Clinical Experience with a Glass-Fiber Gastroscope

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THE PRINCIPLES of fiber optics have been known for many years, but have been utilized in medicine only recently. An instrument utilizing these principles is currently available and has been demonstrated to be of clinical value. This paper is a report of our experience with a Fibergastroscope* in a 4-month period during which 120 examinations were performed. This communication does not constitute a comparison between this gastroscope and other instruments, but simply documents its usefulness on our service.

THE INSTRUMENT

The instrument is 38 in. long and 0.5 in. in diameter. The proximal end contains a variable-focus lens for magnifying the image and a lever for focusing a distal lens. The shaft is composed of a bundle of 150,000 flexible glass fibers, each 0.0006 in. in diameter, so arranged spatially that the orientation of the fibers is the same at each end. This bundle of glass fibers transmits the light and is sufficiently flexible to allow the instrument to assume several sinuosities throughout its length without distortion of the visualized image.

TECHNIQUE

Patients examined with this gastroscope have routinely received premedication with parenteral Nembutal and atropine. Topical anesthesia has not been required. In addition, 10 apprehensive patients received intravenous meperidine hydrochloride. Retained secretions prevented ade-
quate visualization in 20 patients, and in each case the instrument was re-
moved, the gastric contents aspirated and the instrument reinserted. In-
troduction of the instrument has been accomplished in both the sitting
and left lateral positions, the latter being favored because of familiarity
with the landmarks within the stomach in this position. Support of the
head by an assistant has not been required because of the flexibility of the
instrument. Mouth suction via a salivary extractor has been effective in
preventing accumulation of oropharyngeal secretions.

In all but 5 patients, the instrument was easily introduced into the stom-
ach. Carcinoma involving the cardioesophageal junction apparently pre-
vented passage in 4 of these patients. In one, the instrument could not be
introduced despite the absence of organic obstruction.

On 10 occasions, fluoroscopy was performed while the gastroscope was
advanced distally from the cardioesophageal junction with the patient
supine. In all of these cases, the distal end was noted to progress caudally
without spontaneously following the greater curvature. In 8 of 10 cases the
instrument could be directed into the antrum by manipulation through
the anterior abdominal wall. In several cases passage of the instrument in-
to the antrum was apparently facilitated by positioning the patient on his
right side. After the tip of the instrument was located in the antrum fur-
ther passage into the duodenum was attempted and the instrument in-
serted to its full length. On two occasions out of eight attempts we visual-
ized mucosa which was distinctly different from the usual gastric mucosa
and was assumed to be proximal duodenum. A lack of familiarity with the
appearance of this area through an endoscope prevented more adequate
interpretation of the duodenum. It should be emphasized that a prolonged
attempt to visualize the duodenum was made in only a few cases and it is
entirely possible that with further experience such visualization will be
more frequently achieved. Our experience so far, however, would suggest
that duodenal visualization may not always be readily accomplished.

The average duration of each gastroscopic examination has been 20 min.
and many patients have tolerated the procedure for more than 40 min.
without distress. The examination time has allowed several staff members
to view pathologic lesions. The position of the patient was changed during
the examination without danger or discomfort. Seventeen repeat examina-
tions were performed on 12 patients.

PHOTOGRAPHY

The instrument transmits light with greater efficiency than conventional
gastroscopes, thereby permitting photography without the use of an auxili-
ary light source. A simple adapter supplied by the manufacturer couples