

# Lower gastrointestinal endoscopic polypectomy: Cross-sectional study with 7503 consecutive endoscopic procedures

## Alt gastrointestinal sistem endoskopik polipektomi: Ardışık 7503 endoskopik işlem ile kesitsel çalışma

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### Abstract

**Aim:** Colonoscopic polypectomy is the most effective visceral cancer prevention tool in clinical medicine. Studies observed a 76-90% reduction in colorectal cancer incidence following colonoscopic polypectomy. We herein present a case series who underwent polypectomy by lower gastrointestinal system (GIS) endoscopy.

**Methods:** The study population consisted of 7503 lower GIS endoscopy (colonoscopy or rectosigmoidoscopy) procedures performed in the Department of General Surgery between 2009 - 2019 for screening, diagnostic and follow-up purposes. 612 (8.2%) of the patients who underwent polypectomy were evaluated. The patients' demographic data, clinical status, histopathology reports and follow-up findings were recorded.

**Results:** During the study period, 612 patients (38 patients, twice and 3 patients, thrice) underwent polypectomy with lower GIS endoscopy. 386 of the patients were male and 226 were female. The mean age of the patients was 57.3 (13.7) (range 24-89) years. A total of 813 polypectomies were performed, and 118 procedures included two or more polypectomies. The most common sites of polypectomies were rectum (n=233, 29.5%), sigmoid colon (n=208, 25.3%) and the descending colon (n=107, 13%). Histopathological examination revealed 25 adenocarcinomas (4.1%), 98 high grade dysplasias (16%) and 269 low grade dysplasias (44%). In terms of histopathological results, there were no significant differences between genders ( $P=0.098$ ), however, younger patients (mean age: 51.7 years (14.7)) were more likely to have benign results and malignancy was more often encountered in older patients ( $P<0.001$ ). The mean ages of patients with adenocarcinoma and high-grade dysplasia were 61.2 (12.1) and 63.6 (11.1) years, respectively. Necessary treatments and follow-ups were performed for the related pathologies.

**Conclusion:** We observed that 8.2% of the patients undergoing lower GIS endoscopy had polyps and 20.1% of these polyps needed additional treatment, and 44% needed follow-up colonoscopy control. It should be noted that patients with various lower gastrointestinal tract symptoms may have malign polyps, potentially curable by polypectomy.

**Keywords:** Colonoscopic polypectomy, Adenoma, Adenocarcinoma

### Öz

**Amaç:** Kolonoskopik polipektomi klinik tıpta en etkili visseral kanser önleme aracıdır. Çalışmalarda kolonoskopik polipektomiye takiben kolorektal kanser insidansında %76-90 bir azalma sağlandığı rapor edilmektedir. Bu çalışmada alt gastrointestinal sistem (GIS) endoskopisi ile polipektomi uygulanan olgu serisini sunmak amaçlanmıştır.

**Yöntemler:** Çalışma evrenini genel cerrahi servisinde 2009-2019 yılları arasında tarama, tanıl ve takip amaçlı uygulanan 7503 alt GIS endoskopisi (kolonoskopi veya rektosigmoidoskopi) işlemi oluşturdu. İncelemede polip tespit edilen ve polipektomi işlemi gerçekleştirilen 611 (%8,2) endoskopisi işlemi değerlendirildi. Hastalar demografik veriler, klinik durum, histopatoloji raporları ve takipler açısından kayıt edildi.

