

Volume of surgery for benign colorectal polyps in the last 11 years

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Background and Aims: Traditionally large, complex colorectal polyps were managed by surgical resection (SR), and in recent years endoscopic resection (ER) has progressed significantly. However, to what extent ER has replaced SR remains largely unknown. We performed a multicenter retrospective cohort study to assess the volume and volume changes of SR for benign colorectal polyps over the past decade.

Methods: Patients who underwent SR for a benign colorectal polyp in the Netherlands between 2005 and 2015 were selected from the prospective nationwide Dutch Pathology Registry (PALGA database). Clinical characteristics were obtained from the charts of patients who underwent SR in the province of Noord-Holland.

Results: A total of 5937 patients were treated with SR for a colorectal polyp and the absolute (454-739 per year) and relative volumes (0.20%-0.37% per colonoscopy per year) of SR remained stable. In the province of Noord-Holland, 928 patients (15.6%) underwent SR. In these patients, submucosal lifting and ER were attempted in 19.9% (n = 175) and 15.0% (n = 134). After 2010, patients were more likely to undergo lifting (27.7% vs 11.4%, $P < .001$) and ER attempts (18.8% vs 10.9%, $P = .001$) before definitive SR. Twenty-two patients (2.4%) had been referred to another endoscopy clinic.

Conclusions: SR for large, complex colorectal polyps is still frequently performed and has remained stable. A small percentage of patients underwent ER attempts before SR, and referral for an additional ER attempt only occurred in a minority of cases. To increase ER attempts, implementation of a regional multidisciplinary referral network should be considered. (*Gastrointest Endosc* 2017;■:1-10.)

(footnotes appear on last page of article)

INTRODUCTION

Colorectal adenomas and sessile serrated lesions (SSL) are well-known precursors of colorectal cancer (CRC).^{1,2} Colonoscopic polypectomy reduces the incidence of CRC and CRC mortality and is therefore widely accepted and implemented.^{3,4} However, there are limitations in the technical ability to completely resect so-called complex colorectal polyps. Risk factors for incomplete endoscopic resection (ER) are lesion size larger than 40 mm, flat morphology, or lesions located at the ileocecal valve, appendiceal orifice, dentate line, involving a diverticulum or within a segment of inflammation.⁵ Other factors associated with incomplete ER are the so-called non-lifting sign and previous failed ER attempts.⁵⁻⁷

Traditionally, large and complex non-pedunculated colorectal polyps were managed by surgical resection (SR).^{8,9} However, over the past decade, ER techniques, such as piecemeal endoscopic mucosal resection (pEMR)

and endoscopic submucosal dissection (ESD), have progressed significantly and are now applied in many endoscopy centers around the world to treat complex colorectal polyps.¹⁰ Replacing SR with ER will reduce surgical morbidity, mortality, and costs.^{5,9-15} It remains largely unknown to what extent ER has replaced SR. We therefore performed a multicenter, retrospective cohort study in the Netherlands to assess the total volume of colorectal surgery for benign colorectal polyps and the absolute and relative volume changes over the past decade. We also assessed the endoscopic characteristics of the resected lesions, surgical characteristics, and surgery-related morbidity and mortality.

METHODS

Study design and patient identification

This is a multicenter, retrospective cohort study (NTR6294, www.trialregister.nl) consisting of patients

