**Appendix 1:** Methodology for the cohort study and a systematic review of esophageal adenocarcinoma after bariatric surgery

**Methods**

We conducted a retrospective chart review of patients identified through the Advanced Cohort Explorer using a prospectively maintained rich clinical data repository that allows case identification through its search functionality. The search terms were sleeve gastrectomy, Roux-en-Y gastric bypass, and esophageal cancer. Inclusion criteria were patients who had undergone Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) and were diagnosed as esophageal adenocarcinoma (EAC) within 3 to 15 years after bariatric surgery at three Mayo Clinic sites (Rochester, Florida, and Arizona) from January 2000 to September 2019. The rationale to exclude patients who developed EAC less than 3 years or more than 15 years after surgery is because the development of EAC is less likely influenced from bariatric surgery than other factors. Data was extracted after screening patients through an electronic health record (EPIC) to a standardized data record form by 2 investigators (RM and VJ) independently during October 1, 2019 to November 1, 2019. An initial search yielded 97 patients with a final 12 patients meeting inclusion criteria. This study was approved by the Mayo Clinic Institutional Review Board (IRB number: 19-008962). Baseline demographic data, time to presentation after bariatric surgery, presenting symptoms, pathology, treatment, and outcomes were collected.

**Systematic review**

A comprehensive search of several databases from each database’s inception to September 2019, for pertinent English language publications was conducted. These databases included Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, and Daily, Ovid EMBASE, Ovid Cochrane Central Register of Controlled Trials, Ovid Cochrane Database of Systematic Reviews, and Scopus. The search strategy was designed and conducted by a medical reference librarian (L.P.) with input from the study’s principal investigator (B.A.). Controlled vocabulary supplemented with keywords was used to search for patients who underwent sleeve gastrectomy or Roux-en-Y gastric bypass and developed esophageal cancer. Supplementary file 5 outlines the search strategy. Eligible studies had to meet the following criteria: 1) patients must be older than 18 years and underwent SG or RYGB and 2) patients must be diagnosed as esophageal adenocarcinoma after bariatric surgery. Cases with cancer before or at the time of bariatric surgery were excluded.

**Study selection**

The initial search yielded 338 articles (82 articles from Ovid Medline, 79 articles from Ovid EMBASE, 5 articles from CENTRAL, 0 article from Ovid CCRCT, 0 articles from Ovid CDSR, and 172 articles from Scopus). After the exclusion of 76 duplicated articles, 262 articles underwent title and abstract review. Finally, 12 studies [51-62](#_ENREF_51) (14 RYGB patients and 5 SG patients) met our eligibility criteria and were included in our systematic review.