

Management of Young Children for Nasopharyngoscopic Examination.

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ABSTRACT

Methodology for nasopharyngoscopic evaluation of velopharyngeal function as conducted at Kyoto University, Japan is presented. Special problems encountered in nasopharyngoscopic evaluation of young children and methods of coping with those problems are addressed. Three types of scopes, including end-view and side-view ranging in diameter from 3.7 mm to 4.4 mm are used. Methods of introducing local anesthetic and overcoming children's fear and resistance are stressed.

Nasopharyngoscopy has become an essential tool for diagnostic evaluation of persons with repaired cleft palate and for persons suspected of having velopharyngeal insufficiency or submucosal cleft palate. We have also found it a useful adjunct to speech therapy following surgical repair. At Kyoto University, nasopharyngoscopic evaluation is used in conjunction with listener judgements, pneumotachography, observation with a rhinometric mirror for nasal emission, and videofluoroscopy. Based on findings from these examinations, speech pathologists and plastic surgeons make joint judgements regarding velopharyngeal structure and function.

The role of nasopharyngoscopy in our evaluations has become essential, because it is the only method that provides a direct view of the velopharynx¹⁾²⁾ (Kawano, et al. 1983). Permanent records of the examination are made by connecting the nasopharyngoscope to a video camera and video cassette recorder. A television monitor is also used during examination so that colleagues can view

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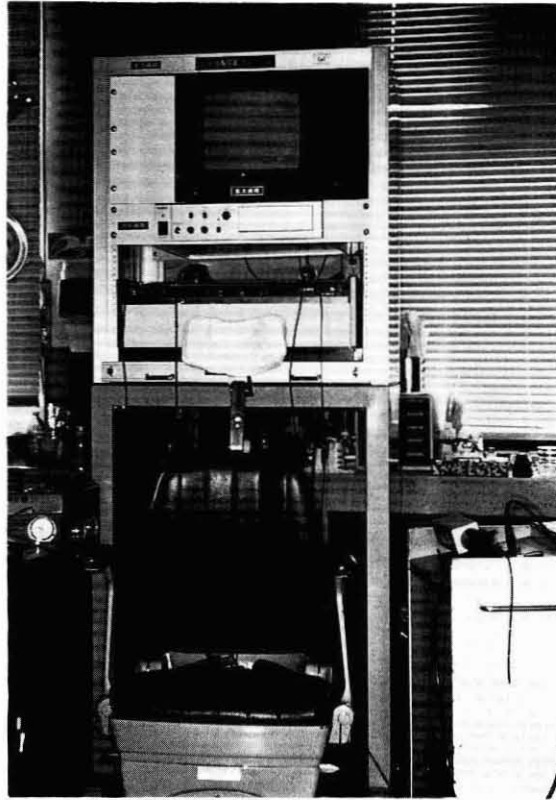


Fig. 1. Nasofiberscopic Unit. Above, TV monitor; Center, video cassette recorder; Right, light source and fiberoptic with camera.

the field coincident with the examination (Figure 1).

While nasopharyngoscopy is used for patients of all ages, scoping of children under the age of five presents special problems. These problems relate to the size of the nasal cavities in young children and to their possible fear of the procedure. However, evaluation of children below the age of five is essential to early detection and treatment. The purpose of this paper is to describe the procedures used at Kyoto University for nasopharyngoscopy of young and difficult-to-scope patients. As background, the general procedure used for nasopharyngoscopy will be presented first.

General Procedure

Three types of nasopharyngoscopes are used. These are the L-type, P-type and S-type manufactured by Olympus (Figure 2). The L-type is an end-view 4.4 mm diameter scope. The P-type is an end-view 3.7 mm diameter scope. The S-type is a side-view 4.4 mm diameter scope. The larger diameter scopes are used principally for photography since they provide a larger field of view. The side-view scope is used when the field of the end-view scope is blocked by the elevated velum. In this case, it is preferable to pass the side-view scope through the middle nasal meatus

