patient had poor nutritional status and cancer cachexia, predisposing him to skin integrity issues (Fig. 3).

Others have noted similar issues, and Jackson et al⁵ proposed specific padding of the head and face to reduce ulcers during prone positioning. Therapists should be cognizant of the potential for these types of facial ulcers (usually associated with mask ventilation), which have been identified by Medicare as avoidable complications.⁶

Facial edema associated with the prone position clearly increases the risk of airway complications regardless of the method of tube fixation. Clinicians should be vigilant to maintain airway position and prevent skin breakdown. The data obtained by Fisher et al¹ and our observations urge extreme caution during use of commercially available tube-fixation devices for patients placed in the prone position.

Dina Gomaa RRT

Richard D Branson MSc RRT FAARC

Department of Surgery

University of Cincinnati

Cincinnati, Ohio

The authors have disclosed no conflicts of interest.

DOI: 10.4187/respcare.03908

REFERENCES

1. Fisher DF, Chenelle CT, Marchese AD, Kratochvil JP, Kacmarek RM. Comparison of commercial and noncommercial endotracheal tube securing devices. *Respir Care* 2014;59(9):1315-1323.
2. Guérin C, Reigner J, Richard JC, Beuret P, Gacouin A, Boulain T, et al. Prone positioning in severe acute respiratory distress syndrome. *N Engl J Med* 2013;368(23):2159-2168.
3. Sud S, Friedrich JO, Taccone P, Polli F, Adhikari NK, Latini R, et al. Prone ventilation reduces mortality in patients with acute respiratory failure and severe hypoxemia: systematic review and meta-analysis. *Intensive Care Med* 2010;36(4):585-599.
4. Lee JM, Bae W, Lee YJ, Cho YJ. The efficacy and safety of prone positional ventila-

tion in acute respiratory distress syndrome: updated study-level meta-analysis of 11 randomized controlled trials. *Crit Care Med* 2014;42(5):1252-1262.

5. Jackson ME, Verano JX, Fry JE, Rodriguez AP, Russian C. Skin preparation process for the prevention of skin breakdown in patients who are intubated and treated with Roto-Prone. *Respir Care* 2012;57(2):311-314.
6. Zaratkiewicz S, Whitney JD, Lowe JR, Taylor S, O'Donnell F, Minton-Foltz P. Development and implementation of a hospital-acquired pressure ulcer incidence tracking system and algorithm. *J Healthcare Qual* 2010;32(6):44-51.

Endotracheal Tube Holders and the Prone Position: A Cause for Concern—Reply

In Reply:

We appreciate the comments by Gomaa and Branson concerning their patients who developed pressure sores during prone ventilation and how it relates to the findings of our study.¹ The authors are correct that the effects of prone positioning were not evaluated in our study. Prone positioning and facial edema, although both important factors in skin integrity around the airway, were not within the scope of our study. However, data derived from our observations could be used to identify airway-securing devices that had pressure points in the supine position. The Hollister AnchorFast device had an increased reading of force on the right cheekbone area (FS1) during each of the vertical and horizontal rotation phases of our testing. Airway complications are a recognized hazard during prone ventilation.²

Unfortunately, the statement in the first paragraph of the letter that “the increase in pressure exerted by the commercially available devices, which the authors reported as not clinically important” is incorrect. In fact, in the second paragraph of the discussion section, we specifically stated that “the force exerted on the patient’s face by many of the commercial securing devices may result in discomfort and formation of pressure ulcers.”¹ We discussed that although there was

no outlier in all of the factors tested, specific techniques/devices may prove more beneficial in certain circumstances.

We do agree and join with Gomaa and Branson in stressing the importance of therapists being aware of and vigilant in prevention of the development of pressure ulcers not only in the prone patient, but also in all patients who have artificial airways. Assessing skin integrity of all patients with artificial airways should be part of every patient evaluation regardless of the need for mechanical ventilation or prone positioning. Gomaa and Branson’s reported experiences only further stress the need for continued evaluation of airway-securing procedures with more sophisticated modeling, as well as clinical observation.

Daniel F Fisher MSc RRT

Respiratory Care Services

Massachusetts General Hospital

Boston, Massachusetts

Robert M Kacmarek PhD RRT

FAARC

Department of Anesthesiology,

Critical Care and Pain Medicine

Respiratory Care Services

Massachusetts General Hospital

and Harvard Medical School

Boston, Massachusetts

Dr Kacmarek has disclosed relationships with Covidien, Hamilton Medical, General Electric, Newport, Dräger, and Maquet. Mr Fisher has disclosed no conflicts of interest.

DOI: 10.4187/respcare.03980

REFERENCES

1. Fisher DF, Chenelle CT, Marchese AD, Kratochvil JP, Kacmarek RM. Comparison of commercial and noncommercial endotracheal tube-securing devices. *Respir Care* 2014;59(9):1315-1323.
2. Lee JM, Bae W, Lee YJ, Cho YJ. The efficacy and safety of prone positional ventilation in acute respiratory distress syndrome: updated study-level meta-analysis of 11 randomized controlled trials. *Crit Care Med* 2014;42(5):1252-1262.