

Subzygomatic Trans-Sigmoid Projection for Condyle & Temporomandibular Joint

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CLEAR radiographic pictures of the Temporomandibular joint are difficult to obtain, and remain important to surgeons interested in maxillofacial problems.

The temporomandibular joint because of its location in close proximity with the base of the skull, is protected medially and superiorly by the mastoid process. The clarity of the shadow of the condylar head is impaired because the X-rays have to pass through intervening bone and brain substance in an ordinary view of the joint.

Though there have been many techniques of producing a radiograph of the condyles and temporomandibular joint the present one is an accurate and precise one. It also shows clearly the structures surrounding the temporomandibular joint like the styloid process and the ramus.

In 1936 Lindblom and Grewcock in 1953 have suggested a transcranial projection for studies of temporomandibular joint dysfunction. Lewis has published an article on transpharyngeal projection in 1964. He has compared the radiograph of the joints in living subjects and in dried cadavers. In the same year Blackman

has published his article over different radiographic techniques for the study of temporomandibular joint. In the 14 different techniques described, he has mentioned lateral sigmoid infra-cranial projection, but this was of limited value. In a study of clinical osteo-arthritis in older patients, Toller (1969) suggested trans-pharyngeal radiography.

In spite of the techniques, mentioned above, condylar and temporomandibular joint area radiographs are far from satisfactory and of remain of limited value. Present technique holds good in the Ankylosis of Jaw, Fractures, over growth of the condyles and Egle's syndrome.

Technique :

This technique can be practised easily with routine dental x-ray units. The method of taking the Roentgenograph is such that intervening bony structures do not superimpose, on an image over the actual area of the condyle.

The patient sits upright on the dental chair, head being vertically supported by the head rest. A 6" x 4 $\frac{3}{4}$ " x-ray film in a cassette is taken and placed close to the ear

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and the face which is to be radiographed. The cassette rests on the inner aspect of the patient's shoulder and parallel to the saggital plane (Fig. 1).



Fig. 1

The cone of the x-ray tube should be adjusted in 0 to 5° upwards and backward angulation over a spot below the zygomatic arch into the sigmoid notch. This spot can be felt with an index finger as a depression, about 1.5 to 3.5 cms. anterior to the tragus depending upon the condylar position. 10° to 20° posterior tilt of the projecting cone in the horizontal plane avoids pterygoid plates (Fig. 2). Central beam should be

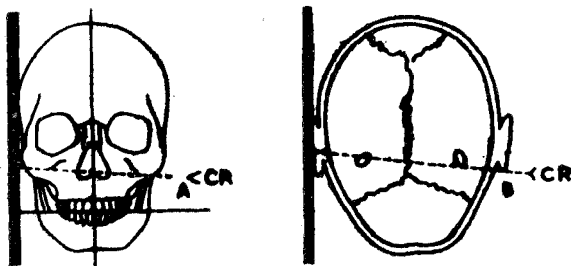


Fig. 2

aimed at the head of the condyle of the desired side through the sigmoid notch. If

the cone is applied accurately, the central ray will pass from the anode to the condyle, without having intervening structures. This could easily be practised both in closed and open mouth positions (Fig. 3). The exposure time is one second.

Discussion :

It is a simple technique, for taking a good radiograph of the temporomandibular



Fig. 3

joint. Blackman (1963) and Toller (1969) have also used dental x-ray units after removing the cone. Toller's technique was used for the x-ray of the condyle in osteoarthritis of the temporomandibular joint only when it comes out of the glenoid cavity and remains against eminentia articularis. The radiation hazards are much more, after removing the cone. The radiation dose to the skin of the contra-lateral side with the cone in position is one roentgen per second and without the cone in four roentgens per second. This has been worked out at the

Mount Vernon Hospital by using an ionisation chamber.

The present technique has been used for large number of ankylosis jaws (Fig. 4),

Condylar fractures (Fig. 5), elongated styloid processes (Fig. 6) and deformities of jaws (Fig. 7). This has been of great assistance in diagnosis and management of these conditions.



Fig. 4



Fig. 5



Fig. 6



Fig 7

Summary

A simple and precise technique of producing a good radiograph of the condyle and temporomandibular joint is presented. The Authors have found subzygomatic trans-sigmoid projection very satisfactory. It has been of great assistance in diagnosis and management of temporomandibular joint disorders.

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