A Model for Training and Evaluation of Myringotomy and Tube Placement Skills

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ABSTRACT

Developing technical skills is essential to surgical education. Traditional use of the operating room as the primary venue to perform myringotomy and tube placement in the operating room under the supervision of the attending surgeon. Unfortunately many issues, including financial pressures, complication rates and ethical concerns are making it difficult for the operating room to be the predominant venue for the acquisition of technical skills. Training residents outside of the operating room may decrease patient complications and enhance efficiency. In addition, an objective structured assessment of technical skills (OSATS) model can be used to reliably and validly assess surgical skills. Efforts to train resident using a skills laboratory have been established in general surgery and are gaining momentum in other specialties.

METHODS

Developing technical skills tool box was developed. First year general surgery residents (n=20) with no previous M&T placement experience were prospectively randomized to receive hands-on skills training using the M&T tool box or to a didactic session focused on M&T placement. The training group practiced the procedure for one hour and the didactic group received a one hour lecture. A blinded examiner tested the subject before and after training. Performance was measured by a global rating scale (GBRS), checklist, time needed to complete task and resident confidence levels.

Participants were divided into two groups:

1. **Intervention group** received hands-on skills training using the myringotomy and tube placement model.
2. **Control group** received a didactic session that described the myringotomy and tube placement procedure.

RESULTS

Participant Demographics
- All (n=20) study participants first-year PGY-1 residents
- All (n=20) right handed
- Female = 8 and Male=12
- 12/20 previous experience skills lab
- 8/20 previous experience with M&T placement

GBRS (Global Rating Scale)
- Calculated as a post minus pre score
- Mann-Whitney U test
- Positive difference means score went up
- Trend toward improvement between didactic and skills lab group

Time
- Calculated as time pre minus time post
- Mann-Whitney U test
- Positive difference means resident took less time after training
- Statistically significant difference (p = 0.0211)
- Skills lab group experienced more improvement

Confidence
- Statistically significant association
- Improve procedure faster (p = 0.0069)
- Improved abilities to perform procedure (p = 0.0007)
- Found skills lab session to be beneficial in improving M&T placement skills (p = 0.0069)

DISCUSSION

Surgical education has evolved over the last decade. Technical skills were traditionally acquired in an apprenticeship format. However, with increasing constraints in the operating room and current limitations on resident duty hours, innovative strategies have been developed to impart surgical skill to trainees. We developed a myringotomy and tube placement model that is easy and inexpensive to construct. Evaluation of pre- and post-testing data revealed a trend in improvement in global rating scales and a statistically significant improvement in time to complete procedure in subjects that trained on the model. Residents in the skills lab group also felt that their abilities and time improved. This model of myringotomy and tube placement not only allows ample practice with close supervision and feedback, but can also be used as an assessment tool.

CONCLUSIONS

There was a positive effect of training on myringotomy and tube placement skills in residents as measured by global rating scale, time and confidence. Otolaryngology surgical curricula should contain myringotomy and tube placement skills training for junior residents.

REFERENCES