Programmatic Change In Delivery Of Central Venous Port Placements:
A Prospective Study Of Time And Resource Efficiency

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Introduction: Central venous port placement is performed by a variety of surgeons in
different subspecialties, and our previous work suggests individual surgeons—
regardless of training—are the strongest predictor of outcomes. We sought to
prospectively evaluate a programmatic shift towards a resource-conscious, patient-
focused algorithm for this common and simple surgical procedure.

Hypothesis: An efficient surgeon in high-throughput, outpatient OR with dedicated time
set aside for CVP placements using standardized ultrasound-guided venous access can
reduce complications and resource utilization associated with the procedure

Methods: Following implementation of a system-side algorithm for efficient central
venous ports (CVP) placement, 78 CVPs were placed by a single surgeon and
evaluated in a prospective fashion. Primary outcomes were procedure time, total OR
time, total facility time, and procedure-related complications. These prospective data
were then compared to a retrospective cohort of CVP placement, as well as a matching
cohort of interventional radiology (IR) CVP placement.

Results: The efficiency-centered (prospective) set had significantly shorter procedural,
operating room (OR), and facility times. The range of OR time savings with the
prospective vs. other comparison groups is 10-34 minutes, representing 22-49%
reductions in OR time (p<0.001). Complication rates did not show a significant
difference (p=0.13). Delay between referral and port placement was also reduced by 2
days with the prospective group as a result of infrastructural change (p<0.05). The
median IR set case showed a 48-minute lower facility time than the median prospective
case (p<0.001).

Conclusions: Through a programmatic change emphasizing efficiency and patient-
centered outcomes, procedural/OR/facility time, as well as complications can be
reduced greatly. These data provide compelling evidence that common and ostensibly
simple operative procedures can be substantially improved upon with thoughtful and
data-driven systems-level enhancements.

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