The International Journal of ORAL MYOLOGY
Volume 1, Number 4 **October, 1975**

Good Photos Mean Accurate Records

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Practice limited to Orthodontics

It is self-evident that a method of accurate and complete recording of clinical diagnosis and progress is a "sine qua non" of adequate accountability and professionalism in oral myology.

Keeping adequate records is important for the following reasons:

1. To establish the physical presence of the actual condition.
2. To record the etiology of the condition.
3. To record the plan of treatment and the various options open to the therapist.
4. To measure progress and effectiveness of the therapy used.
5. To be able to conveniently refer to records at later dates for evaluation and comparison.
6. To communicate more effectively with the patient, parent and referring dentist.
7. To enable the clinician to demonstrate the effectiveness of therapy to the patient as a convenient tool of motivation and cooperation.

In order to do all these things well, the clinician must have a complete—yet succinct—case history that can be easily stored and readily available. The case history form and additional random written notes are traditionally used by clinicians.

The most graphic tool of the orthodontist has long been the set of plaster models of the maxillary and mandibular dentures. These are made before, during and after treatment of the patient. These casts have served the dentist well and provide a most satisfactory and rewarding experience for the patient and parents. In addition, they are readily available to show the obvious differences in occlusion before and after treatment. Note figures #1, 2 and 3.

The oral myologist has a different goal in his therapy than the orthodontist or referring dentist. He works concurrently with the orthodontist but his goal is the modification of oral facial muscle behaviour—namely, the elimination of deleterious swallowing behaviour and the substitution of normal mature swallowing patterns.

To record progress in the modification of these swallowing patterns, the therapist depends upon his own observations which are recorded in the patient's records before and after treatment. He may possibly use electromyography or cine-radiographic tapes if he has sophisticated equipment available. The assumption is that the alteration of myofunctional behaviour which is the goal of the oral myologist will, in turn, modify the morphology of the dental arches—and thus contribute to the efforts of the referring dentist. It must be noted that the diagnosis from the orthodontist be made first regarding the need for extraction of teeth before proceeding with myofunctional therapy.

