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Original article

The readmission contradiction: toward clarifying common misconceptions about bariatric readmissions and quality improvement

Anthony Petrick, M.D.^{a,*}, Shannon A. Brindle, M.D.^a, Ellen Vogels, D.O.^b,
James Dove, B.S.^a, David Parker, M.D.^a, Jon Gabrielsen, M.D.^a

^a*Surgical Institute, Division of Bariatric and Foregut Surgery, Geisinger Medical Center, Danville, Pennsylvania*

^b*Sanford Broadway Clinic, Fargo, North Dakota*

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Abstract

Background: Efforts to improve quality in U.S. medicine have included reimbursement penalties for readmissions.

Objectives: This study's first phase measured readmissions after initial bariatric surgery and analyzed surgical outcomes secondarily. The second phase aimed to identify nonclinical factors associated with bariatric readmissions.

Setting: Rural U.S. academic hospital.

Methods: This retrospective study analyzed a prospective database of patients undergoing initial Roux-en-Y gastric bypass or sleeve gastrectomy between May 1, 2007 and April 30, 2015. Phase I included readmission data as well as demographic and surgical outcomes data. Phase II focused on "nonclinical" data from readmitted patients including payor status (Medicare, Medicaid, Commercial, Geisinger Health Plan), distance from home to the index hospital, and utilization of a transfer center.

Results: A total of 2275 patients were studied; 5.5% were readmitted. Of remissions, 48% were preventable and were most often associated with nausea, vomiting, and dehydration (gastrointestinal). Nonpreventable readmissions were significantly associated with major complications. No significant difference was found in overall or preventable readmission rates by payor. Distance from index hospital was not significantly associated with readmissions; however, 28% of readmitted patients were transferred from other healthcare facilities.

Conclusions: Payor status was not associated with increased risk for readmissions. Nearly half of all bariatric readmissions were preventable, identifying a quality improvement opportunity. However, 28% came through a transfer center, resulting in both better treatment and patient capture rates.

Such quality improvement initiatives paradoxically risk increased reimbursement penalties. (*Surg Obes Relat Dis* 2018;■:00–00.) © 2018 American Society for Metabolic and Bariatric Surgery. All rights reserved.

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It can be argued that *To Err is Human*, published by the Institute of Medicine in 1999 [1], has had the most

*Correspondence: Anthony Petrick, M.D., Surgical Institute, Division of Bariatric and Foregut Surgery, Geisinger Medical Center, 100 N Academy Ave., Danville, PA 17822.

E-mail: atpetrick@hotmail.com

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significant impact of any publication on American health-care in the 21st century. This report suggested that nearly 100,000 Americans die each year from medical errors [1]. Until this time, quality in healthcare was overseen by the Joint Commission, states, providers, and healthcare systems. In response to this report, the Federal government implemented sweeping policies through the Centers for

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67 Medicare and Medicaid Services to improve quality in U.S.
68 healthcare with mandatory quality reporting tied to reim-
69 bursement for healthcare services. The Deficit Reduction
70 Act of 2005 required compliance with 22 healthcare quality
71 measures. Under a provision effective July 2007, hospitals
72 subject to the Inpatient Prospective Payment System were
73 required to submit data from the Hospital Consumer
74 Assessment of Healthcare Providers and Systems to receive
75 their full Inpatient Prospective Payment System annual
76 payment.

77 In 2009, Jencks et al. [2] reported that 18% of Medicare
78 patients were readmitted within 30 days of discharge at an
79 annual cost of \$17 billion [2]. Others have estimated the
80 overall cost of readmissions in the United States to be as
81 much as \$25 billion annually [3]. Principally in response to
82 these data, the Hospital Readmissions Reduction Program
83 was included in the Affordable Care Act first passed by
84 Congress in 2010 and upheld by the Supreme Court in
85 2012. This provision became effective for discharges
86 beginning on October 1, 2012 and requires Centers for
87 Medicare and Medicaid Services to reduce payments to
88 Inpatient Prospective Payment System hospitals with excess
89 readmissions [4]. While hip arthroplasty is the only surgical
90 procedure currently subject to Centers for Medicare and
91 Medicaid Services penalties, these events have been fol-
92 lowed by intensive efforts in U.S. medicine to understand
93 and reduce hospital readmissions for all causes.

