

Peer Review File

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Reviewer A

Esophagectomy: Technique, Considerations, and Challenges

1. Well described technique: figure 4 needs to be better quality.
2. Also, the technique related rolling the lesser curvature so the staples lines are in contact with each other needs to be clear and easy to understand

Reply

Figure 4 (now Figure 5) was replaced with a clearer image showing insertion of the stapler as well as “sock over foot” orientation and folding of the conduit with the lesser curvature staple lines approximating. Additionally minor change was made in the prose to add clarity.

Reviewer B

This is an well written technical guide on how to safely and effectively use the Orvil EEA stapler anvil. The device offers a reproducible and feasible way to perform an intrathoracic anastomosis during a minimally invasive esophagectomy. The only additional recommendation I have is to specify what energy device you use to create an esophagotomy at the mid-point of the esophageal staple line. I use a harmonic scalpel which works well.

Reply

We use harmonic scalpel as well. This was added to the technique prose for clarity of the esophagotomy and gastrotomy creation.

Reviewer C

The authors have can be congratulated with the results of their technique and also with describing it.

Even without the pictures the procedure was completely clear and easy to follow.

I have some minor comments/suggestions:

1. Please add year of the 37 procedures. Did the authors perform any of the Orvil procedures before that? Were results different with other anastomotic technique? Is there a proficiency gain curve the authors could share with the reader?

2. It would also be interesting to know some details of a number of the steps, although I realize these are probably difficult to find retrospectively.
 - what percentage of patients a leak was found during the procedure (during the leak test)
 - what percentage showed an abnormality at the postop day 3 barium swallow?

3. The impact of staple height is an interesting one. What do the authors recommend in the process of compressing the anastomosis? How far in the zone? This is naturally also an experience driven (small) step of the procedure.

4. Please add some more information on postoperative barium swallow. It is performed to exclude leak but some centers perform it to identify non emptying gastric conduit which could cause dilation and blow out of the anastomosis. Do you identify this at your center? (at our center this is the only indication for the barium swallow-decision is made to leave the NG tube in in case of stasis.

5. The study from van Woerkom was correctly cited about the 119 patient learning curve; for high volume centers however this was lower. Probably the outcome driven modification is easier in high volume centers.

6. Figure 4 is blurred but in my version but this could be a problem in downloading here. Could save some space putting 8A and 8B side to side.

Reply

In regard to the 37 procedures by Campos et al., 2007-2009 was added to the prose. We ultimately decided to discuss learning curve and proficiency in the later section with more recent studies.

Very insightful point regarding barium swallow. We elaborated on our POD3 swallow study. We use this primarily for conduit emptying. We have yet to identify any occult (radiographic) leaks which were not clinically apparent (fever, tachycardia, leukocytosis). Our most interesting finding has actually been 2 patients with hiatal stenosis (from omental pedicle compression), although a few patients required endoscopic pyloromyotomy or dilation/botox as well. These findings have resulted in modification of omental pedicle, but we still avoid prophylactic pyloroplasty as it would be unnecessary in the majority of our patients.

Clarity was added to the van Woerkom et al. reference to reflect the 119 learning curve at non-high volume centers.

Figure 4 (now figure 5) was replaced and is much clearer.

Reviewer D

Congratulations to the authors on trying to explain their technique of doing the circular esophago-gastric anastomosis. In this article the authors described the pitfalls of doing the Oravil circular anastomosis.

The aim of the study was to help in providing tips to decrease the leak rate of this anastomosis. However, the authors only reviewed the surgical literature up to 2019 with various papers quoting their leak rates without a comparison to their own leak rate that they achieved from their modification.

To the authors:

- Can you please provide the difference and modifications that you made from those described by other authors? You cited three studies from 2019. What did they do differently than what you are proposing?
- Did you review more recent articles (after 2019) describing the same anastomosis? Is there any difference or similarity to your article?
- On line 72: Was the abdominal part of the procedure done laparoscopically or open? Please expand. If laparoscopic, please provide a sketch of the trocars positions.
- How many patients have you operated on using this technique? What year did you start using this method?
- What was your operative time for each portion of the procedure?
- Did you have a problem before using this technique that made you switch to this method? If so what were the changes that you made and what difference did you see?
- What was your leak rate and stenosis rate that you saw before and after these changes?
- On line 78: Can you please provide a sketch showing the trocars positioning
- Can you please provide sketches to the intra-operative pictures that you have in the manuscript for better illustration of the technique?
- On line 135: You described the method of introducing the Oravil. There is a video by the company addressing this and you may consider referring to that video in the manuscript. The link is https://www.youtube.com/watch?v=1qmwzztq_PI
- On line 184: Your statement about the angle of the staple line can't be substantiated unless you have done studies showing that it is a risk. Can you please show your evidence of this claim or a reference to the studies confirming this allegation?
- On line 233: You stated that you noticed from the pooled data that the learning curve of 119 cases is needed before anastomotic leak rates plateaued. Is this what you are advocating as a learning curve for this kind of anastomosis? What is your experience as a learning curve at your institution using your described technique?

Reply

Upon initial drafting this manuscript in 2020 we were unaware of the impressive work by Foley et al. (UK) which was published in Dis of Esophagus earlier this year. This is the largest study to date of the Orvil anastomosis highlighting their institutional data and pooling of the prior Orvil literature. As such we included this in the outcomes section.

In regard to comparisons of technique variation, such as staple line exclusion, dog-ear plication, and omental wrap, we elected to defer commentary as this may have proved quite tangential.

Figure 2 has been added to highlight the laparoscopic port placement for the abdominal portion.

Currently there is no direct data to support our hypothesis that the intersection angle of the staple lines may contribute to ischemia/leak. There is some evidence from the colorectal literature regarding oblique, linear rectal stump staple lines intersecting with circular staple lines. Although, this acute angle creation is on the longitudinal plane of the bowel, rather than the transverse plane as we theorized in this paper. We did reference this paper and acknowledged that future studies would need to validate the observation.

At the time of this article invitation we were under the impression that topic was more centered on technical aspects. While we agree that providing the requested institutional data would be beneficial to readers, that was not our initial intent and much more time would be needed for analysis. We are currently in the process of compiling our own institutional data with intent for publication in the near future.

Reviewer E

This article describes the technique of the so-called Orvil anastomosis in the Ivor Lewis procedure. The anastomosis technique is still a highly debated topic in esophageal surgery, which means that the perfect technique has not been found yet. The reasons for this are multifactorial. Besides anatomical and technical difficulties, the placement of the stapler is also a challenge.

The Orvil instrument described here, which has been known for many years, can be considered interesting because the pursuing suture does not have to be applied in this technique.

Nevertheless, many pitfalls are already known with this technique, some of which are discussed in this manuscript.

In the end, however, this article is more like a technical description of the surgical technique with a technical instrument that has been in use for many years. Therefore, from my point of view, there is no real novelty or technical development in the surgical scene. The tricks and pitfalls described are already known to esophageal surgeons.

Furthermore, the authors do not present their own clinical data.

Reply

At the time of this article invitation we were under the impression that topic was more centered on technical aspects. While we agree that providing the requested data would be beneficial to readers, that was not our

initial intent and much more time would be needed for analysis. We are currently in the process of compiling our own institutional data with intent for future publication.

There seems to be a recent shift at some centers for linear anastomoses, but we feel that the information may be beneficial for surgeons who were previously swayed from circular double stapled techniques. This is especially in light of the recent, large study by Foley and colleagues out of UK demonstrating quite acceptable rates of leak/stricture, although this paper was not published prior to our initial drafting of our manuscript.