**Bulgular:** Çalışma döneminde alt GIS endoskopisi ile polipektomi işlemi 557 hastaya (38 hastada iki kez, 6 hastada üç kez olmak üzere) 611 işlem yapıldı. Hastaların 386'sı erkek, 226'sı kadın idi. Hastaların ortalama yaşı 57,3 (13,7) (aralık 24-89) idi. Tek endoskopisi işleminde gerçekleştirilen biyopsi sayıları değerlendirildiğinde; 118 işlemde iki veya daha fazla olmak üzere toplam 813 polipektomi yapıldı. Polipektomi lokalizasyonları değerlendirildiğinde; en sık rektum 233 (%29,5), sigmoid kolon 208 (%25,3) ve inen kolon 107 (%13) olduğu görüldü. Histopatolojik inceleme sonuçları değerlendirildiğinde; 25 (%4,1) adenokarsinom, 98 (%16) high grade displazi, 269 (%44) low grade displazi tespit edildi. Patolojiler arasında cinsiyet açısından fark tespit edilmedi ancak yaş açısından fark tespit edildi (sırasıyla  $P=0,098$  ve  $P<0,001$ ). Malign hastaların ileri yaşta (adenokanser (61,2(12,1)) ve high grade displazi (63,6(11,1))) ve benign hastaların daha genç yaşta (51,7(14,7)) olduğu görüldü. İlgili malign patolojiler için gerekli tedavi ve takipler gerçekleştirildi.

**Sonuç:** Alt GIS endoskopisi yapılan hastaların %8,2'sinde polip görüldüğü ve bu poliplerin %20,1'inde ek tedavilere ve %44'ünde kontrol endoskopik takiplere gerek duyabileceği görülmektedir.

**Anahtar kelimeler:** Kolonoskopik polipektomi, Adenom, Adenokanser

## Introduction

It has long been thought that colorectal cancers develop from a precursor lesion (adenomatous polyp). This concept was based on the pathology studies published by St Mark's Hospital, London, Lockhart-Mummery and Dukes in 1928 and resulted in the concept of the polyp-cancer sequence published in 1975 by Muto et al. [1]. The introduction of colonoscopy in the early 1970s, following the demonstration of colonoscopic polypectomy feasibility, provided the clinically applicable technology for this concept. It was assumed that colorectal cancers could be prevented by examining the entire colon and detecting and removing the polyps. The evidence for this belief was provided by Winawer et al. [2].

Gastrointestinal polyps are proliferative and neoplastic lesions originating from the mucosal and submucosal epithelium, forming a mass protruding into the stomach and intestine lumen. Gastrointestinal tract (GIS) polyps are more common in the colorectal area. Colonoscopic examination may reveal polyps with or without stalks, - varying in size [3,4]. Colorectal polyps are classified as non-neoplastic polyps (hyperplastic polyps, hamartomatous polyps, mostly seen in juvenile polyposis, Peutz-Jeghers syndrome, Cronkhite-Canada syndrome, Cowden's syndrome, and inflammatory polyps), neoplastic polyps and adenomas (tubular, tubulovillous, villous) [5,6].

Adenomas may show mild, moderate, and severe dysplasia. Tubular adenomas are generally small and mildly dysplastic. As the diameter of the polyp grows, dysplasia is expected to increase. Among tubular adenomas, 88% are mildly, 8% are moderately and 4% are severely dysplastic. The rates of mild, moderate and severe dysplasia are 58%, 26% and 16% for tubulovillous and 41%, 38% and 21%, respectively, in villous adenomas [4,5]. Inflammatory polyps, with a diameter of 2-3 cm, develop in response to chronic inflammation, such as inflammatory bowel diseases, and are mostly seen in the rectum. Hyperplastic polyps are the most common nonneoplastic polyps. They are characteristic lesions smaller than 5 mm in size. Large polyps may be stalked and are particularly observed in the distal colon and rectum [3,6].

The aim of this study is to document the types of polypectomy materials of the lower gastrointestinal system diagnosed in our center.

## Materials and methods

Between January 2009 and December 2019, 7503 consecutive patients were admitted to the endoscopy unit for lower GIS endoscopy. 611 (8.2%) of them who had polyps and underwent polypectomy were included in this study.

