

Left on the Table: Examining a Pathologists’ Assistant Role in Preventable Tissue & Organ Anatomical Discards in Donation Settings

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Abstract:

Despite more than 100,000 patients awaiting transplantation in the United States, a significant number of recovered organs and tissues are discarded each year. While some non-use is medically necessary, many discards are associated with anatomical abnormalities or pathological uncertainty identified during procurement. Current recovery protocols provide guidance for donor assessment but do not incorporate specialized pathology expertise at the point of recovery. This study examines the potential role of Pathologists’ Assistants in reducing pathology-related tissue and organ discards.

National data from organ & tissue governing bodies were reviewed to identify discard trends associated with pathology-adjacent findings. Results suggest that a meaningful proportion of tissue and organ non-use falls within the interpretive scope of a pathologists’ assistant. Integrating pathology expertise into procurement workflows could provide rapid gross assessment, histological support, and standardized pathological documentation, potentially reducing preventable discards and increasing the number of viable tissues and organs available for transplantation.

Background:

Each year in the United States of America, thousands of patients are placed on the National Transplant Waiting List. Simultaneously, thousands of tissues and organs recovered from deceased donors are never transplanted, keeping these patients waiting. Tissues & organs that are not transplanted are either returned to the donor, or they are discarded. While discards can be clinically necessary to prevent danger to the recipient, the standards for discards exist in a grey zone: if pathological findings are present during procurement and the significance cannot be determined, the safest way forward is to discard.

This can be changed with the implantation of trained pathology professionals, specifically a professional such as a pathologists’ assistant (PA) that can be integrated into a recovery team. Recovery technicians at Organ Procurement Organizations (OPOs) must follow anatomical assessment protocols set forth by their workplace that follow national guidelines, but these are not designed to replace gross or histological pathological interpretation. Without access to a pathology professional, the recovery team will have no choice but to discard anything suspicious, leaving a potentially viable gift of life unused, and patients waiting without a transplant.

Rationale and Hypothesis:

PAs are uniquely trained in gross organ & tissue examination, histological evaluation, specimen triage, and intraoperative consultation – all skills that directly reflect challenges recovery teams face during procurement. Recovery requires fast and accurate analysis; organs must be transplanted as soon as possible, and tissues must be recovered with 24 hours of death to be considered viable. The implementation to PAs in OPOs could:

- Provide rapid, trained assessment of ambiguous gross findings at the time of recovery
- Ensure suspicious findings could be quickly evaluated histologically using microscopy or frozen sectioning
- Augment existing recovery protocols based on current pathological research and literature
- Standardize pathological documentation at procurement that could address gaps in current protocols

Integrating pathologists’ assistant expertise into the tissue and organ procurement process has the potential to reduce pathology-related tissue discards, thereby increasing the availability of transplantable tissues and enhancing overall recovery efficiency.

Methodology:

Data is collected from two sources: the United Network for Organ Sharing (UNOS), which records discards of each individual organ and the discard reason codes, and the National Tissue Recovery through Utilization Survey Report (NTRUS) from the American Association of Tissue Banks (AATB), which documents trends of discards for all tissues nationally.

This information will be compiled and evaluated for proportions of discards citing pathology or anatomical related reason.

Results:

Organ Data (2023)				
Organ	Total Tissues Recovered	Total Tissues Discarded	Discards with Pathology-Related Reason Codes	Significance Compared to 2012 Report
Kidney (Left + Right)	~29,155	8,258	27.90%	Increasing
Pancreas	~1,196	279	22.80%	Stable/Declining
Liver	~10,966	1,056	9.60%	Increasing
Lung	~3,276	260	9.00%	Increasing
Intestines	~99	4	4.00%	Stable
Heart	~4,664	68	1.50%	Increasing

Table 1. Deceased donor organ non-use rates by organ type, United States, 2023.

