

Supplementary Online Content

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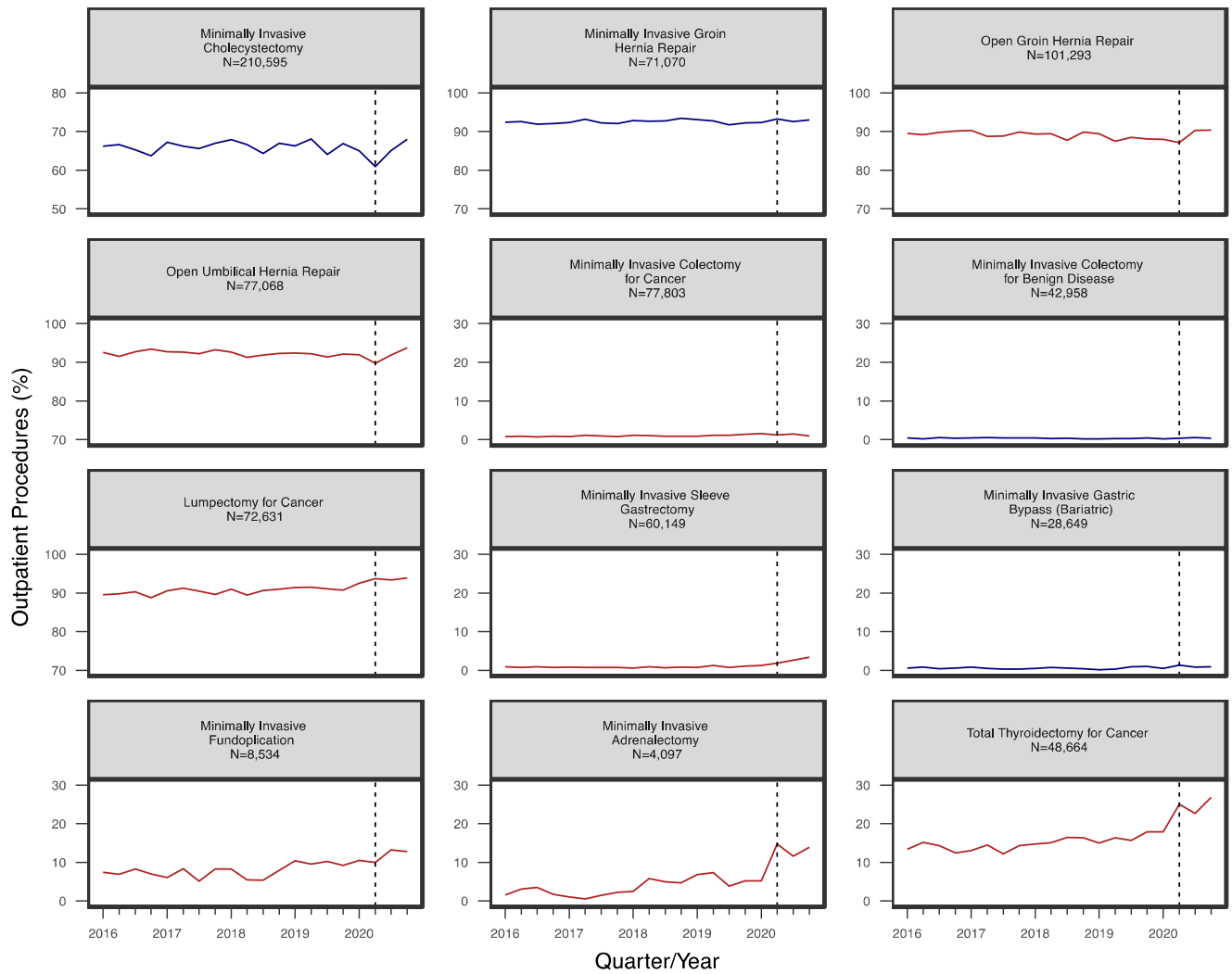
eFigure. Time Trends of Operations Without a Clinically Meaningful ($\geq 10\%$) Increase in
the Proportion of Outpatient Procedures Over the Study Period (2016-2020)

eTable 1. CPT, ICD-9-CM, and ICD-10-CM Codes Used to Identify Patients

eTable 2. Sensitivity Analysis of Odds of Undergoing Outpatient General Surgery
Procedures During Q2-Q4 of 2020 vs Q2-Q4 of 2019

