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KEY POINTS

- It is possible to successfully extubate a patient with an open abdomen.
- Extubation may lead to less complications, but may also be a sign of less severe disease.
- All open abdomens have some temporary abdominal closure.

Cited article:

Taveras LR, Imran JB, Cunningham HB, et al. Trauma and emergency general surgery patients should be extubated with an open abdomen.

Last month, I read an article which stretched my understanding and forced me to consider my current practice. It was retrospective study which is pretty good evidence for feasibility. While this editorial is not really designed to answer its title, I hope it at least causes you to ponder it for a moment. Enter in [Taveras et al.](#)¹

Taveras et al. looked at patients over 2 years at Parkland Hospital on their trauma and emergency general surgery services. Inclusion criteria was either having an open abdomen (OA) or a temporary abdominal closure (TAC) as part of your treatment plan, and exclusion criteria was death within 24 hours or an unsurvivable head injury. After IRB approval, 52 patients were enrolled in the study. Indications for their surgical management include intra-abdominal contamination, concern for intra-abdominal hypertension, severe intra-abdominal hemorrhage, planned second look, and necrotizing abdominal wall infection. Twenty-five of the patients were extubated with their OA, with 4 of them being extubated in the OR. Patients who were extubated had a lower sequential organ failure assessment score compared to those left intubated. All patients had an Abthera as the primary TAC device at some point, but a little more than a third used an additional modality with their OA. Taveras et al found the following:

1. There was no difference in ICU length of stay whether the patient was extubated or not.
2. 9 cases of Ventilator Associated Pneumonia (VAP), 8 in the never extubated while having an OA group.
3. 1 patient was reintubated for respiratory distress.

I found the study pretty interesting. Up until this point, I had never considered extubating a patient with an OA, let alone in the operating room. This gives the possibility for accessing whether or not extubation decreases the development of VAP in a prospective study. The development of VAP leads to a doubling in the mortality for these patients.² In Taveras et al.'s study, reasons for leaving a patient intubated, despite passing a spontaneous breathing trial were planned take back to the OR



and altered mental status. Three of the patients were left intubated with no documented reason.

Since this study was causing me to reconsider my practice, I wondered how many members of the Trauma Anesthesiology Society would potentially feel the same way I did before reading this article. It sounds like the majority of the cases in this study were emergency surgery.

Do you extubate patients if they have an open abdomen after emergency surgery?

Answered: 57 Skipped: 0

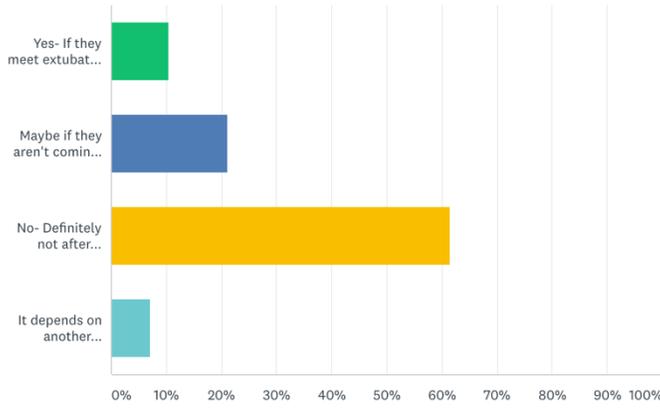


Figure 1.

Turns out, the majority of you all felt the same way as I do (Figure 1). If you feel inclined, please answer the poll attached to the site on whether this study would consider changing their practice. The article actually included what the authors thought were acceptable extubation

criteria. Some of these extubation criteria would have addressed your free field comments on additional variables to consider before extubation.

Just to make sure I wasn't missing something, I asked if you all would consider extubation if it was a non-emergent surgery which led to the OA. With this question, I fell into a little less than a third of respondents practice. I felt that an open abdomen would be a contraindication to extubation, but clearly, I am in the minority on this.

Do you extubate patients if they have an open abdomen after non-emergency surgery?

Answered: 57 Skipped: 0

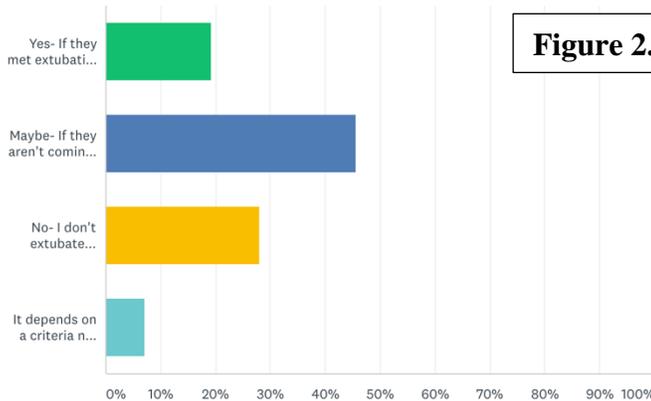


Figure 2.

I was a little confused at how Taveras et al. had used TAC as part of their surgical plan but also has patients with OA. So, I did a little research and found out that the terms OA and TAC

were pretty synonymous. Boele van Hensborek et al.³ defines OA as “the inability to close the abdominal fascia after laparotomy.” They included vacuum-assisted closure, vacuum pack, mesh, zipper, silo, skin closure, dynamic retention sutures. This would also include the Abthera OA negative pressure wound therapy, Wittmann patch, Bogota bag, polypropylene mesh, biological mesh, and Barker vacuum pack discussed in Taveras et al.’s manuscript

With this new tidbit of information, I found out that my practice had not completely matched my above statement about an open abdomen being a contraindication for extubation. There are patients whose abdomen was closed with mesh that I have extubated in the OR. Thus, I wish Taveras et al. had a little more clarity about what TAC was used at the time of extubation. Clearly, more studies (prospective please) on this need to be done to help guide best practices. Till then, I will be a little more thoughtful on who I consider meeting extubation criteria.

References

1. Taveras LR, Imran JB, Cunningham HB, et al. Trauma and emergency general surgery patients should be extubated with an open abdomen.
2. Safdar N, Dezfulian C, Collard HR, et al. Clinical and economic consequences of ventilator-associated pneumonia: a systematic review. *Crit Care Med.* 2005 Oct;33(10):2184-93.
3. Boele van Hensbroek P, Wind J, Dijkgraaf MG, et al. Temporary closure of the open abdomen: a systematic review on delayed primary fascial closure in patients with an open abdomen. *World J Surg.* 2009 Feb;33(2):199-207.