94 Roux-en-Y gastric bypass (RYGB) readmission rates
95 have been reported to be as high as 24% and are higher
96 than sleeve gastrectomy (SG) in most reports. While
97 readmission costs vary by region, we found the excess cost
98 of RYGB readmission in our institution to be approximately
99 \$10,000 [5]. The cost and quality implications of readmis-
100 sion have led to many efforts focused on understanding the
101 factors leading to readmission. Several studies have
102 reported that hospitals caring for the poorest and highest
103 acuity patients have the highest readmission rates [6]. These
104 patients disproportionately rely on public payors, such as
105 Medicare and Medicaid. Other studies find that higher
106 volume hospitals and those with private insurance have
107 lower all-cause readmission rates [7,8]. The study by Hong
108 et al. [9] identified gastrointestinal complaints such as
109 nausea, vomiting, and dehydration (N/V/D) as the most
110 common cause of bariatric readmissions. These findings
111 were confirmed by a recent prospective study of readmis-
112 sions in centers accredited by the Metabolic and Bariatric
113 Surgery Accreditation and Quality Improvement Program in
114 which the aforementioned gastrointestinal complaints were
115 the primary cause of 35% of bariatric readmissions [10].

116 Our study was conducted in 2 phases. Phase I inves-
117 tigated our rate of readmission after initial RYGB or SG
118 with the primary outcome being proportion of preventable
119 readmissions and related readmissions. Secondary end-
120 points included causes and length of readmissions. In phase
121 II, our primary goal was to determine the impact of payor

status, distance from index hospital, and utilization of a
transfer center on bariatric readmission rates.

Methods

This is an institutional review board–approved retrospec-
tive cohort study of all patients undergoing RYGB (open =
ORYGB or laparoscopic) or laparoscopic SG from May 1,
2007 through April 30, 2015 in a single hospital within a
large health system.

Readmissions were defined as admission to the index
hospital within 30 days of their primary operation. Read-
missions were characterized as related to the index admis-
sion if the readmission diagnosis or treatment was
associated with the bariatric surgical diagnosis or a known
complication of the bariatric procedure. All other readmis-
sions were characterized as unrelated.

Criteria established by Goldfield et al. [11] were used to
define preventable readmissions. A readmission was
deemed preventable if there was a reasonable expectation
that the readmission could have been prevented by
improved performance in 3 areas [11]. Potential process
improvements included (1) inpatient discharge planning,
(2) outpatient follow-up, and/or (3) improvements in the
coordination between inpatient and outpatient teams that
could have prevented readmission. All other readmissions
were considered nonpreventable. Data were extracted from
a prospectively collected from the database as well as
electronic medical records. In phase I, these data included
patient demographic information, initial body mass index
(BMI) as well as number of co-morbid conditions, and
medications before index procedure. Outcomes data
included length of stay (LOS), intensive care unit stay,
reoperations, complications and emergency department, or
inpatient readmissions within 30 days. These outcomes
were also captured for readmissions as well as time to
readmission and readmission LOS were analyzed.

During Phase II of the study, “nonclinical factors”
potentially affecting readmission were analyzed. These
factors included payors and were grouped by Medicare,
Medicaid, Commercial, and Geisinger Health Plan. We also
studied geodetic distance in miles from home to the index
hospital and the utilization of a transfer center to facilitate
readmitted patients who initially presented to healthcare
facilities other than the index hospital

Statistical analysis of data was done by Student’s *t* test,
univariate, and multivariate analysis, as well as Bonferroni
corrections, Logistic, and Poisson regression analysis.
Analytic tests are specified within each of the figures and
tables.

Results

Of a total of 2275 study patients, 124 were readmitted
within 30 days. Readmission are categorized as preventable

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