This supplementary material has been provided by the authors to give readers additional
information about their work.

eFigure. Time Trends of Operations Without a Clinically Meaningful ($\geq 10\%$) Increase in the Proportion of Outpatient Procedures Over the Study Period (2016-2020)



Red and blue lines indicate significant ($P < 0.05$) and non-significant ($P \geq 0.05$) trends over time, respectively, as determined by Cochran-Armitage tests. The vertical dotted line represents quarter 2 of 2020 (the onset of the COVID-19 pandemic in the United States).

eTable 1. CPT, ICD-9-CM, and ICD-10-CM Codes Used to Identify Patients

Procedure	CPT codes	ICD-9-CM codes*	ICD-10-CM codes
Minimally invasive colectomy for cancer	44204, 44205, 44206, 44207, 44208	153, 171.5, 195.2, 197.5, 197.6, 198.89, 199.1, 209.1, 209.11, 209.12, 209.13, 209.14, 209.15, 209.16, 209.17, 209.20, 209.27, 209.30, 209.5, 209.51, 209.52, 209.53, 209.54, 209.55, 209.56, 209.57, 209.60, 230.3, 230.4, 235.2, 235.5, 238.9, 239.0	C7A.00, C7A.02, C7A.020, C7A.021, C7A.022, C7A.023, C7A.024, C7A.025, C7A.026, C7A.029, C7A.096, C7A.1, C7A.8, C18, C18.x, C19.x, C20.x, C21.x, C49.A0, C49.A4, C49.A5, C76.2, C78.5, C78.6, C79.89, C80.1, D01.0, D01.1, D01.2, D3A.00, D3A.020, D3A.021, D3A.022, D3A.023, D3A.024, D3A.025, D3A.026, D3A.029, D3A.096, D12.x, D37.3, D37.4, D37.5, D37.9, D48.9, D49.0
Minimally invasive colectomy for benign disease	44204, 44205, 44206, 44207, 44208		K50.x, K51.x, K52.x, K57.x, K58.x, K59.x
Lumpectomy for breast cancer	19301, 19302		C50.x, D05.x
Mastectomy for breast cancer	19303, 19305, 19306, 19307		C50.x, D05.x
Minimally invasive inguinal hernia repair	49650, 49651, 49659		K40.x, K41.x
Open inguinal hernia repair	49507, 49520, 49521, 49525, 49505, 49550, 49553, 49555, 49557		K40.x, K41.x
Minimally invasive ventral hernia repair	49652, 49653, 49654, 49655, 49656, 49657		K42.x, K43.x, K46.x
Open umbilical hernia repair	49585, 49587		K42.x
Minimally invasive sleeve gastrectomy	43775	278, 278.01	E66, E66.0, E66.01, E66.09, E66.1, E66.2, E66.8, E66.9, E88.81, K95.89, Z68.41, Z68.42, Z68.43, Z68.44, Z98.84
Minimally invasive gastric bypass	43644	278, 278.01	E66, E66.0, E66.01, E66.09, E66.1, E66.2, E66.3, E66.8, E66.9, E88.81, Z68.41, Z68.42, Z68.43, Z98.84

Minimally invasive cholecystectomy	47562, 47563		K80.x, K81.x, K82.x
Minimally invasive fundoplication	43280		K21.x, K44.x
Parathyroidectomy	60500, 60502	227.1, 252, 252.01	D35.1, E21.x, E83.52, N25.81
Thyroid lobectomy	60200, 60210, 60220	193, 237.4, 239.7, 234.8, 199.1, 258.02	C73, C80.1, D44.x, D49.7, D09.3, E04.x, E05.x, E06.x, E07.x, E31.22
Total thyroidectomy	60240, 60252, 60254, 60260, 60271		C73, C80.1, D09.3, D44.x, D49.7, E04.x, E05.x, E06.x, E07.x, E31.22
Minimally invasive adrenalectomy	60650	194, 194.0, 198.7, 237.2, 239.7	C74, C74.00, C74.01, C74.02, C74.10, C74.11, C74.12, C74.91, C74.92, C79.7, C79.70, C79.71, C79.72, D35.x, D44.1, D44.10, D44.11, D44.12, D49.7, E24.x, E26.x, E27.x

