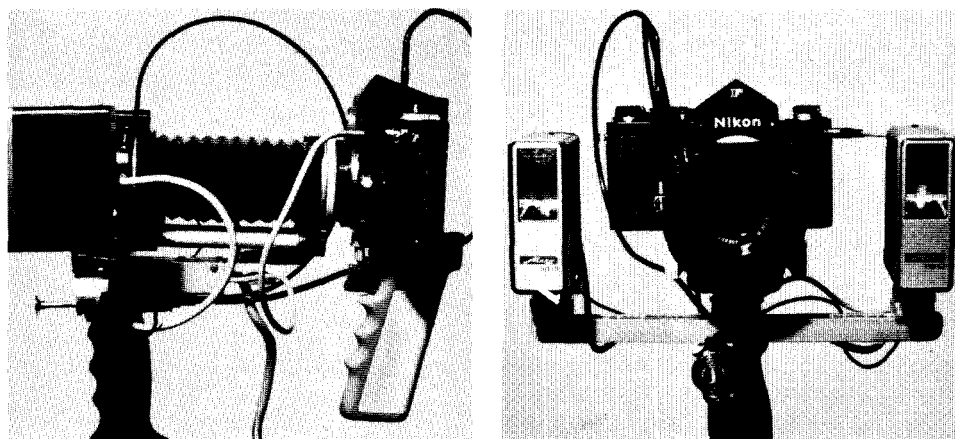


Fig. 1: Camera unit used.

Taking each item separately, I will give reasons for the selection of the above-mentioned equipment. The 35 mm format was chosen because of its compactness and ease of handling. The single lens reflex system which gives through-the-lens viewing is essential for close-up work.

The choice of lighting is governed by the choice of bellows. It is here that I have parted from what most articles on the subject recommend. These articles recommend the use of only one flash unit in a rotating mount close to the lens. This system requires the rotation of the flash depending on the angle of view. I use two flash units mounted on a cross bar attached to the front board of the bellows. The flash units are some 8 cm on either side of the lens. The units can be slid in towards the lens for deep posterior views such as the tonsillar areas. With the use of two flashes and a clip on diffuser, excellent full face and profile views are obtained. (Fig. 2).

* Based on a paper presented to the M.P.I.A. Convention, Melbourne, March 1974.

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Fig. 2: Full face and profile photographs.

The two flash units are operated by a 240 volt customized shoulder pack. This system gives a recycling time of 1.5 seconds as well as a unit which requires no regular maintenance or replacement. By using two pistol grips, one on the camera body and the other under the front of the bellows, the whole unit is well balanced and a pleasure to use. Due to the fixed position of the flash units a non-automatic bellows had to be used as the automatic type does not allow the camera body to be rotated through 90 degrees for vertical views.

The ideal focal length for intraoral work is 105 mm. This prevents any distortion and gives 1:1 magnification at full extension on the Novaflex bellows. The lens used is a 105 mm short-mount Novaflex Noflexar automatic lens. This lens obtains its automatic diaphragm operation from the use of a twin cable. The 105 mm lens also gives a good working distance of approximately 20 cm at 1:1 magnification.

I have found that 'Kodachrome 25' colour film with a speed of 25 ASA is the ideal film for intraoral work. It gives an operating aperture of approximately f/18 at 1:1 magnification.

Dental Retractors, Mirrors and Accessories

Having dealt with the camera and lighting, the second most important factor is the proper use of dental accessories such as mirrors, retractors and tongue depressors. Many otherwise good slides are ruined by the poor use of retractors or an improper angle of the mirror.

Retractors

It is difficult to make good intraoral pictures without the use of retractors. Their proper use is essential not only to see the area well but to open up the oral cavity for proper lighting.

