

Review article

Systematic review on reoperative bariatric surgery *American Society for Metabolic and Bariatric Surgery Revision Task Force*

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Received January 30, 2014; accepted February 10, 2014

Abstract

Background: Reoperative bariatric surgery has become a common practice in many bariatric surgery programs. There is currently little evidence-based guidance regarding specific indications and outcomes for reoperative bariatric surgery. A task force was convened to review the current evidence regarding reoperative bariatric surgery. The aim of the review was to identify procedure-specific indications and outcomes for reoperative procedures.

Methods: Literature search was conducted to identify studies reporting indications for and outcomes after reoperative bariatric surgery. Specifically, operations to treat complications, failed weight loss, and weight regain were evaluated. Abstract and manuscript reviews were completed by the task force members to identify, grade, and categorize relevant studies.

Results: A total of 819 articles were identified in the initial search. After review for inclusion criteria and data quality, 175 articles were included in the systematic review and analysis. The majority of published studies are single center retrospective reviews. The evidence supporting reoperative surgery for acute and chronic complications is described. The evidence regarding reoperative surgery for failed weight loss and weight regain generally demonstrates improved weight loss and co-morbidity reduction after reintervention. Procedure-specific outcomes are described. Complication rates are generally reported to be higher after reoperative surgery compared to primary surgery.

Conclusion: The indications and outcomes for reoperative bariatric surgery are procedure-specific but the current evidence does support additional treatment for persistent obesity, co-morbid disease,

This project was supported by an unrestricted educational grant by Covidien.

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<http://dx.doi.org/10.1016/j.soard.2014.02.014>

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and complications. (Surg Obes Relat Dis 2014;10:952–972.) © 2014 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords:

Reoperative; Revisional; Bariatric; Weight regain; Complications

Morbid obesity is a chronic disease that requires lifetime treatment. While bariatric surgery is highly effective and durable therapy, as with many other chronic diseases requiring medical or surgical therapy, there will be patients who respond well to an initial therapy and others with only a partial response. There will also be a subset of patients who are nonresponders or have recurrent or persistent disease or complications of therapy; these patients may require escalation of therapy, a new treatment modality, or correction of complications [1].

The paradigm of revisional, adjuvant or escalation of therapy is well established in many medical and surgical specialties. For example, total joint arthroplasty for the treatment of chronic degenerative joint disease has an established early success rate. Patients receiving a successful joint replacement, though, will have varying degrees of functional recovery based on their underlying disease, technical aspects of the procedure, and their functional status before surgery. Over time, there is also a well-established revision rate [2–4] with joint replacement and, when this initial therapy fails, a revision, replacement, or conversion procedure is offered.

There are many other examples of surgical procedures with known long-term need for revision such as coronary artery bypass grafting, heart valve surgery, abdominal wall hernia repairs, and oncologic operations. In all of these cases, the necessity of reoperative procedures or the use of adjunctive therapy is clear and covered by payors. Review of several major nationwide health plans and plans for state employees in the United States found no limitation with regard to revisional surgery for orthopedics, cardiac surgery, or any other specialty except bariatric surgery [5]. The paradigm of chronic treatment for other diseases is applicable to the chronic disease of morbid obesity and its complications. Therefore, revisional or additional therapy is justified if a primary bariatric procedure does not sufficiently treat the disease of morbid obesity.

Many patients with morbid obesity are not provided insurance coverage for the treatment of this disease or are offered *only* 1 lifetime procedure to treat it or face near insurmountable barriers to access care. Patient selection for the initial procedure is often determined by the patient's and primary care physician's perspective of risk and benefits for their individual medical situation, insurance coverage, and their operative risk in consultation with their surgeon and bariatric program. Patients and surgeons in consultation often choose the operation that best fits their risk and benefit preferences. The opportunity to convert or revise a primary

operation that does not achieve adequate weight loss or comorbidity improvement is therefore necessary to provide effective therapy for these patients. As with other surgical specialties, reoperative bariatric surgery is more challenging than primary procedures and is associated with a higher rate of 30-day adverse events [6]. However, when reoperative surgery is performed by experienced surgeons who perform a variety of revisional procedures, risk and complication rates are acceptable [7–10].

The purpose of this systematic review is to provide a summary of the current evidence regarding reoperative bariatric surgery. Specific nomenclature has been developed to provide descriptive categories of revisional procedures.

Methods

Evidence search strategy

MEDLINE 1996–present was queried for the following terms: “bariatrics/ or *bariatric surgery” OR “gastric bypass/ or gastroplasty/” OR “band/ banding” OR “anastomosis, roux-en-y/ or biliopancreatic diversion/ or gastrectomy/” AND “revis\$.mp” OR “conver\$.mp.” OR “revers\$.mp.” OR “fail\$.mp.” OR “Reoperation/ reop\$.mp.” OR “redo / redo” OR “regain.mp. or Weight Gain/”. The search was limited to articles in the English language with human patients.

A task force comprised of private practice and academic bariatric surgeons with expertise in reoperative bariatric surgery and critical evidence review was convened to review this topic. The ASMBS Insurance, Research, Clinical Issues, Quality Improvement, and Access to Care committees were represented on the task force. A medical researcher not affiliated with the ASMBS was contracted to perform the literature search and assist with evidence review. Members of the task force reviewed all citations and abstracts that met search criteria. The evidence was graded and sorted by procedure type and type of reoperation according to the nomenclature below. Secondary searches for specific procedures and topics were conducted by the task force based on key articles and bibliographies obtained in the primary search. A flow diagram of the citation selections process is shown in Fig. 1.

Nomenclature

Conversion. Procedures that change from an index procedure to a different type of procedure.

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