ICD-9-CM, International Classification of Diseases, Clinical Modification, Ninth Revision; ICD-10-CM, International Classification of Diseases, Clinical Modification, Tenth Revision, CPT, Current Procedural Terminology

*Although ICD-10-CM was implemented in the ACS-NSQIP Participant User File from 2016, six procedures (minimally invasive colectomy for cancer, minimally invasive sleeve gastrectomy, minimally invasive gastric bypass, parathyroidectomy, thyroid lobectomy, and minimally invasive adrenalectomy) additionally utilized ICD-9-CM diagnosis codes in 2016. In order to capture these procedures, both ICD-9-CM and ICD-10-CM codes were used for these six procedures in 2016 only. For the years 2017-2020 only ICD-10-CM codes were used for all procedures.

eTable 2. Sensitivity Analysis of Odds of Undergoing Outpatient General Surgery Procedures During Q2-Q4 of 2020 vs Q2-Q4 of 2019

Procedure	Years	Univariate odds ratio (95% CI)	P value	Adjusted odds ratio (95% CI) ^a	P value
Minimally invasive colectomy for cancer	Q2-Q4 2020 vs Q2-Q4 2019	1.01 (0.79-1.28)	0.97	1.01 (0.79-1.29)	0.92
Lumpectomy for cancer	Q2-Q4 2020 vs Q2-Q4 2019	1.44 (1.30-1.60)	<0.001	1.44 (1.30-1.60)	<0.001
Mastectomy for cancer	Q2-Q4 2020 vs Q2-Q4 2019	2.87 (2.65-3.11)	<0.001	2.94 (2.71-3.18)	<0.001
Minimally invasive adrenalectomy	Q2-Q4 2020 vs Q2-Q4 2019	2.63 (1.75-3.96)	<0.001	2.53 (1.67-3.83)	<0.001
Thyroid lobectomy for cancer	Q2-Q4 2020 vs Q2-Q4 2019	1.55 (1.42-1.70)	<0.001	1.54 (1.40-1.69)	<0.001
Minimally invasive inguinal hernia repair	Q2-Q4 2020 vs Q2-Q4 2019	1.10 (0.99-1.22)	0.07	1.11 (0.99-1.23)	0.06
Open inguinal hernia repair	Q2-Q4 2020 vs Q2-Q4 2019	1.16 (1.07-1.26)	<0.001	1.17 (1.08-1.27)	<0.001
Minimally invasive ventral hernia repair	Q2-Q4 2020 vs Q2-Q4 2019	1.23 (1.16-1.30)	<0.001	1.24 (1.17-1.31)	<0.001
Open umbilical hernia repair	Q2-Q4 2020 vs Q2-Q4 2019	1.04 (0.93-1.15)	0.53	1.04 (0.93-1.16)	0.52
Minimally invasive sleeve gastrectomy	Q2-Q4 2020 vs Q2-Q4 2019	2.82 (2.02-3.93)	<0.001	2.81 (2.01-3.93)	<0.001
Minimally invasive gastric bypass	Q2-Q4 2020 vs Q2-Q4 2019	1.27 (0.69-2.35)	0.45	1.23 (0.66-2.30)	0.52
Parathyroidectomy	Q2-Q4 2020 vs Q2-Q4 2019	1.27 (1.16-1.40)	<0.001	1.30 (1.19-1.44)	<0.001
Minimally invasive cholecystectomy	Q2-Q4 2020 vs Q2-Q4 2019	0.93 (0.90-0.96)	<0.001	0.93 (0.90-0.97)	<0.001
Minimally invasive fundoplication	Q2-Q4 2020 vs Q2-Q4 2019	1.32 (1.00-1.73)	0.05	1.30 (0.98-1.71)	0.07
Minimally invasive colectomy for benign disease	Q2-Q4 2020 vs Q2-Q4 2019	1.36 (0.76-2.44)	0.30	1.51 (0.83-2.73)	0.18
Total thyroidectomy for cancer	Q2-Q4 2020 vs Q2-Q4 2019	1.65 (1.51-1.79)	<0.001	1.67 (1.53-1.82)	<0.001

Abbreviations: CI, confidence interval

^aCovariates adjusted for in multivariable logistic regression models included: American Society of Anesthesiologists class, age, smoking status, sex, and body mass index.