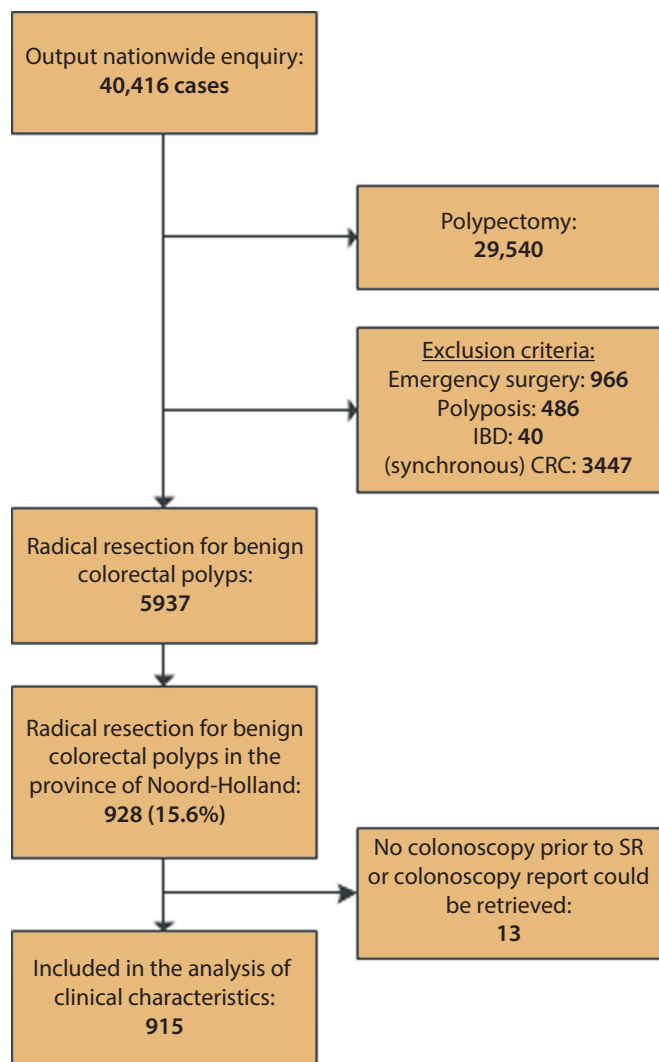


Figure 1. Flowchart of extracts included from the PALGA database.

who underwent SR for the treatment of benign colorectal polyps in the Netherlands. Patients were selected based on the histopathology reports of SR specimens using the Pathological Anatomy National Automated Archive (PALGA) database. The PALGA database is a nationwide network and registry of histopathology and cytopathology. This database contains pathology reports generated in the Netherlands since 1971 with complete national coverage since 1991, encompassing data from all pathology laboratories from all academic and nonacademic hospitals in the Netherlands.¹⁶

The PALGA database was searched with the following search terms: “Colon,” “Rectum,” “Resection,” “Polyp,” “Adenoma,” “Lesion,” or a (Dutch) synonym. The search included SR specimens between January 1, 2005, and December 31, 2015. Thereafter, cases were further confirmed or excluded after careful evaluation of individual pathology reports. The charts for all patients who under-

went SR in the province of Noord-Holland (15 regional and 2 academic hospitals, 1.7 million inhabitants between 30 and 90 years of age, which is in accordance with the age distribution of our cohort) were evaluated in further detail to assess the endoscopic characteristics of the resected lesions, the surgical characteristics, and surgery-related morbidity and mortality.

The study protocol was presented to the Medical Ethics Review Committee of the Academic Medical Center. They decided that a formal ethics agreement was not required according to the Medical Research Involving Human Subjects Act, because patient data were retrieved during standard care and no interventions were performed for the sake of this study. Separate approval of the study in the participating centers was obtained. The study was carried out in accordance with the Declaration of Helsinki.¹⁷

Study population

All patients who underwent SR for a benign colorectal polyp were included. A benign colorectal polyp was defined as an adenomatous lesion (tubular, tubulovillous, or villous), hyperplastic polyp, SSL, or traditional serrated adenoma with or without low- or high-grade dysplasia according to the Vienna criteria.¹⁸ The following exclusion criteria were applied: malignant submucosal invasion present in preoperative biopsy samples, (partial) endoscopic polypectomy specimen or SR specimen; SR performed for synchronous CRC or emergency SR such as bowel perforation, bowel obstruction, ischemia, diverticulitis, appendicitis, or ileus. Patients with known hereditary polyposis syndromes or inflammatory bowel disease (IBD) also were excluded. For the secondary analysis of the clinical characteristics of the resected lesions, surgical characteristics, as well as surgery-related morbidity and mortality, only patients who underwent a colonoscopy before SR in the province of Noord-Holland were included.

Patient characteristics

One investigator (M.B.) manually abstracted the clinical characteristics of all patients who underwent SR in the province of Noord-Holland from patient charts. The patients’ age, gender, American Society of Anesthesiology Physical Status Classification System, and body mass index were recorded.

Lesion and colonoscopy characteristics

Data from all colonoscopy reports before SR were collected consisting of the following colonoscopy characteristics: date of colonoscopy, endoscopy center, performing endoscopist, colonoscopy indication, depth of intubation, and cleanliness of the bowel assessed by the endoscopist. The following data concerning lesion characteristics were collected: lesion size as assessed by the endoscopist during colonoscopy, lesion location (ileocecal valve, appendiceal orifice, cecum, ascending colon, hepatic flexure, transverse colon, splenic flexure, descending

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