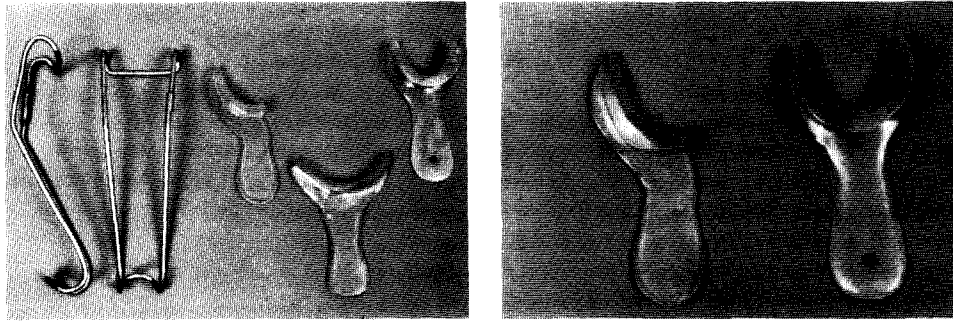


Fig. 3: Retractors.

The single-end clear plastic retractor, which can be modified in size and shape, together with the Hu-Friedy wire retractor will accommodate all requirements. (Fig. 3).

An important factor in the use of retractors is how pressure is applied. The most common fault, after having placed the retractors on the lips, is to retract by pulling the handle back towards the ears. This results in the buccal mucosa being pressed back onto the buccal surfaces of the teeth. For posterior pictures this restricts good viewing. The handles should be held straight out or slightly forward, thus opening the buccal vestibules (Fig. 4).



Fig. 4: Correct position of retractors for anterior photographs.

Mirrors

Front surface mirrors of varying shapes enable you to photograph any area of the mouth. I use glass mirrors that have been rhodium plated on both sides. These were obtained from the Evaporated Metal Products Company, New York. They are standard shapes sold as the University of Washington Set. (Fig. 5).

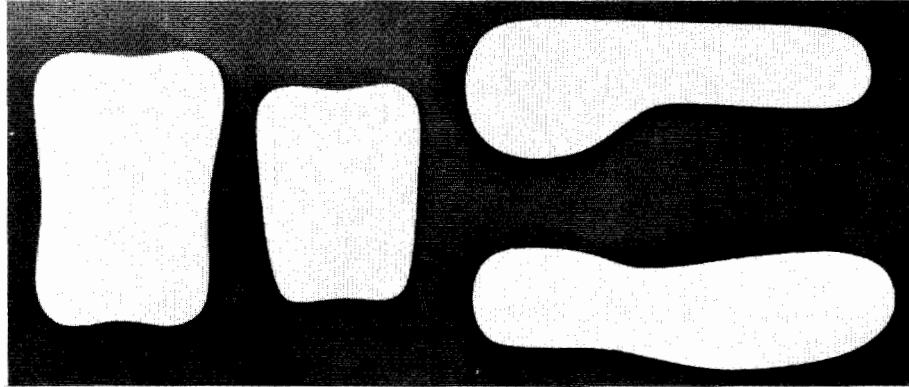


Fig. 5: Front surface mirrors.

The mirror on the left can be used for maxillary and mandibular arches. Note one end is larger than the other enabling you to cover varying arch sizes, the smaller mirror being used for children. The two on the right are used for posterior and buccal views. The larger rounded end being used for lingual views of the upper and lower anterior teeth.

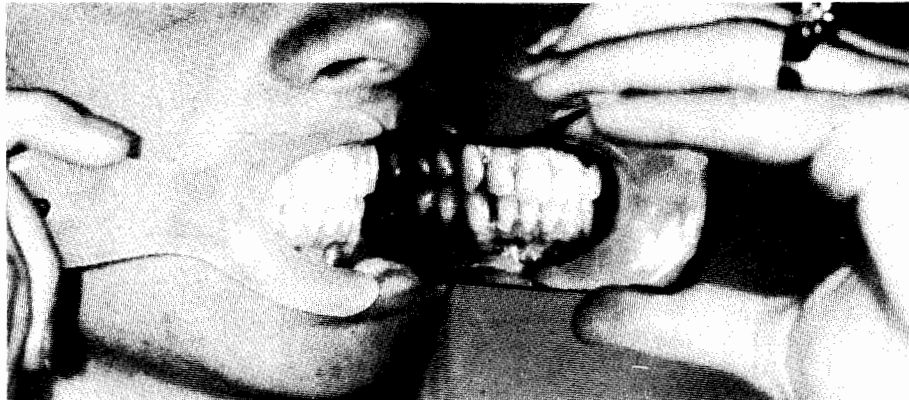


Fig. 6: Buccal mirror view.