### Endoscopy procedure

Indications for lower GIS endoscopy included patients with a complaint of lower gastrointestinal system (rectal bleeding, bowel habit changes lasting more than two weeks, bloody mucus defecation, lower abdominal pain and tenesmus sensation), unexplained iron deficiency anemia detected during examinations in patients presenting with a different complaint (menopausal female patients and male patients of all ages), patients with first-degree relatives with colon cancer, patients with the presence of hematochezia or occult blood positivity in

the stool. To prepare for the colonoscopy procedure, patients were advised to be fed with fluids for one day before the procedure. Also, all patients drank 1: 1 diluted 45mL sodium phosphate one day before the treatment at 23:00 and at 07:00 in the morning of colonoscopy. During the colonoscopy procedure, sedatives and antispasmodics were administered for better toleration of the procedure and pain control. The colonoscopy was performed with CF-30L Olympus brand colonoscopy device and a rigid rectoscope (30 cm). Endoscopy and pathological results were then evaluated.

### Statistical analysis

Categorical variables were expressed as frequency and percentage, parametric data with normal distribution were presented as mean (standard deviation), and non-normally distributed parametric as median (quarter range) and range. T-test for parametric data and Fisher's exact test for categorical data were used for comparison. *P*-value of less than 0.05 was statistically significant within 95% confidence interval.

## Results

During the study period, 612 patients (38 patients, twice and 3 patients, thrice) underwent polypectomy with lower GIS endoscopy. 386 of the patients were male and 226 were female. The mean age of the patients was 57.3 (13.7) (range 24-89) years. A total of 813 polypectomies were performed, and 118 procedures included two or more polypectomies. The most common sites of polypectomies were rectum (n=233, 29.5%), sigmoid colon (n=208, 25.3%) and the descending colon (n=107, 13%) (Table 2). Histopathological examination revealed 25 adenocarcinomas (4.1%), 98 high grade dysplasias (16%) and 269 low grade dysplasias (44%) (Table 1). In terms of histopathological results, there were no significant differences between genders (*P*=0.098), however, younger patients (mean age: 51.7 years (14.7)) were more likely to have benign results and malignancy was more often encountered in older patients (*P*<0.001). The mean ages of patients with adenocarcinoma and high-grade dysplasia were 61.2 (12.1) and 63.6 (11.1) years, respectively (Table 3). Necessary treatments and follow-ups were performed for the related pathologies.

Table 1: Histopathological examination results of polyps

|                      | n   | %    |
|----------------------|-----|------|
| Benign               | 219 | 35.8 |
| Adenocarcinoma       | 25  | 4.1  |
| High grade dysplasia | 98  | 16   |
| Low grade dysplasia  | 269 | 44   |
|                      | 611 | 100  |

Table 2: Polypectomy locations

| Polypectomy locations | n   | %    |
|-----------------------|-----|------|
| Total                 | 813 | 100  |
| Rectum                | 233 | 28.7 |
| Sigmoid colon         | 209 | 25.7 |
| Descending colon      | 107 | 13.2 |
| Anus                  | 80  | 9.8  |
| Transvers colon       | 48  | 5.9  |
| Rectosigmoid          | 40  | 4.9  |
| Ascending colon       | 37  | 4.6  |
| Cecum                 | 29  | 3.6  |
| Hepatic flexure       | 18  | 2.2  |
| Splenic flexure       | 12  | 1.5  |

Table 3: Age distribution of patients with various histopathological results

| Histopathological results | Number of patients | Mean age (years) | Standard deviation |
|---------------------------|--------------------|------------------|--------------------|
| Benign                    | 222                | 51.7             | 14.7               |
| Adenocarcinoma            | 25                 | 61.2             | 12.1               |
| High-grade dysplasia      | 98                 | 63.6             | 11.1               |
| Low-grade dysplasia       | 268                | 59.3             | 12.2               |
| Total                     | 613                | 57.3             | 13.7               |

## Discussion

In our country, lower GIS complaints are among the common gastroenterological problems. As a matter of fact, a significant proportion of our patients present to our outpatient clinic with complaints related to the GIS such as constipation and rectal bleeding. These symptoms may be indicative of a benign disease such as hemorrhoids, and treatment without further examination may delay the diagnosis of an important disease such as carcinoma. According to the American Cancer Society guidelines, everyone over the age of 50 should have a stool blood test and undergo rectosigmoidoscopic examination with 3-5 year intervals [1]. For this reason, rectosigmoidoscopy / colonoscopy or barium radiography should be performed to rule out malignant or inflammatory bowel diseases in patients presenting with rectal bleeding.