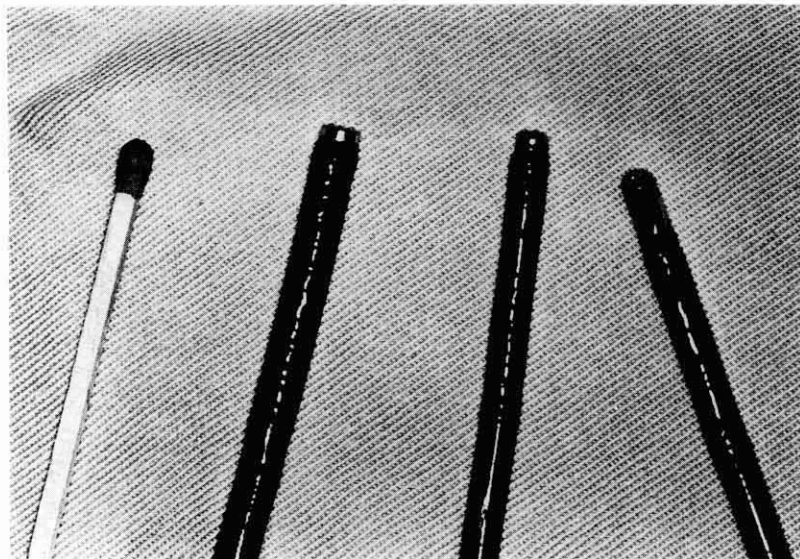


Fig. 2. Three types of nasofiberscope tips compared in size to a match stick (left). From left to right: Type L (end-view); Type P (end-view); Type S (side-view).

so that the tip of the scope is elevated as much as possible. In young children this is usually not possible, since the middle meatus is too small. An additional problem is encountered when using the side-view scope. Since the examiner cannot see the destination of the scope as it passes through the middle or inferior meatus, it may take several trials to obtain placement of the scope for adequate view of the nasopharynx.

Prior to nasopharyngoscopy, the anterior and posterior parts of the nasal cavities, bilaterally, are examined with a nasal speculum. Specific note is made of the presence of a deviated septum or hypertrophy of the turbinates, since either of these conditions will effect the ease of introduction of the nasopharyngoscope. In addition, the level of the hard palate is noted, since in some cases of unilateral complete cleft palate, the nasal floor is lower on the cleft side than on the non-cleft side. This will effect the level of insertion and therefore the view through the nasopharyngoscope.

The following procedures are followed to prepare the typical patient for nasopharyngoscopy. If one or both sides of the nasal cavity are occluded by deviation of the septum or hypertrophy of the turbinates, 0.1% epinephrine is sprayed into the cavity to shrink the nasal mucosa. Both sides are then anesthetized by spraying 4% lidocain into the nose. After approximately five minutes, to let the lidocain take effect, the patient is scoped on both sides. Both sides are scoped to gain full perspective on the entire nasopharynx, including both lateral walls. The difference in perspective when viewing from the right and left sides is sufficient to make bilateral scoping advisable.

Whenever there the middle meatus is of sufficient size, the nasopharyngoscope is passed through it. It is our experience, that the elevated level of the scope over that achieved by passing it through the inferior meatus gives a more complete view of the nasopharynx.

Special Procedures for Young Children

Young children present several problems with regard to successful nasopharyngoscopy. First, the nasal airway is small, which may make the introduction of the scope difficult or impossible. Second, they tend to be fearful of the procedure. Third, they must be alert and cooperative or the procedure will not yield useful information. Anesthetics that produce drowsiness are not used since they may reduce the patient's muscular tonicity and, therefore, prevent a valid measure of the patient's velopharyngeal functional capacity.

The procedure for anesthetization of the nasal mucous membrane is modified for the children, since they typically are frightened by nasal sprays. The lidocaine is introduced into the anterior nares with a small cotton applicator (Figure 3). After about two minutes, the applicator can be advanced further into the nasal cavity. It is gradually moved posteriorly and is finally placed into the narrowest portion of the cavity and left there for approximately five minutes (Figure 4). In some cases, when children have resisted the use of the cotton applicator, a gauze tampon with 4% lidocaine has been used successfully.