Buccal Mirror Views

The buccal mirror view is often the hardest to photograph. The mirror should always be placed distal to the area to be viewed and held as close to a 45 degree angle to the buccal surface as possible. I have found that by using only one plastic retractor on the opposite side to keep the lips parted and using the mirror as the retractor on the other side, it is easier to obtain the 45 degree angle required. The only image that should be seen on the film is the mirror image. This allows reversal of the slide when mounting, thus resembling a direct view. (Fig. 6).

Maxillary Arch

The two plastic retractors used for this view have been modified by cutting off one wing of each — this allows for free movement of the mirror. The patient's head is slightly tilted back. The retractors are placed on the upper lip and held by the assistant. The mirror, having been warmed to prevent fogging, is positioned so as to rest on the distal cusps of the last tooth, with the mirror centred in the arch and held at about a 45 degree angle by the patient if possible. Place the fingers as far forward on the mirror as possible to keep them from appearing in the photograph. (Fig. 7).

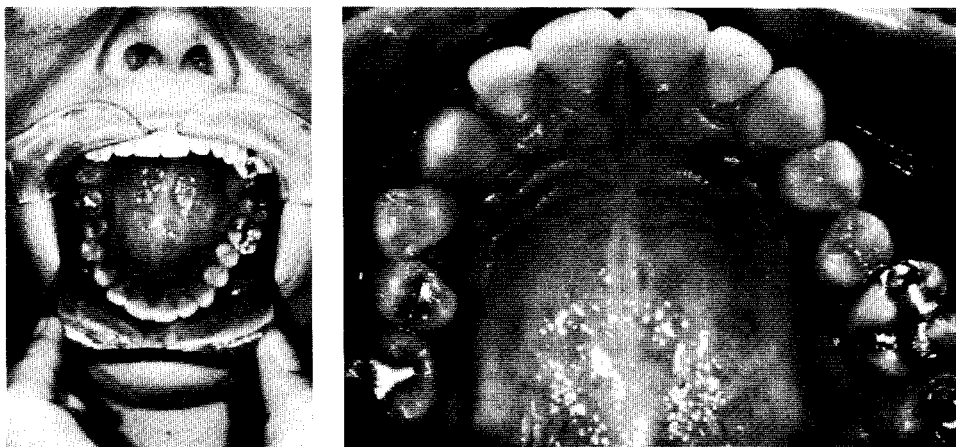


Fig. 7: Maxillary arch view.

Mandibular Arch

Much the same procedure is used as for the maxillary arch except that the head must be tilted back far enough to allow this arch to be parallel with the floor when the mouth is wide open. For this position it is easier for the patient to hold the retractors on the lower lip and the assistant to hold the mirror in position. (Fig. 8)

Lingual Views of the Upper and Lower Anterior Teeth

The plastic half-retractors are placed on the lip to be retracted and the larger rounded end of the buccal mirror is placed one tooth distal of the area to be photographed. (Fig. 9).

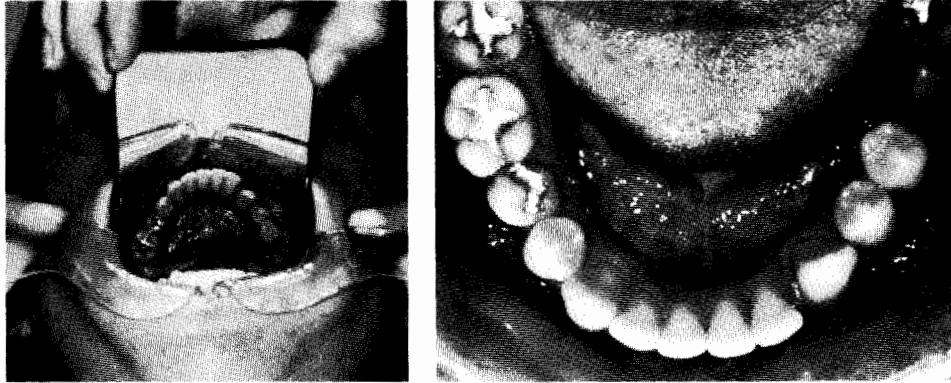


Fig. 8: Mandibular arch view.

