# Dysphagia in Stroke, Neurodegenerative Disease, and Advanced Dementia

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**KEYWORDS**

• Stroke • Neurodegenerative disease • Dementia • Dysphagia • Myasthenia gravis • Muscular dystrophy • Multiple sclerosis

**KEY POINTS**

- Stroke, neurodegenerative disease, and dementia are disorders that have a high incidence of dysphagia.
- There are similarities and differences, but common themes associated with an aging population prevail.
- Aspiration risk varies with the severity of disease and is a challenge to rehabilitate based on presbypharynges, cognitive status, and level of nutrition.
- It is important to screen for dysphagia in these high-risk groups and to assess aspiration risk early in order to maintain nutrition with pertinent food consistencies.
- In the case of global laryngeal dysfunction, surgical options are available.

## INTRODUCTION

Central and peripheral neurologic diseases have a profound impact on deglutition, whether it is traumatic, inflammatory, infectious, autoimmune, or caused by secondary effects of the aging process. Although the causes of stroke, neuromuscular degenerative diseases, and advanced dementia are different, they have several commonalities regarding the presentation of dysphagia:

1. They typically occur in an aging population
2. There is potential for cognitive impairment (through direct effects of the disease, comorbidities, or indirect effects of medication)

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Otolaryngol Clin N Am 46 (2013) 1137–1149
http://dx.doi.org/10.1016/j.otc.2013.08.005 **oto.theclinics.com**
0030-6665/13/$ – see front matter 

| Abbreviations: Neurodegenerative Dysphagia | |
|---|---|
| AD | Alzheimer disease |
| ADL | Activity of daily living |
| ALS | Amyotrophic lateral sclerosis (also known as motor neuron disease) |
| DMD | Duchenne muscular dystrophy |
| FEES | Functional endoscopic evaluation of swallowing |
| GI | Gastrointestinal |
| MBS | Modified barium swallow |
| MG | Myasthenia gravis |
| MS | Multiple sclerosis |
| NG | Nasogastric |
| NPO | Nil per os |
| PD | Parkinson's disease |
| PEG | Percutaneous endoscopic gastrostomy |

3. Neuromuscular atrophy is often present and progressive
4. Discoordination is also present from deconditioning and central neurologic disease
5. Patients eventually become less active and have a sedentary lifestyle
6. They are associated with predominantly oropharyngeal dysphagia and aspiration risk

The initial presentation for an acute-onset event such as stroke is different than the chronic disease presentation, which often involves increasing aspiration risk with time. As the diseases progress with age, there is also an increasing nutritional requirement to stave off muscular atrophy. This requirement leads to increased need for oral intake, further taxing the vulnerable deglutition and increasing aspiration risk. This article reviews commonly encountered central and peripheral neurologic diseases presenting with dysphagia, discusses the likelihood of encountering dysphagia, and introduces a management approach that focuses on preserving nutritional requirements and quality of life.

## DYSPHAGIA IN STROKE

Dysphagia is a frequently under-recognized complication of acute stroke, despite its prevalence of up to 78%.[1] It adversely affects outcomes as determined by length of hospitalization, and also increases the risk of mortality.[2–5] It is most prevalent in the acute phase, with about half of patients recovering spontaneously (or dying) in the first week.[2] The severity of dysphagia relates to the degree of pharyngeal representation in the unaffected cerebral hemisphere, with the most severe problems in those with an involved dominant hemisphere.[6] The rate of dysphagia in hemispheric strokes is lower than in those affecting the brainstem.[1] Recovery is thought to be related to neuroplasticity in the nonaffected hemisphere.[7]

Prolonged hospital stay in patients who are dysphagic after stroke is most evident in those with hemorrhagic disease, with a 55% increase in the duration of stay.[3] The discharge destination of patients after stroke is also dramatically altered when there is comorbid dysphagia, with more than double the rate of patients requiring long-term care.[2]

Pneumonia represents a major cause of morbidity and is associated with 24% to 30% of deaths in patients after acute stroke.[5,8] Those with dysphagia have a 3-fold increase in pneumonia (RR, 3.17), and aspiration shown on videofluoroscopy markedly increases the risk of pneumonia (RR, 11.56).[1] As a consequence, stroke mortality