NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Paper (CAP): External Published DIAGNOSTIC Evidence

CLINICAL BOTTOM LINE:
41% of trauma patients presented with swallowing dysfunction when assessed within 24 hours of extubation, using two indicators of swallowing failure (1) coughing when drinking thick fluids and 2) requiring multiple swallows). For those trauma patients identified with swallowing dysfunction, age older than 55 years and duration of endotracheal intubation were reported as independent risk factors.

Clinical Question [patient/problem, outcome, assessment tool /diagnostic marker, and comparison]:
What is the incidence and what are the predictors of oro-pharyngeal dysphagia in extubated patients?

Citation: Bordon et al (2011) *Swallowing dysfunction after prolonged intubation: analysis of risk factors in trauma patients;* The American Journal of Surgery Volume 202, No 6

Method: Design and Procedure (e.g., note type of research design, comment on randomization, summarize treatment intensity as appropriate, such as dose (trials) per session, session length, frequency, total treatment duration, summarize general procedure, resources / materials required)

A retrospective cohort analysis. Files of 150 consecutive trauma patients, intubated for greater than 48 hours over a 6 month period were analysed.

- Clinical bedside assessment within 24 hrs of extubation
- Post-Swallow Dysfunction (PSD) defined as failure of normal swallowing reflex determined by two factors: coughing when drinking thick fluids and multiple swallows to clear the oropharynx
- Files were divided into those with PSD and those without which were compared via univariate fashion across demographics, injury characteristics, co morbid conditions (note COPD for rest see article), ventilator and ICU days and the presence or absence of pneumonia.
- Backward stepwise analysis logistic regression used to determine the risk factors associated with PSD after controlling for injury characteristics and demographics.

Method: Participants (where relevant note number of participants, inclusion/exclusionary criteria, characteristics of participants in experimental group and control group/s):

Inclusion criteria - 150 trauma patients intubated for greater than 48 hours.
Exclusion criteria - Patients who did not survive extubation and those with penetrating neck injuries were excluded, as well as those who could not follow simple commands.

Experimental group:
Patients who were intubated for >48hours admitted to trauma centre with trauma (non-penetrating) over a 6 month period who had post-swallow extubation dysfunction

Control Group: Patients who were intubated for >48hours admitted to trauma centre with trauma (non-penetrating) over a 6 month period who did not have post-swallow extubation dysfunction

Results: (briefly summarize the results, note whether the outcome was evaluated with/without blinding, note how many (if any) of the participants 'dropped out' of the study, note if **effect size** was reported)

Average age 42 and average Injury Severity Score (ISS) of 18.9; Almost 50% had major medical comorbidities and >28% developed ventilator-associated pneumonia during their ICU stay; PSD in 41% of pts (ie: 61 pts)

- Those with PSD were more commonly >55 years old; and more commonly developed VAP; with increased hospital days, LOS in ICU and Increased ventilator days
- Ventilator days and pts older than 55 were the independent risk factors for PSD (ie: Those pts older than 55 years had 2.5 fold greater risk of PSD; the risk of PSD increased by 14% of PSD for each ventilator day)
- Injury severity score, admission GCS and major medical comorbidities were not significantly associated with a greater risk of PSD

Strength of the evidence

(1) Level of evidence (NHMRC, 2009): I II III-1 III-2 **III-3** IV

(2) Quality of Evidence (based on Dollaghan, 2007): Appraisal points

Comments – Strengths/weaknesses of study

Strengths –

- Large numbers and statistical analysis using logistic regression analysis.

Weaknesses –

- Retrospective nature of analysis and examination of files - ?validity as well as unable to account for other unknown confounding variables.
- Poorly explored presence of trauma in cohort that may contribute to presence of dysphagia e.g. neurological/spinal/surgical interventions
- Poorly defined 'swallow screen' and unclear if performed by speech pathologist therefore not replicable
- Poor differentiation of 'ventilated time' and 'time of extubation' in discussions
- PSD is not a validated assessment tool or outcome measure, and ?whether accurate way to assess PSD
- Nil consideration of silent aspiration in this population
- Poorly explored significance of 'major medical comorbidities' – generalist statement
- Despite comments in introduction re known mechanisms that lead to PSD there is no exploration of these in swallow assessment e.g. glottic function/injury
- Only assessed swallowing function 24 hours post extubation and no other time points to see if/when recovery or change.
- No description or analysis regarding the size/type of ETT

Appraised By:
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Date: August 2015