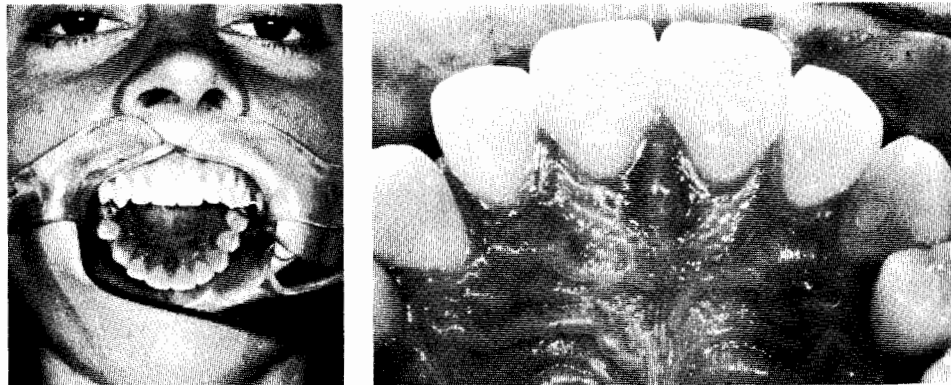


Fig. 9: Lingual view of the upper anteriors.

If the mirror is held at too steep an angle, a view of the nostrils will also be included. (Fig. 10).



Fig. 10: View of the nostrils due to steep mirror angle.

Mandibular Posterior Lingual Area

The mirror is placed diagonally across the floor of the mouth. The distal end nearly touches the last molar and the mesial end nearly touches the cuspid on the opposite side. (Fig. 11).

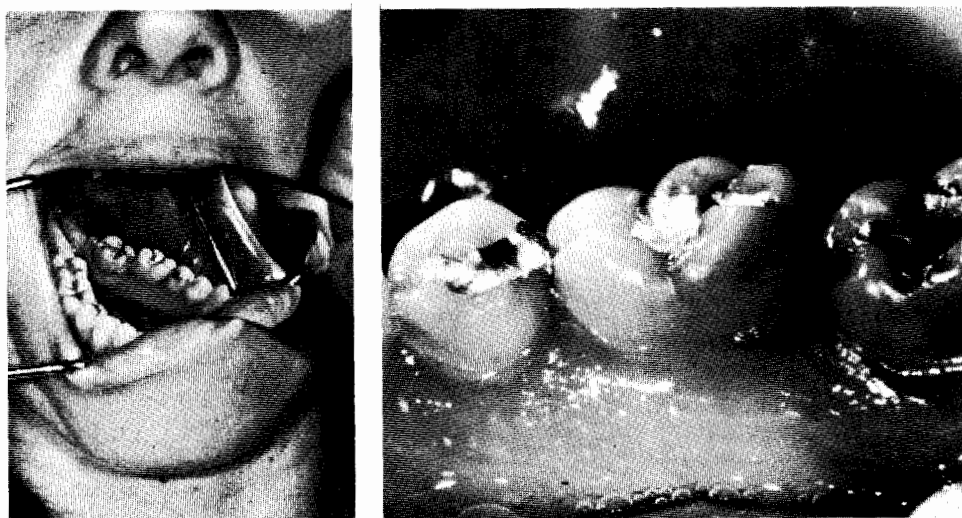


Fig. 11: Mandibular posterior lingual view.

Maxillary Posterior Lingual View

Again the mirror is placed slightly diagonally across the mouth. (Fig. 12).

