Third, although recipient diagnosis overall did not differ between groups, contused lungs were transplanted in only 2 of 44 patients (4.5%) with pulmonary arterial hypertension (PAH), compared with 57 of 650 (8.8%) in the control group. Contused donor lung recipients may have been unwittingly selected, thereby avoiding patients with PAH at increased risk for developing PGD posttransplantation.

This interesting report from a well-respected and high-volume lung transplant center in Europe is the first in-depth outcome study using lungs from donors who had sustained significant chest trauma. These results may guide other lung transplant centers in considering whether to accept contused lungs from selected donors more frequently (Figure 2). This policy may further enlarge the lung donor pool, thereby decreasing total waiting time and waiting list mortality.

We should be grateful to the Vienna Lung Transplant group for bringing these types of lung donors to our attention and demonstrating that contusion per se is not an absolute exclusion criterion for lung donation. When carefully selected, bruised donor lungs can still support recipients' life immediately after transplantation, with no impact on early or long-term outcome.

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Commentary: Bruised and battered, but not broken—use of lung allografts from donors with chest trauma

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CENTRAL MESSAGE

Investigation by the Vienna Lung Transplant Group demonstrates selected lungs with traumatic contusion can be safely utilized with comparable outcomes to grafts from donors without trauma.

Eligible donors with traumatic injuries comprise more than one-third of the overall deceased donor pool, tend to be younger, and yield high-quality grafts.¹ With respect to lung grafts, some consider polytrauma donors high-risk and significant practice variability exists in organ acceptance from this donor pool. Current guidelines recommend

declining lung grafts with “severe trauma not appreciated on [computed tomography]”²; however, objective guidelines that specifically define severe trauma are lacking.

Schwarz and colleagues³ of the Vienna Lung Transplant Group report a retrospective single-center analysis of 1152 donor lungs; of these, 118 came from polytrauma donors and 44 had radiologic evidence of contusion before proceeding to transplant. The authors found similar rates of graft dysfunction, ventilation time, freedom from rejection, 1-year survival, and 5-year survival among recipients of grafts from donors with traumatic contusion and those without trauma. Notably, donors with trauma but without contusion had superior graft survival compared with the nontrauma controls. This might suggest that in terms of overall graft survival, the presence of contusion is counterbalanced by the superior quality of grafts from younger, less-comorbid-trauma populations.

The authors should be commended for their analysis of this specific donor population. However, it remains uncertain how these findings may influence the donor pool. In the United States, lungs are transplanted from about 22.5% of eligible donors.⁴ Among cases in which lungs were not recovered from eligible donors (63.1% of all donors in 2018), trauma to organ accounted for only 112 out of 6767 refusals (0.02%) and ruled out after evaluation in the operating room accounted for 399 of 6767 (0.06%). Among grafts discarded after recovery, trauma was cited as the reason for discard in only 5 of 135 grafts (0.04%).⁴ The most common reason for either refusal or discard was poor organ function, typically defined by the arterial partial pressure of oxygen divided by the inspired oxygen concentration (also known as the P/F ratio) (2312 out of 6767 or 34% of those not recovered). Although the authors have clearly demonstrated value and safety in utilization of selected donors with lung contusion (about 3.8% of all donors in their cohort), one must

acknowledge that utilizing these donors in some countries may not expand the donor pool to the same degree as it did in their series. Unfortunately, current data collection for donor turnaround by the Scientific Registry of Transplant Recipients remains inadequate for reliable analysis to aid in understanding the reasons behind donor organ nonuse, so the true influence remains unknown.

Most importantly, given that objective measurements of severity of contusions are not available to the authors and 10 of 16 trauma-donor lungs declined in their series had contusions, the question remains: How much contusion is too much? A considerable limitation of this study is that the degree of contusion is not objectively quantified, and therefore the community is left only with the selection bias among the donors with contusion who were included. Although it is reassuring to know that their current practice of selectively using polytrauma donors with lung contusions provides comparable outcomes, subsequent investigation of this topic using quantitative computed tomography measurements of contusion will be valuable in answering this question with more granularity. Ultimately, although battered and bruised, this study confirms that contused lungs with good function in the donor are likely to be good lungs in the recipient as well.

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