Tissue Data (2015)			
	2007/2012 Reports	2015 Report	Significance
Deceased Donors Recovered	29,799	39,121	Increase
Donors Determined Ineligible at Recovery Site*	5,697	5,421	Stable
Donors Determined Ineligible After Recovery**	2,235	3,309	Increase

Table 2. Tissue donor ineligibility by reason at recovery site, United States, 2015.

*Reason for Ineligibility at Recovery Site	2007/2012 Reports	2015 Report	Significance
Chart Findings	25.40%	39.50%	Increase
Physical Findings	36.60%	34.90%	Stable
**Reason for Ineligibility After Recovery	2007/2012 Reports	2015 Report	Significance
Infectious Disease Testing	39.10%	53.90%	Increase
Autopsy Results	7.10%	6.80%	Stable
Tissue Quality	1.70%	2.50%	Increase

Table 3. Reasons for Tissue Donor Ineligibility At and After Recovery , United States, 2015.

Discussion:

The data available from UNOS and the NTRUS suggests a significant relationship between pathology-adjacent findings and discarded tissues across multiple donation types.

At the organ level, the non-use rates of most organs is on the rise, indicating that pathological interpretation at the time of procurement remains an unmet need. One of the most striking findings is the utilization rate of biopsied kidneys, with pathology-related coding accounting for a discard rate of 27.9%. While the ultimate decision to accept or decline an organ rests with the transplant surgeon and their assessment of suitability for a specific recipient, the involvement of a trained pathology professional could provide valuable insight into the significance of questionable findings and facilitate more informed discussions regarding organ viability. Ideally, every transplant candidate would receive an organ from a young, healthy donor with no significant medical history; however, this is not the reality of modern transplantation in the United States. As the donor pool continues to evolve, it becomes increasingly important that imperfect organs are carefully evaluated for transplant suitability.

At the tissue level, NTRUS data reinforces this pattern and provides additional context. Rather than reporting non-use rates for individual tissues like UNOS, NTRUS categorizes donor ineligibility and tissue discard data, allowing for identification of broader trends. Physical findings and chart-based determinations accounted for nearly three in four on-site donor ineligibility rule-outs in 2015; a proportion that has grown wider from the 2007 report. Although some causes of donor ineligibility fall outside the scope of pathology and would not be directly impacted by PA involvement, a substantial subset of these determinations could potentially benefit from pathology expertise.

Notably, the absence of granular, pathology-specific codes in the national databases are meaningful in themselves. The current coding system does not account for individual pathology conditions that led to the tissue’s discard, meaning that the interpretation of what qualifies as “pathological” cannot be determined. This also emphasizes the need for standardized pathology documentation at the time of procurement.

Current anatomical assessment protocols, established through the framework of federal regulations, Centers for Medicare & Medicaid Services (CMS), accreditation standards, and preferences of each individual Organ Procurement Organization (OPO), provide foundation for recovery technician practice. However, these protocols are not designed to address anatomical or pathological ambiguity, and no current governing body mandates pathology expertise. While a pathology professional is not an absolute need, the specialized training offered by a pathologists’ assistant in gross examination, intraoperative consultation, histological support, and specimen triage represents a natural and feasible extension of the existing framework that would positively augment the recovery process and discard rates.

Conclusion:

The findings of this study show a meaningful subset of tissue and organ discards in the donation setting are driven by findings that fall within the interpretive scope of a pathologists’ assistant. Across both organ and tissue donation, national data reveals rising rates of discard attributable to gross assessment findings, biopsy results, and pathological uncertainty – all categories that fall squarely within the expertise of a PA.

Integrating PAs into the procurement workflow would not replace existing recovery team protocols but expand & enhance them, particularly given the time-sensitive environment required of recovery. With over 100,000 patients on the national transplant waitlist and non-use rates of organs & tissues on the rise, the cost of inaction is measurable in human lives. Pathologists’ assistants could be the solution that closes this gap.

References:

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3. American Association of Tissue Banks. (2015). *National tissue recovery and utilization survey*.
4. Mid-America Transplant. (2026). *Tissue recovery and disposition data, 2024-2025* [Unpublished internal dataset].