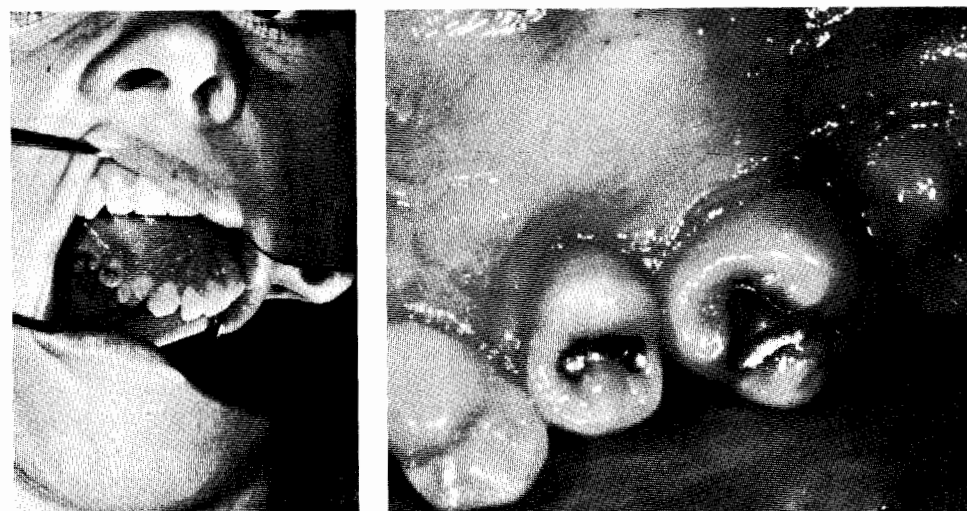


Fig. 12: Maxillary posterior lingual view.

Tongue Depressors

When it is necessary to depress the tongue or hold it to one side of the floor of the mouth, a regular tongue blade or dental hand mirror can be used very satisfactorily. The buccal mirror also acts as a tongue blade when a lingual view is wanted. I find that a dental hand mirror is best to depress the posterior of the tongue for views of the uvular or tonsillar area (Fig. 13).

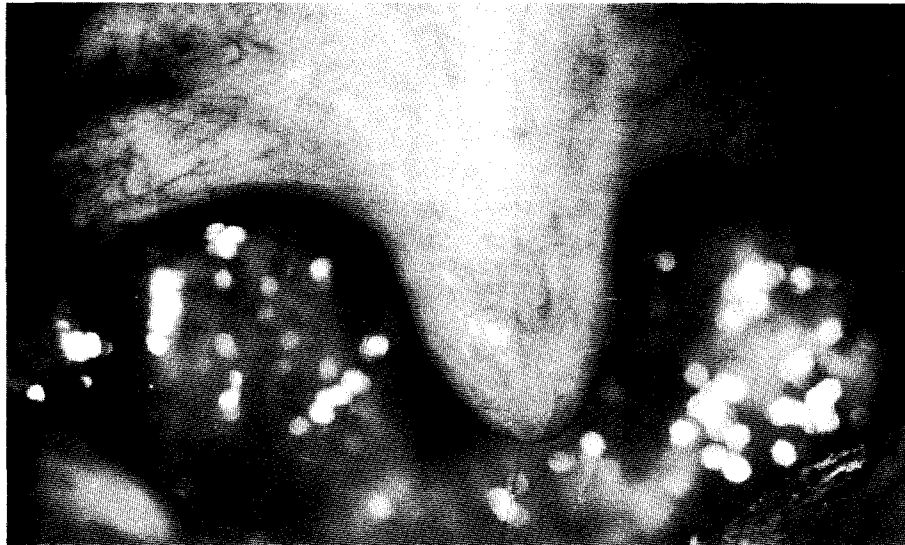


Fig. 13: Uvular area

To ensure a quality image, it is always necessary to remove the saliva from the area to be photographed just before the exposure is made. Particles of food and abrasive or polishing compounds, along with threads from gauze or cotton, should never be left in the area to be photographed. When projected onto a screen, these small items become very distracting.

Photographs of study models can be made satisfactorily with the same camera unit. A suitable flat, non-glossy, coloured background should be used.

If the dental subject is worth recording, enough time should be taken to make the end result worthy of showing. There is no short cut to quality photography.