

Robotic Transhiatal Esophagectomy is the Future: Here and Now

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Objective:

The advent of robotics may greatly impact Surgery. This study was undertaken to examine our results with robotic TransHiatal Esophagectomy (THE) and to compare our results with those predicted by NSQIP and those reported through NSQIP.

Methods:

Since our first robotic THE, we have followed patients with IRB approval. We determined predicted outcomes for our patients using the ACS NSQIP Surgical Risk Calculator and, for comparison, utilized patients undergoing transhiatal esophagectomy from 2013-18 in NSQIP. For illustrative purposes, data are expressed as median (mean ± SD), where appropriate.

ACS NSQIP Surgical Risk (Predicted) Outcomes, Outcomes Reported in NSQIP, Actual Outcomes with Robotic THE			
Complications	Predicted (%)	NSQIP (%)	Actual (%)
Any Complication	33	35	20 ^Δ
Serious Complication	29	32	17 ^Δ
Cardiac Complication	3	2	0 ^Δ
Pneumonia	11	12	9
VTE	4	4	4
SSI	14	14	2* ^Δ
Sepsis	9	9	6
UTI	2	2	0 ^Δ
Return to OR	12	13	2* ^Δ
D/C to Nursing or Rehab	16	11	19
Readmission	11	11	13
Length of Stay (days)	11 (10±1.9)	-	8 (13±12.4)
In-Hospital / 30-Day Mortality	2	2	4

Results:

65 patients underwent robotic THE: perforation/empyema with end-stage achalasia (1), GIST (1), radiation induced stricture (1), NET (1), squamous cell carcinoma (1), adenocarcinoma (60). The patients were of age 69 (67±8.8) years, had a BMI of 26 (27±5.2) kg/m2, and 79% were men. 66% of patients received neoadjuvant chemotherapy or chemoradiotherapy. Operative duration was 307 (318±92.7) minutes and estimated blood loss was 200 (267±372.3) mL. Five operations were converted to ‘open’, all within our first 19 robotic THE. Length of stay was 8 (13±12.4) days but was decreasing with experience (p<0.01). 20% of patients had complications: pneumonia (5), DVT (2), SSI (1) (Table). 6% died in-hospital [acute renal failure (1), stroke (1), pneumonia (2)]. 15% of patients were readmitted within 30 days. No patients had issues with their gastric conduits. Median survival was 75 months.

Predicted outcomes were like outcomes reported in NSQIP (Table). Actual outcomes were often superior to predicted outcomes (e.g., rates of SSI and patients returned to the O.R.) and outcomes reported in NSQIP (e.g., rates of any complication, serious complications, cardiac complication, SSI, UTI, and patients returned to O.R.) (Table).

Conclusions:

Our patients undergoing robotic THE were like patients reported in NSQIP; they were not a select group. Outcomes after robotic THE are like or better than predicted outcomes or national ‘benchmark’ data with the conventional ‘open’ approach and their median survival is outstanding. While we believe our results will continue to improve with more experience, the robotic approach is the future of transhiatal esophagectomy.

