

Normal and Abnormal Swallowing

Second Edition

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Editor

Normal and Abnormal Swallowing Imaging in Diagnosis and Therapy

Second Edition

With 164 Figures, 4 in Full Color



Springer

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Cover illustration: On the left side: a single spot film in the frontal projection shows a translucent curved filling defect at the lower border of the pharynx representing a mucosal web. On the right side: a stop-frame print from a cinepharyngogram demonstrates an upright epiglottis, open larynx, laryngeal penetration, and aspiration along the anterior surface of the trachea. The bolus is passing past the open cricopharyngeus into the cervical esophagus.

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*To my mentor, the late Martin W. Donner, MD,
and the patients and colleagues of
The Johns Hopkins Swallowing Center*

Preface

It is now 11 years since the publication of the first edition of *Normal and Abnormal Swallowing: Imaging in Diagnosis and Therapy*. These 11 years have seen an enormous change in the specialty of the study of dysphagia. First, we have seen the tragic loss of two of the pioneering giants in the field: Wylie J. Dodds, MD, of the Medical College of Wisconsin, Milwaukee, and Martin W. Donner, MD, of The Johns Hopkins University School of Medicine, Baltimore, Maryland, a former coeditor of this book. Second, there has been a steady expansion in the number of professionals interested in and working in this specialty. The last 11 years have also seen the steady growth of the multidisciplinary journal *Dysphagia*, devoted to swallowing and its disorders, as well as the formation of the Dysphagia Research Society, which held its tenth annual meeting in October 2001. The dysphagia special interest division (SID 13) of the American Speech and Hearing Association (ASHA) now has some 3,000 members. At the same time, the world population is aging. Dysphagia will be an important health issue in this aging population.

Despite the high and increasing incidence of dysphagia, many physicians and allied health professionals are unfamiliar with the anatomy and physiology of the pharynx nor are they trained in the techniques used to examine dysphagic patients. An upper gastrointestinal series, for example, usually examines only the thoracic esophagus, neglecting the pharynx, unless symptoms suggest an oral or pharyngeal location. Even then, spot films only may be taken, with no dynamic imaging to evaluate the movement of the structures.

It is the intention of this book to familiarize the reader with imaging of the pharynx and with the spectrum of swallowing disorders. The text is intended not to be encyclopedic or exhaustive, but rather to present a practical approach to the role of imaging in the diagnosis and treatment of patients with dysphagia. An attempt has been made to define the role of the newer modalities such as ultrasound, computed tomography, and magnetic resonance imaging in the work-up of the dysphagic patient. It is felt that scintigraphy is outside the scope of this text; therefore, this technique has not been included.

Imaging has been illustrated with both spot films and still frames from either cinefluorographic studies or super-VHS studies. The reader is reminded that some resolution is lost when a dynamic study is frozen, and thus, a few of the illustrations are grainy.

The text concentrates on oral and pharyngeal disease but also emphasizes the interrelationships between pharynx and esophagus in health and disease.

A glossary is appended of some words and phrases commonly used in discussing dysphagia.

Baltimore, Maryland

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With deep appreciation to Fay R. Cromer, who (without grumbling) completely retyped those chapters authored by the editor.

Baltimore, Maryland

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Overview

Dysphagia (difficulty in swallowing, implying difficulty of passage of bolus) is a surprisingly common symptom and, often, an extremely troublesome one. Dysphagia is a symptom that spans all ages, being common in the young and otherwise healthy, during the middle years, and in the elderly. It can be long-standing, frustrating, and all-consuming, and it can interfere with one of the most enjoyable social interactions, namely, eating. In addition, dysphagia is a symptom that may not be given due attention by friends or relatives, or may be dismissed as being of psychogenic or psychosomatic origin. The patient with unexplained pharyngeal dysphagia should not be dismissed as neurotic, nor should the condition be given the label “*globus hystericus*” or “dysphagia of psychogenic origin.” A patient so dismissed or so labeled may never be re-evaluated, even if symptoms change.

The act of swallowing seems simple. It is something we do unconsciously, and once the voluntary oral phase has been completed, the remainder of the swallow is involuntary. However, the successful execution of a swallow requires the intricate coordination between several cranial nerves and 30 to 40 muscles of the face, mouth, pharynx, and esophagus. Neuromuscular diseases, head and neck surgery or trauma, local structural lesions, gastrointestinal disorders, cancer, and developmental disabilities can all produce problems with swallowing. The resulting impairment may range from mild discomfort to life-threatening disability.

Many patients adjust to slowly progressive disease by modification of their diet or speed of eating and may themselves be unaware of such compensatory behavior. Others may have lost sensory perception in the mouth, pharynx, or larynx resulting in dysphagia and may even aspirate without coughing (silent aspiration) or subjective awareness (silent dysphagia). Symptoms suggesting dysphagia may be subtle, absent, or referred; for example, respiratory diseases, such as asthma or laryngospasm, may in fact be due to an unsuspected problem with swallowing.

When all voluntary and involuntary compensatory mechanisms break down, massive aspiration or choking on food may dramatically demonstrate how advanced the underlying disorder has become. Estimates based on insurance statistics suggest that, in the United States alone, 8,000 to 10,000 individuals die from choking each year.

The scope of the problem of dysphagia is certainly significant and widespread. For example, studies in several medical institutions have revealed a surprisingly high incidence: 12 to 20% of patients in the general hospital population and 50 to 90% in the nursing-home environment. In the United States, esophageal carcinoma accounts for approximately 1% of all cancers and almost 10% of cancers of the gastrointestinal tract. Similarly, laryngeal and head and neck cancers cause a significant incidence of dysphagia both from the primary tumor and following surgical resection, chemotherapy, or radiation.

Our population is an aging one, with the potential for an increasing incidence of dysphagia related both to the aging process alone and to diseases that affect the elderly. More refined surgical techniques, improved life-support systems, and new and better medications also allow patients to survive longer even with debilitating disease.

The reason for the dysphagia may be obvious, such as prior radical head and neck surgery or obvious neuromuscular disease elsewhere, or the cause may be obscure. Imaging is essential for the evaluation of the dysphagic patient in both known and undiagnosed disease. Imaging is critical not only in the diagnosis of the cause of dysphagia but also in guiding therapeutic intervention.