Most colorectal polyps are adenomatous polyps. Tubular adenomas constitute 80-86% of adenomatous polyps, villous adenomas constitute 3-16% and tubulovillous adenomas constitute 8-16% [3,7]. In a series of 675 cases, the rate of tubular adenoma was 80.7%, tubulovillous adenoma, 16.4% and villous adenoma, 2.9% [2]. Another study of 2506 cases revealed that 75% of adenomatous polyps were tubular adenomas, 15.3%, tubulovillous adenomas and 11.7%, villous adenomas [8]. Altınparmak et al. [9] reported that among 428 cases, 64.8% were tubular adenomas, 22.7% were hyperplastic polyps, and 3.7% were juvenile polyps. In Vatn et al.'s [10] study conducted on 914 cases, 68% turned out to be tubular adenomas, 7%, tubulovillous adenomas, 0.5% villous adenomas, 4.3% hyperplastic polyps, 6% serrated adenomas and 0.8%, adenocarcinomas. In our study, 35.8% were benign, 44% were low grade dysplasias, 16% were high grade dysplasias and 4.1%, adenocarcinomas.

The, incidence, size and dysplasia rate of adenomas increase with age [10-12]. Various studies in the literature report that 53-59% of adenomas are seen in males, 40-46% are seen in females and the age of patients with adenoma ranges between 43-61 years [3,9,11]. In our study, the mean age was 57.3 (13.7) years.

Adenomatous polyps are categorized into three groups based on diameter: <1 cm, 1-2 cm and >2 cm. Most adenomas are smaller than 1 cm. According to the literature, tubular adenomas are <1 cm in 77%, 1-2 cm in 20%, >2 cm in 4%. Tubulovillous adenomas are 1 cm in 25%, 1-2 cm in 47%, >2 cm in 29%. Villous adenomas are <1 cm in 14%, 1-2 cm in 26%, >2 cm in 60%. Large adenomas are more common in distal colon segments [10]. Polyps with diameters  $\leq 5$  mm are considered small, and they are almost always nonneoplastic. The rate of small polyps with villous or severe dysplasia foci is less than 1% [10-12]. In GIS, polyps occur most frequently in the rectosigmoid region and their incidence decreases towards the cecum. DiSario et al. [13] reported that 54% of the adenomas were localized in the proximal splenic flexure. Bech et al. [14] reported that adenomas were most commonly located in the sigmoid colon. Liebermann et al. [15] reported that 44% of the polyps were located in the distal 60 cm. In a series of 675 cases [3], 47% of the polyps were localized in the sigmoid colon, 18.7% in the descending colon, 13.6% in the transverse colon, and 12.5%, in the rectum. In another study conducted on 428

cases [9], 76.7% of the polyps were observed in the left colon and 23.3%, in the right colon. In our study, 28.7% of the polyps were observed in the rectum, 25.7% in the sigmoid colon, 13.2% in the descending colon. All our results were coherent with the literature.

## Limitations

The retrospective nature of this study was the first limitation of our study. In addition, we did not compare the sizes of the polyps in terms of histopathological results, which would have illuminated this subject more.

## Conclusion

We observed that 8.2% of the patients undergoing lower GIS endoscopy had polyps and 20.1% of these polyps needed additional treatment, and 44% needed follow-up colonoscopy control. It should be noted that patients with various lower gastrointestinal tract symptoms may have malign polyps, potentially curable by polypectomy.

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