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ABSTRACT SUBMISSION TITLE: *D1 - Lean Thinking in Plastic Surgery: A Framework for Quality Improvement*

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Abstract Text:

PURPOSE:

Plastic surgery faces increasing pressure to deliver efficient, cost-effective care while maintaining high patient satisfaction and quality clinical outcomes. As healthcare systems continue to shift toward value-based care, optimizing resource utilization is essential. Lean methodology, which focuses on maximizing value and minimizing waste, has been successfully adopted in other surgical specialties but remains underutilized in plastic surgery. This study applies Lean principles to a facial fracture model to illustrate how inefficiencies in workflow, delays in care, and variability in practice patterns can be reduced to improve both patient outcomes and overall system performance.

METHODS:

An example panfacial trauma case was analyzed using the five core Lean principles: defining value, mapping the value stream, creating continuous flow, establishing pull, and pursuing perfection. The patient care pathway was mapped from initial emergency department presentation through operative fixation. Value-added and non-value-added steps were identified, and inefficiencies were categorized according to the seven classic Lean wastes. A future-state model was proposed to demonstrate potential workflow

optimization strategies. Epic institutional data from an example case representing costs for both supplies and time was used to model cost savings.

RESULTS:

Current-state analysis identified consultation delays, redundant imaging, and inefficient operative setup as key inefficiencies. Application of Lean principles led to the development of standardized consultation and imaging protocols, improved workflow integration between specialists, and implementation of streamlined fracture-specific trays. These targeted interventions modeled a reduction in preoperative time of approximately 40%, operative setup time by 30 minutes, and total time to fixation by 35%, which translated to potential cost savings of at least \$2,500 per case, in addition to enhanced efficiency and resource utilization.

CONCLUSIONS:

Lean methodology offers a practical and structured framework to improve efficiency and reduce waste, ultimately increasing value in plastic surgery. This modeled application in an example panfacial trauma case demonstrates the potential for meaningful improvements in workflow, timeliness, and cost effectiveness. Adoption of Lean principles within plastic surgery may serve as a foundation for broader quality improvement initiatives across the specialty.