Are There Contraindications for Uniportal Video-Assisted Thoracic Surgery?

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KEYWORDS

• Video-assisted thoracic surgery (VATS) • Uniportal • Safety • Contraindications • Evidence

KEY POINTS

- Allowing oneself to indulge in illusory superiority when it comes to uniportal video-assisted thoracic surgery (VATS) can harm patients and the specialty.
- One must be clear about the absolute and relative contraindications for VATS: those conditions that should deter from even attempting a uniportal approach.
- Once the operation is started, one must also bear in mind those situations that should prompt one to stop persisting with uniportal VATS and convert.
- Only by first safeguarding patients in this way can the aspiring uniportal VATS surgeon go on to safely master the approach and explore its benefits.

SO YOU THINK YOU ARE A GREAT SURGEON?

In a classic study, 93% of surveyed drivers in the United States deemed themselves to be above average in terms of driving skills, and 88% felt their driving safety was also above average.[1] This echoed an earlier study by the United States College Board, which found that 70% of students felt they were above average in terms of leadership skills, and 85% felt they were above average in terms of being able to get along with others, including 25% who placed themselves in the top 1% in this ability.[2]

Such studies often elicit laughter. However, there is no reason to believe that surgeons are immune to this well-recognized phenomenon of "illusory superiority."[3] For surgeons reading this article, simply ask yourself: Have you never felt that your own skills are superior to your colleagues? The culture of surgery is inherently geared toward generating practitioners of great self-confidence, which may even exceed one's concern for patients.[4]

Today, as worldwide interest in uniportal video-assisted thoracic surgery (VATS) grows,[5–8] it is inevitable that increasing numbers of thoracic surgeons are rushing to learn this technique.[8–11] In this scenario, illusory superiority may blind many aspiring surgeons to the reality that not every surgeon or every center is suited to perform it. Instead, illusory overestimation of one's own surgical prowess, coupled with spectacular reports of complex surgery being feasible with uniportal VATS,[12,13] may easily lead one to believe that it is "easy."

The unfortunate consequences of this are 2-fold. First, in the early days of VATS in the

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Thorac Surg Clin 27 (2017) 373–380
http://dx.doi.org/10.1016/j.thorsurg.2017.06.005

1990s, many were also eager to jump on the bandwagon of this exciting new approach and publish their own results.[14] However, some studies reported negative results, which set back the adaptation of VATS for many years.[15–17] It was only gradually realized that not all those reporting their results were performing proper or "complete" VATS,[18] and that failure to do so could compromise patient outcomes.[19,20] In layman terms, some "bad drivers" were possibly tainting the track record of the "good drivers" by having their results counted among the latter's. Unless training is well-regulated, there is a risk that poor results from those performing uniportal incorrectly may taint the track record of the approach as a whole and set its development back for years.[11]

The second potential consequence from about illusory superiority goes much deeper than this. If surgeons attempt operations that they or their units are not suited to perform, patients' lives are potentially put at risk. One very regrettable mishap in 2015 that was widely reported occurred during a live surgery demonstration, when reportedly the surgical team persisted with a highly difficulty laparoscopic procedure despite significant intraoperative problems being encountered.[21] Whether the failure to convert to an open procedure (despite apparent calls for this from the audience) was owing to the illusory superiority of the team is not known. What is known is that the patient died. There is a clearly need to protect patients by defining limits on how far a surgeon should push him or herself in pursuing a particular technique. In other words, for an approach like uniportal VATS, it is necessary to be aware of the contraindications.

REASONS NOT TO PERFORM UNIPORTAL VIDEO-ASSISTED THORACIC SURGERY

A *contraindication* is defined in the Merriam-Webster Dictionary as "something (as a symptom or condition) that makes a particular treatment or procedure inadvisable."[22] In this context, it is first necessary to point out that lack of evidence saying that a surgical approach should always be used should not be misconstrued as an absolute dictum saying it should never be used. Evidence that an approach is harmful is a contraindication, but lack of evidence that it is beneficial is not.

This author previously published a systematic review in 2016 summarizing the evidence for and against the use of the uniportal VATS approach for lobectomy.[11] Given that there had only been a few years since uniportal VATS lobectomy was first performed,[6] it was not surprising that relatively few clinical data had been collected. Only a handful of studies comparing the postoperative outcomes for uniportal VATS with those of conventional VATS had been published.[23–30] From those studies, only limited conclusions could be drawn about the supposed benefits of uniportal VATS:

i. *Operation:* Only 2 of the 7 studies providing data in this area found that uniportal VATS gave shorter operation times, less blood loss, and higher yields from lymph node dissection.[25,27] However, the absolute differences were small and both of these studies came from the same center. Another study actually showed that operation times were longer with uniportal VATS.[26] The remaining 4 studies found no difference between the approaches in terms of intraoperative parameters.
ii. *Pain and Morbidity:* Only 2 studies found that uniportal VATS gave lower postoperative pain, and only 1 associated it with quicker cessation of analgesic use and a lesser incidence of paresthesia.[26,28] None of the studies found that overall morbidity rates were lower among uniportal patients.
iii. *Recovery:* Only 1 study found that uniportal VATS gave shorter postoperative duration of stay,[27] but another study found that postoperative stay was longer after uniportal VATS.[30] The remaining studies found no difference between the approaches in terms of chest drain durations or durations of stay.

It would, thus, be fair to say that the evidence to support the use of the uniportal VATS approach over conventional VATS for all lobectomy operations ranges from weak to nonexistent. In terms of cancer survival after uniportal VATS lobectomy, there have been no large studies at all in this regard. There is simply not enough evidence to say that uniportal VATS should be done as the approach of choice. However, the volume of case series that have demonstrated the safety and feasibility of uniportal VATS in a large variety of clinical situations is large.[7,8,12,13,22–29] It can be argued that there is adequate evidence to say that uniportal VATS can be done.[11]

The lack of evidence in support of uniportal VATS in itself is not evidence to not perform it. Rather, now that it has been demonstrated to be feasible, this lack of comparative data should be a call for surgeons to explore the approach and create more data that will define its role in modern thoracic surgery. However, to safeguard patients as discussed, rules and contraindications should be established whilst that exploration is conducted.