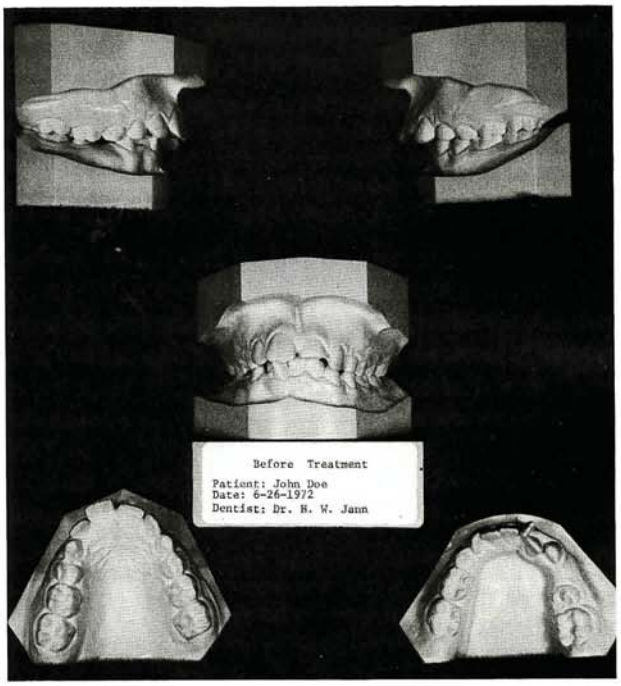


Fig. 1. Before treatment

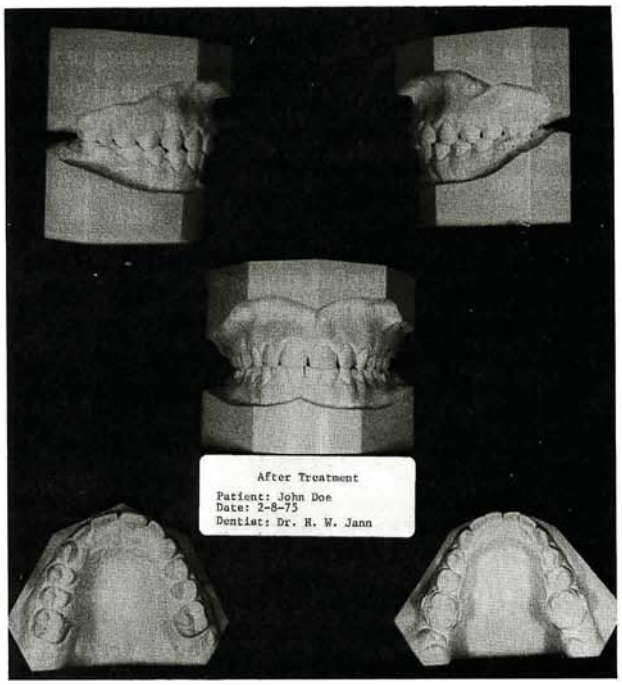


Fig. 2. After treatment

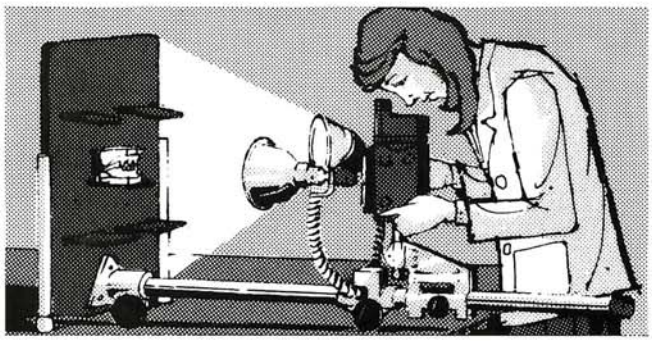


Fig. 3. Procedure

It would be useful to the oral myologist if he had within his armamentarium for record keeping the technique of making plaster models. This is within the domain of the dentist and the oral myologist who functions outside of a dental group does not have these models available to him. This can be a professional disadvantage for which one must compensate.

The purpose of this paper is to suggest an effective use of photography to make the actual dental casts unnecessary. Refer to figures #1, 2 and 3 again. This use of photography allows for convenient record keeping on the part of the oral myologist.

It is recommended that three types of photos be made for each case:

A. Facial photos (frontal and lateral). (Refer to figure #5)
B. Intra-oral photos. (Refer to figure #7)
C. Ortho prints (1 : 1 photos of the actual models). (Refer to figures #1, 2 and 3).

Procedures

A. Facial

The photos should be frontal and lateral. They should be of adequate print size $2^1/_4 \times 2^1/_4$ so that they are meaningful to the viewer. Inexpensive folders are available from various vendors to accommodate these prints. The actual prints can be done by photographers at a nominal cost. Please notice (figure #5) the identical headsize and alignment of the two poses. It is of extreme importance that a back-up light be used to eliminate undesirable shadows. These lights are usually fluorescent fixtures or can be an enclosed strobe light (behind the patient) subservient to the strobe affixed on the camera. As to the actual camera used, the author will be happy to supply the names of several vendors. The use of the equipment in figure #4 gives the result seen in figure #5. The patient is positioned in front of the fluorescent back-up light.

The cameras of choice are:

1. A $2^1/_2 \times 2^1/_2$ twin lens reflex costing under $100.00.
2. A modest flash-cube Instatech (Kodak)—figure #6.
3. A 35 mm. camera with a 50 mm. or 100 mm. macro lens (the macro lens can be more expensive than the basic camera).

In each arrangement of photo equipment, the back-up lighting is important.

Each camera, once understood and used sufficiently, serves a different function. For the individual without a camera and with no experience in photography, the Kodak Dental

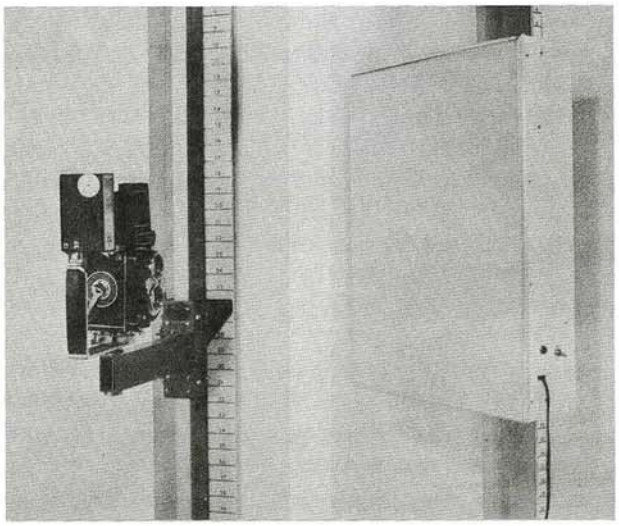


Fig. 4. Equipment

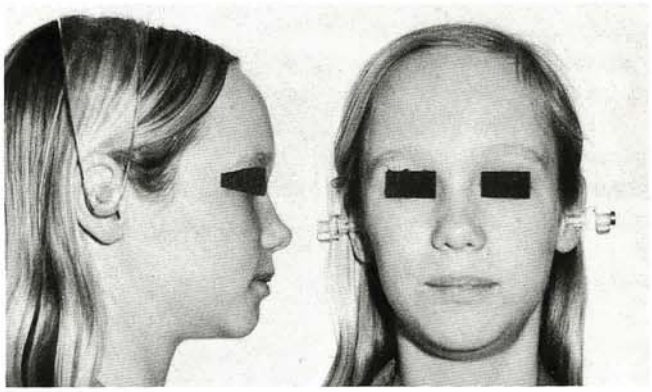


Fig. 5. Position of patient



Fig. 6. Instatech camera

Instatech is an excellent takeoff point for the person who wants to get going quickly. For back-up lighting in lieu of strobe or fluorescent lights, one can use a white sheet and a photoflood light focused onto the white wheet. This is inexpensive, practical and will give good immediate results. Ektachrome is usually used and prints can be ordered from the slides.

