Protocol for a Modified Barium Swallowing Study

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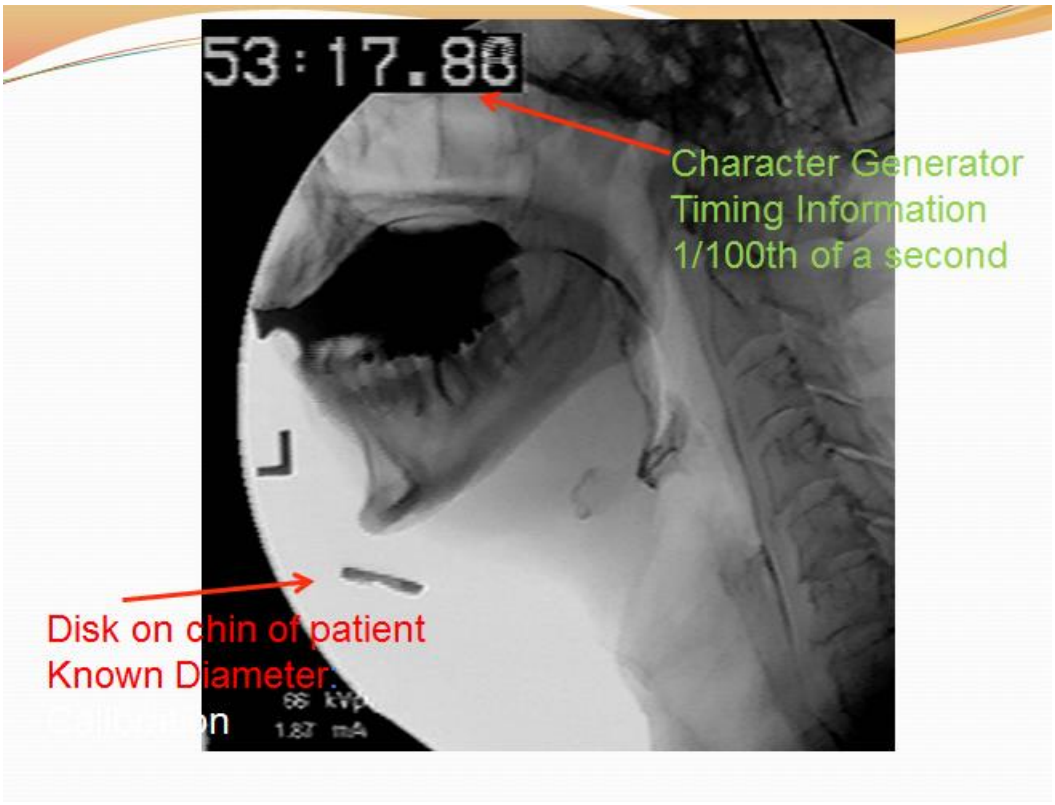
- **ENSURES PT. SAFETY**
- **PERMITS STANDARDIZATION OF EXAM**
- **ALLOWS COMPARISON OF PERFORMANCES OVER TIME, TREATMENT**
- **ALLOWS COMPARISON TO OTHER PT. GROUPS, NORMALS**
- **ALLOWS BETTER COMMUNICATION BETWEEN CLINICIANS**

