

A. PROJECT TITLE: Evaluation of Inferior Esophageal Competence by Esophagoscopy

B. PRINCIPAL INVESTIGATOR: E. L. Burke, CAPT, MC, USN

C. OBJECTIVES: The principal aim of this study is to relate the amount of "open time" of the inferior esophageal sphincter during examination with the fiberoptic esophagoscope, to the degree of competence of the inferior esophageal sphincter. A secondary aim is to correlate if possible the extent and severity of esophagitis and the demonstration of presence or absence of hiatal hernia and reflux by x-ray.

D. BACKGROUND: The recent medical literature on hiatus hernia, esophageal stricture and esophageal reflux shows increasing concern with the role played by the inferior esophageal sphincter. It is becoming increasingly clear that the principal consideration in esophageal reflux is not the presence or absence of the frequently associated hiatus hernia, but the degree of competence of the esophageal sphincter. The documentation of esophageal strength (and thusly competence) by manometric examination is quite desirable but quite expensive in that in addition to a skilled investigator the equipment cost is in the nature of 8 to 9 thousand dollars. Additionally, such manometric equipment has no value other than esophageal manometry. The fiberoptic esophageal examination, however, easily documents esophagitis, tumor, fistula, etc. It is the experience of the principal investigator that the fiberoptic esophagoscope also yields information on the physiologic and abnormal movements of the esophagus and that in the clinical situation of reflux the inferior sphincter, for the most part, remains widely open during the examination while in the absence of reflux the sphincter intermittently opens and closes but is closed the majority of the time.

If documented as being of value in diagnosing sphincteric competence, a significant advance would have been made in the diagnostic armamentarium of the physicians caring for such patients. It might also prove of use in the postoperative evaluation of such subjects. Interestingly multiple studies have compared manometry and radiological procedures but the comparison of the esophagoscope and manometry in the study of the inferior esophageal sphincter seems to have escaped attention.

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E. APPROACH: In conjunction with an endoscopic study performed as indicated by the particular clinical situation, the inferior esophageal sphincter will be brought into view. At a time determined by an independent observer an attached movie camera will be run for a period of time (3 to 5 minutes). Gentle insufflation of air will be continued during this period. The amount of time the sphincter is open out of the total time will be computed from the film and compared to the x-ray findings and manometric studies. A significant correlation of the sphincter strength (competence) and the length of time the esophagus remained open will document the feasibility of use of the esophagoscope for this additional purpose.

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Enclosure (1)