NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Due to the limitations of study design, it is uncertain if pre-treatment exercises improve long term swallowing outcomes for an impaired oropharyngeal swallow. However, findings of improved epiglottic inversion and tongue base to posterior pharyngeal wall approximation measures observed on VFS in participants who underwent pre-treatment exercises suggest further research is warranted.

Clinical Question [patient/problem, intervention, (comparison), outcome]:
Do tongue strengthening exercises improve the impaired oropharyngeal swallow?

Citation: Carroll. W, et al (2008). Pretreatment Swallowing Exercises Improve Swallow Function After Chemoradiation. *Laryngoscope,* 118:39-43.

Design/Method: Retrospective case-control design. The groups were matched to cancer site, stage, treatment type, treatment dose and timing of swallowing studies. All patients received a prophylactic PEG tube prior to treatment commencing. 9 patients were in the experimental group, 9 in the control group.

All participants received a VFS approximately 3 months post Chemoradiation Therapy (CRT). A single radiologist blinded to clinical category scored the VFS examinations. Independent sample t tests or x analyses were used where appropriate to assess differences for all outcome measures. Outcomes measured included Rosenbeck Aspiration Score, posterior tongue base position at rest, posterior tongue base position during swallow, posterior tongue base movement, vertical hyoid position at rest, vertical hyoid position during swallow, vertical hyoid movement, epiglottis inversion, cricopharyngeal opening and PEG tube use 12 months post CRT.
All patients were followed at least 12 months post treatment.

Participants: 18 patients with advanced Squamous Cell Carcinoma of the oropharynx, hypopharynx, and larynx treated at the University of Alabama at Birmingham with combined chemotherapy and radiation therapy (CRT) to a minimum dose of 70 Gy were included in the study. All participants received a prophylactic PEG tube prior to treatment commencing.

Experimental Group: 9 patients received pre-treatment swallowing exercises, commencing 2 weeks prior to CRT. These included Masako (10 swallows), isometric tongue resistance (4 directions holding each position for 5 seconds), effortful swallow (10 swallows 5 times daily), Mendelsohn manoever and Shaker (sustained – holding for one minute times 3 sets, and repetitive – 30 repetitions). Regime was 10 repetitions, 5 times daily. Participants were encouraged to incorporate the swallow exercises into daily activities.

Control Group: 9 patients received post-treatment swallowing exercises as problems arose through their treatment (to mirror common practice in the community).

Results:
A significant difference was found between groups on:
- Measures of epiglottic inversion, with the experimental group maintaining more normal epiglottic inversion during swallowing
- Measures of posterior tongue base position during swallow, with the tongue base positioned more closely to the posterior pharyngeal wall in the experimental group

No other statistically significant results were found on other outcome measures.

Comments – Strengths/weaknesses of paper

Weaknesses –

- No randomisation
- No baseline VFS prior to therapy commencing, therefore not measuring an improvement/change in swallow in each person
- VFS only completed at 3 months post CRT, however participants followed to 12 months post CRT. Does not take into account changes in swallow and PEG removal later, post CRT
- Small sample size
- No comment on oral intake prior to or during or after treatment
- No comment on participants compliance with therapy
- I x radiologist interpretation of VFS – no peer review
- No quality of life measures incorporated into study; do the improvements made in some measures have an impact on swallow function and oral intake?

Strengths –

- Objective evaluation of swallow function
- Attempts made to match participants in experimental and control group (i.e. by tumour site, stage, treatment type, treatment dose and timing of objective swallow study)
- Uses statistical analysis and reports statistically significant findings

Level of Evidence (NH&MRC): Level III 2

Appraised By: Adult Swallowing EBP group

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