We have found that introduction of the nasopharyngoscope into the nares with the light on frightens some children. In most cases, therefore, the scope is introduced with the light off, and the scope is turned on after it has been passed into the

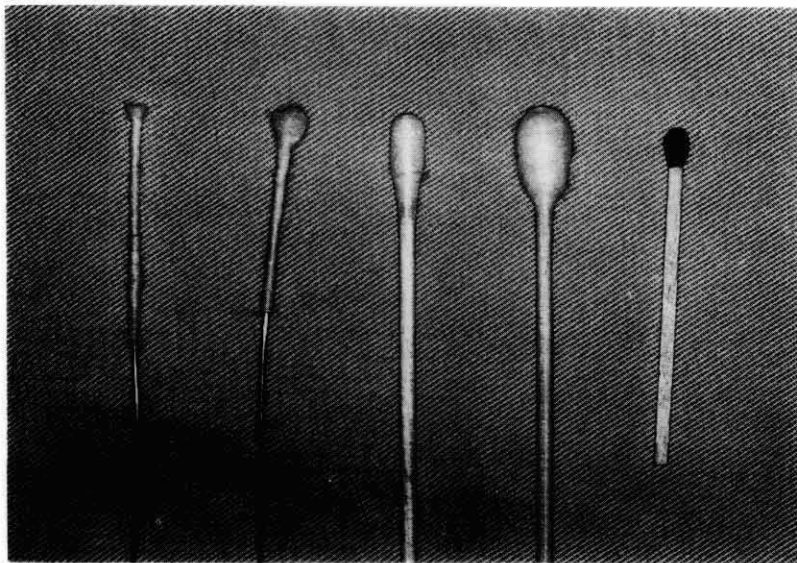


Fig. 3. Four types of swabs used in nasofiberoscopy compared in size to a match stick (right). The two swabs on the left are hand made. The two to the right are commercially available.

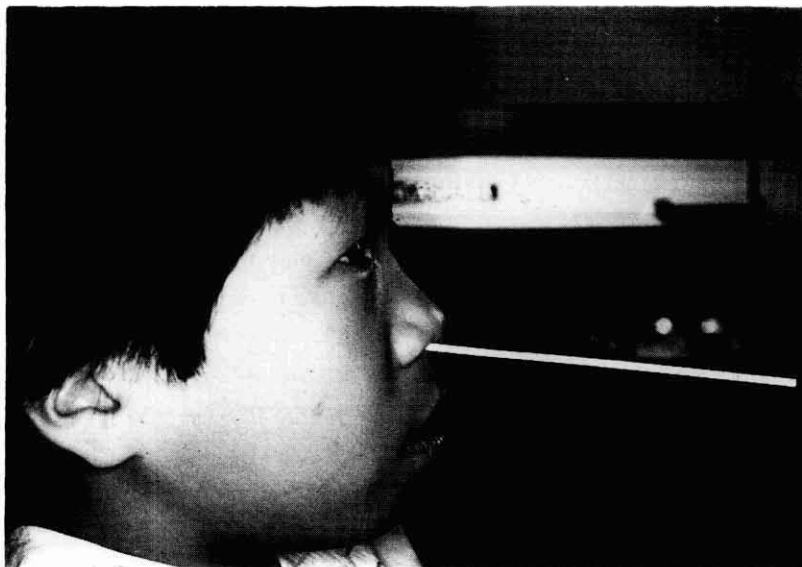


Fig. 4. Insertion of a swab into the inferior nasal meatus.

anterior nares. Much of the child's potential fear can be eliminated by minor adaptations in the usual procedure. White coats are not worn, since many children have learned to associate them with painful procedures such as inoculations. The children should be used to the room used for scoping prior to the time the scoping is attempted. It is helpful to have a warm, friendly atmosphere by having toys or stuffed animals present and by removing any unnecessary equipment and instruments. Either the parents or a familiar professional, such as the speech pathologist, should be present to give the child reassurance. The procedure should be done slowly and gently, and should never be forced on a resisting child, even if the procedure has to be rescheduled several times. It may be helpful to have the child observe the procedure being done with another cooperative child so that they lose some of their apprehension by familiarity.

In our experience, most children can be successfully scoped if the procedure is understood by the child, and if it is done with sufficient gentleness and an understanding attitude on the part of the examiner. We feel this is very important, since the alternative is incomplete diagnostic information during the age range when most palatal surgery takes place.

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