A more desirable approach is the $2^1/_4 \times 2^1/_2$ size because the end result (figure #5) is a nicer quality, more professional looking photo, and still inexpensive. With an enthusiastic approach on your part, you may obtain this equipment yourself or you might persuade the referring practitioner to install this equipment in his office (if not already present). Thus, a duplicate print can be made from the negative for the oral myologist's records.

B. Intraoral

By "Intraoral" is meant viewing the dentition itself with the posterior teeth in centric occlusion. This involves the frontal aspect of the anterior teeth, the right posterior occlusion, and the left posterior occlusion (see figure #7). Plastic cheek retractors serve the purpose of exposing the teeth most effectively. The retractors are held from behind by the assistant or by the patient himself.

The 35 mm. camera with an affixed ring light works most effectively. The "f" stop is usually between 11-16 (determined by trial and error based on distance of camera to patient). A conventional strobe light will produce only satisfactory photos because of the undesired shadows given off by this type of light source.

For taking pictures of the palate where a mirror is needed, it is well to remember that a front-surfaced mirror is essential to avoid getting a finished picture having a double image.

The Kodak Instatech will give good quality photos also. The light source is the flash cube and Ektachrome works best in this arrangement. The film returned from processing will be in the form of slides. Many clinicians prefer having slides for ease of demonstration at meetings. However, there are many who prefer the use of prints—made from Kodacolor film. Whether to use slides or prints is dependent upon the individual's needs and plans for display.

The needs of the photographer in taking intraoral photos are so varied that they are best satisfied by using a 50 mm. or 100 mm. macro lens on a 35 mm. single-lens reflex camera. This lens and camera arrangement, with a ring light, can fulfill practically all the needs of the clinician. The film process can be Kodachrome, Kodacolor or Ektachrome.

C. Photos of Models (figure #1, 2 and 3)

This 8″ × 10″ photo is a composit of all the possible aspects of the orthodontic casts. It is the result of multiple exposures on one frame of film. The apparatus (Great Lakes Orthodontic Laboratories) is illustrated in figure #3. The camera used is a Yashica Mat—D with a Plus 2 lens added to get the 1 : 1 size ratio (i.e. the actual size of the teeth on the models are the same size on the 8″ × 10″ composit photos)—figures #1 and 2.

These prints are invaluable to both dentist and myologist alike. They can be filed with the patient history, treatment plan and x-rays in the patient's chart. The Ortho-print gives a two-dimensional and three dimensional record of the patient's mouth. Its ease of filing simplifies consultations and is a fast reference during telephone discussions. Such photos serve as convenient transportation of case histories to conferences and eliminates study model breakage with less handling. Furthermore, these prints permit out-of-way storage of study models to save office space. The extent to which the therapist utilizes this approach is dependent upon his rapport with the referring dentist.

Conclusion

It is readily seen then that adequate records are an absolute must if the oral myologist is to substantiate results and show any modifications in his patient's environment. Of even greater significance, however, is the diagnosis of the case. There are so many variables involved in oral myology and orthodontics as related to open-bite cases that their discussion and evaluation is not within the scope of this paper. Suffice to say, however, that it is my considered opinion that the oral myologist can easily become involved in cases which first require orthodontic correction—sometimes through the extraction of teeth. Thus it is most desirable for the referring orthodontist to utilize cephalometrics for a thorough diagnosis. For the myologist to attempt a service for a patient with skeletal discrepancies is to challenge the impossible in their treatment approach.

It is critical for the orthodontist with his training to make a proper diagnosis based on adequate cephalometric records—and then the myologist can make his contribution in conjunction with active orthodontic treatment.

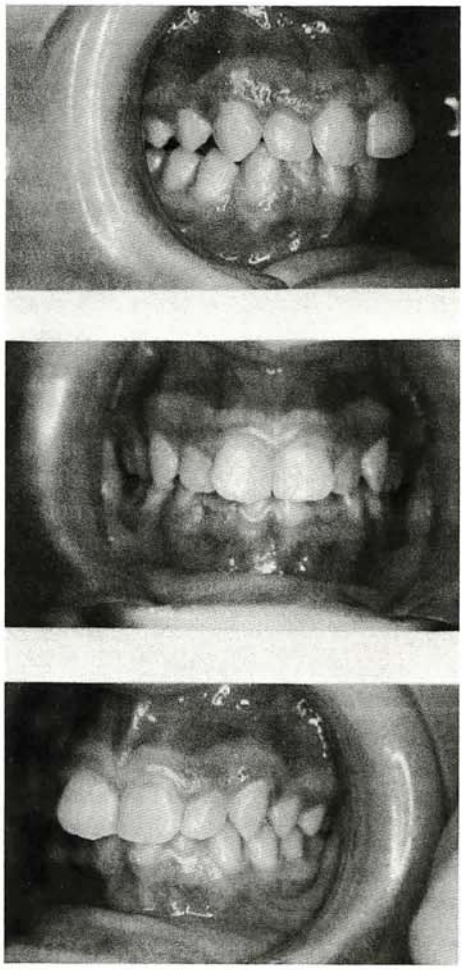


Fig. 7. Instatech view