

INTERVENTIONS TO SUPPORT HOMEOSTASIS DURING ORAL FEEDINGS WITH SOFFI™

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Part VI

Slowing the flow with thickeners



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Objectives

- Describe at least one danger of using thickeners with the premature population
- Describe at least one reason why infant videofluoroscopic swallow studies have more variability than those done with the geriatric population



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Neonatal Videofluoroscopic Swallow Studies

- Less consistent than with the geriatric population
 - More variability
 - More influenced by homeostasis
- Effectiveness of thickeners less clear
- More variability in thickeners used
- Dangers associated with thickeners



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Pediatric compared to Geriatric

- Geriatric VFSS typically done after neurologic insult
 - Neurology does not change rapidly
- Pediatric VFSS often done with an infant who does not have a neurologic insult
 - Maturation is an influencing factor
 - Homeostasis (or lack of) affects ability to protect airway
 - Illness affects ability to protect airway
- Lack of supportive interventions can influence results



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Videofluoroscopy and thickening

- This study used an Advanced Rheometric Expansion System to compare:
 - prethickened antiregurgitation formula
 - regular (thin) infant formula
 - two types of regular infant formula, hand-thickened:
 - with a thickening agent
 - with liquid Polibar (barium-impregnated liquid)
- Significant difference among the barium-impregnated liquids and the thickened and unthickened infant formula.

Cichero, et al., 2011



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International Dysphagia Diet Standardization Initiative (IDDSI)

<https://iddsi.org/>

“A global standardized way of describing foods and drinks that are safest for people with feeding, chewing or swallowing problems”



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Thickened Barium Liquids

- Viscosity values of thickened barium liquids much higher than thickened non-barium liquids
- Additional of barium to a thickener resulted in further thickening

Park et al, 2019



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Thickeners and Preterm Infants

- Shorter GI tract
- Less protective secretory IgA, putting infant at higher risk of infection
- Gut lining is more permeable, less able to repair after injury
- Alternatives to thickeners should be considered due to increased risk posed by thickeners

Gosa & Corkins, 2015

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Concerns re: thickening agents

- 22 Infants developed NEC (7 died, 14 required surgery)
 - 1 infant was a term baby
 - Half developed NEC after discharge from hospital
- Slowed GI motility
- Increased NEC risk with any increase in osmolality
- Potential for accumulation of sodium benzoate

Huang, et al., 2002
 Woods, et al., 2012
 FDA warning Sept 18, 2012
 Gosa & Corkins, 2015

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Concerns re: thickening agents

- If using starch-based thickener, alteration of macronutrient composition
- Impacts bioavailability of water from the developing gut

Hill, et al., 2010



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Pediatric dysphagia and thickening

- Only 60/121 children from 5 studies reported elimination of aspiration with thickening
- 2/2 children improved nasopharyngeal reflux
- 2/10 children with Trisomy 21 had improved initiation or resolution of delayed swallow
- 1/3 children aspirated with thickened, but not with thin liquids
- Conclusion: “the clinical utility of the findings from the studies examining thickened liquids as a treatment for dysphagia is limited.” (p. 349)

Gosa, et al., 2011



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Human milk viscosity

- Formula, untreated human and pasteurized milk was thickened in different concentrations and the viscosity were determined every 20 minutes for a period of 60 minutes
- Lactose formula thickened significantly across 1 hour
- Untreated and pasteurized human milk produced diminished viscosity over time
 - changes were more accentuated in the first 20 minutes

Almeida, et al., 2011



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Variations in suck/swallow/breathe coordination

- Swallows followed by inspiration (versus followed by expiration)
 - 25% with expressed breast milk
 - 35% with formula
 - 40% with distilled water
- Significantly lower frequency with expressed breastmilk ($p < 0.05$)

Mizuno, et al, 2002



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Treat medical conditions first

Example: Gastro-esophageal reflux disease (GERD)

- Refluxate creates edema in the posterior glottic region
- Edema dulls the sensory responsiveness
- Edema interferes with the laryngeal protective reflexes
- Treatment of GERD result in improvement of airway protection

Suskind, et al, 2006

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