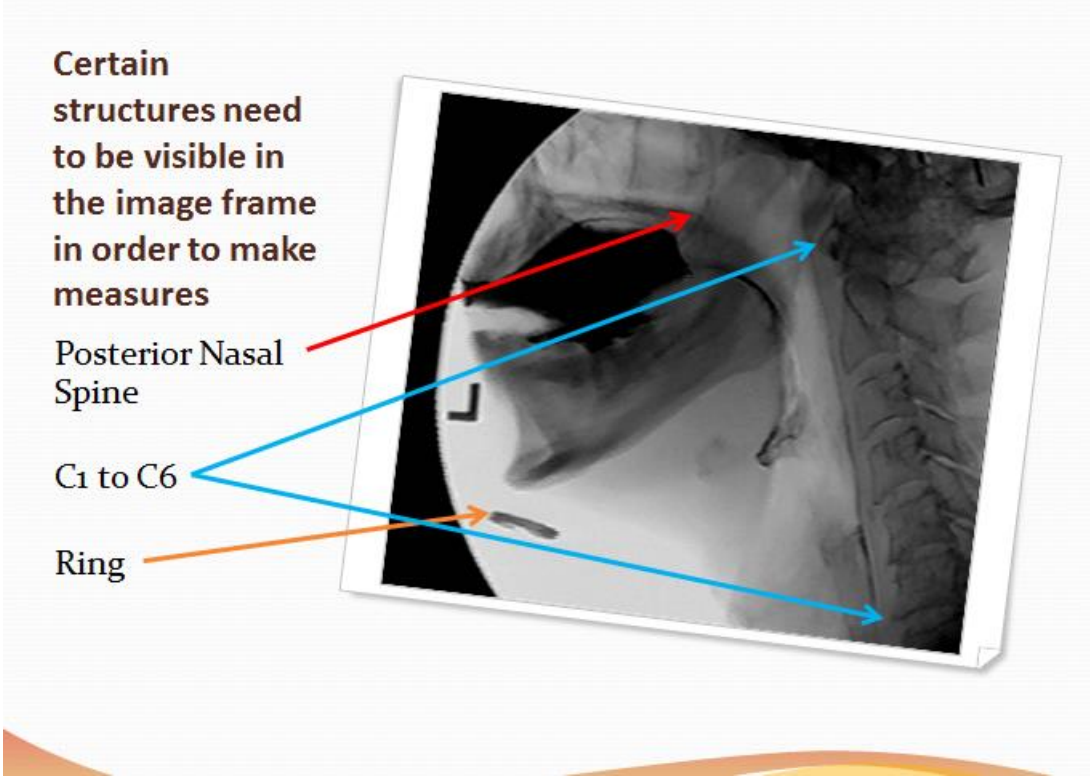
This protocol allows measurement of timing information and measurement of structural displacements from a swallowing study.

A character generator or time stamp is needed on each frame of the video. Timing needs to be displayed in increments of .01 of a second. The study is filmed at 30 frames per second. Frame-by-frame analysis is later done to evaluate the timing of bolus movements and the coordination of swallowing gestures.

Displacement measures can be made if a ring of known diameter is taped to the patient's chin. This will allow calibration of the video image for later displacement measures.



The study starts in the lateral view. Evaluation of the pharyngeal phase of the swallow requires that certain structures be seen in each video screen. Ideally, the disk on the chin of the patient is seen in each video frame so that re-calibration for distance measures can be done on any frame. The onset of the swallow is defined as when the bolus head passes the **anterior nasal spine**, so that structure should be visible. The pharynx is defined as beginning at the level of **C1**, and ending at approximately **C6**, so both those structures should also be visible. It is sometimes helpful to place a balloon or glove under the chin of the patient if signal averaging done by the fluoro unit is making these structures difficult to see. The posterior spine does not need to be in the video frame.



The protocol for the study begins with recording a "hold" position. This entails asking the patient to place the bolus into the oral cavity and to hold it there. The patient does not swallow until given the command to swallow. The hold position is important for measurement of the hyoid position and pharyngeal area "at rest" or before the swallow.

The patient then will swallow liquid barium in the following sequence: 1cc, 3cc, 20cc. The barium liquid should be of a standardized and known viscosity. Varibar makes an excellent product that is widely used.

After the liquid swallows are completed an additional two swallows will consist of Paste then cookie.

Once this part of the protocol is complete, the clinician may choose to introduce difficult food, straw drinking, and strategies (maneuvers, positional changes) based on the observations made during the first part of the study.

The patient is then turned for the AP view. The disk of known diameter is placed on the patients left sternocleidomastoid muscle. A 20cc liquid swallow and a pill or tablet swallow are recorded.

The entire study should then be saved in an avi format, preferably to an encrypted external drive. The file can then be transferred to a desktop computer for further analysis.