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Monika Wdowiak[1], Bartosz Kabała[1], Monika Pelczar[1], Piotr Wosiewicz[1], Bartosz Ostrowski[1], Marcin Romańczyk[2,3]

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Colonoscopic surveillance in selected clinical situations: a review of guidelines

Omówienie wytycznych nadzoru endoskopowego dolnego odcinka przewodu pokarmowego w wybranych sytuacjach klinicznych

[1] Laboratory of Gastrointestinal Endoscopy, K. Gibiński University Clinical Centre of Medical University of Silesia in Katowice, Katowice, Poland
[2] Department of Gastroenterology, Faculty of Medical Sciences, Academy of Silesia, Katowice, Poland
[3] Endoterapia, H-T. Centrum Medyczne, Tychy, Poland
Correspondence: Bartosz Ostrowski, Laboratory of Gastrointestinal Endoscopy, K. Gibiński University Clinical Centre of the Medical University of Silesia in Katowice, Medyków 14, 40-752 Katowice, Poland, e-mail: bartoszostrowski8@gmail.com

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ORCID iDs
1. Monika Wdowiak https://orcid.org/0009-0002-6990-8634
2. Bartosz Kabała https://orcid.org/0009-0007-1548-9450
3. Monika Pelczar https://orcid.org/0009-0003-0952-1582
4. Piotr Wosiewicz https://orcid.org/0000-0002-3314-0857
5. Bartosz Ostrowski https://orcid.org/0000-0003-2216-3276
6. Marcin Romańczyk https://orcid.org/0000-0002-5369-8161

Abstract

Colonoscopy is an important diagnostic and therapeutic tool for the identification and removal of colorectal cancer precursors, such as adenomas and serrated polyps. It plays a crucial role in the prevention and monitoring of patients with an increased risk of colorectal cancer, including individuals with inflammatory bowel diseases, familial polyposis syndromes, and those with a history of pelvic or abdominal radiation therapy. This article discusses endoscopic surveillance in patients with inflammatory bowel diseases (ulcerative colitis, Crohn's disease), after endoscopic polypectomy of adenomas and serrated polyps, and after resection of colorectal cancer. The guidelines consider risk factors, time intervals, and indications for subsequent colorectal examinations. For inflammatory bowel diseases, screening is recommended at 8 years after the onset of symptoms, with an individualised approach based on the risk group. The management of dysplastic lesions involves different surveillance intervals, depending on the type and extent of the resection performed, and the characteristics of the removed lesion. Patients after radical resection of colorectal cancer should have their first colonoscopy performed after one year, followed by subsequent examinations at 3 and 5 years post-operatively. Optimising endoscopic surveillance is a key element in ensuring the effectiveness, accessibility, and quality of performed procedures. The quality of colonoscopy depends directly on proper bowel preparation for the examination and the analysis of retrieved specimens. A balance between the frequency and quality of colonoscopy is crucial for effective oncological surveillance while minimising the negative effects of excessive endoscopic procedures.

Keywords: inflammatory bowel disease, colonoscopy, colonic polyps, endoscopic surveillance

Streszczenie

Kolonoskopia jest ważnym narzędziem diagnostyczno-terapeutycznym służącym do identyfikacji i usuwania prekursorów raka jelita grubego, takich jak gruczolaki i polipy ząbkowane, i dlatego odgrywa kluczową rolę w profilaktyce i monitorowaniu pacjentów obciążonych podwyższonym ryzykiem jego wystąpienia. Do tej grupy należą m.in. osoby z chorobami zapalnymi jelit, zespołami polipowatości rodzinnej oraz po radioterapii narządów miednicy lub jamy brzusznej. Artykuł omawia techniki nadzoru endoskopowego u pacjentów z nieswoistymi zapaleniami jelit (wrzodziejące zapalenie jelita grubego, choroba Leśniowskiego–Crohna), po polipektomii endoskopowej gruczolaków oraz polipów ząbkowanych, jak również po resekcji raka jelita grubego. Wytyczne uwzględniają czynniki ryzyka, interwały czasowe i wskazania do przeprowadzenia kolejnych badań jelita grubego. W przypadku nieswoistych zapaleń jelit wytyczne zalecają badanie przesiewowe po 8 latach od początku objawów, z indywidualnym podejściem w zależności od grupy ryzyka. Postępowanie w przypadku zmian dysplastycznych obejmuje różne interwały czasowe nadzoru, zależne od typu i rodzaju wykonanej resekcji oraz charakterystyki usuniętej zmiany. Po radykalnym usunięciu raka jelita grubego zaleca się wykonanie pierwszej kolonoskopii po roku, a następnie po 3 i 5 latach od operacji. Optymalizacja schematu nadzoru endoskopowego stanowi kluczowy element w zapewnieniu efektywności, dostępności i jakości wykonywanych procedur. Jakość kolonoskopii zależy bezpośrednio od właściwego przygotowania jelita do badania i analizy usuniętych zmian. Uzyskanie równowagi pomiędzy częstością

i jakością kolonoskopii ma fundamentalne znaczenie dla skutecznego nadzoru onkologicznego przy jednoczesnej minimalizacji negatywnych skutków nadmiernego obciążenia procedurami endoskopowymi.

Słowa kluczowe: choroby zapalne jelit, kolonoskopia, polipy jelita grubego, nadzór endoskopowy

INTRODUCTION

Colonoscopy is a diagnostic and therapeutic tool allowing for the detection of adenomas and serrated polyps, which are precursors of colorectal cancer (CRC)[1,2]. For this reason, it is an excellent tool for CRC prevention and oncological surveillance. Inflammatory bowel diseases (IBDs), such as ulcerative colitis (UC) and Crohn's disease, familial polyposis syndromes (e.g. familial adenomatous polyposis), and pelvic or abdominal radiation therapy are some of the risk factors for CRC[3–6]. This paper discusses endoscopic surveillance in patients with IBDs, those with a history of endoscopic resection of adenomas and serrated polyps, as well as patients after surgical treatment for CRC. The cited guidelines for endoscopic surveillance include indications, time intervals and recommendations for further management. It is worth emphasising that if colonoscopy is performed more frequently than recommended, it increases the workload of endoscopy laboratories, which may reduce the quality of examination.

ENDOSCOPIC SURVEILLANCE IN PATIENTS WITH INFLAMMATORY BOWEL DISEASES

IBD patients are at increased risk of CRC compared to the general population. For this reason, they should be included in endoscopic surveillance. The choice of the appropriate endoscopic surveillance schedule depends on the identified CRC risk factors, such as longer disease duration, extensive colonic involvement with long-term active inflammatory process assessed endoscopically or histologically, family history of CRC, coexisting primary sclerosing cholangitis (PSC), and the presence of stenosis or inflammatory pseudopolyps[7–10].

As set out in the guidelines of the European Crohn's and Colitis Organisation (ECCO) and the Polish Society of Gastroenterology, the first surveillance colonoscopy should be performed 8 years after the diagnosis of UC[9–11]. Patients with concomitant PSC, in whom surveillance for CRC should be initiated immediately after PSC diagnosis, regardless of UC duration, are at particular risk[7]. Screening should also be offered to UC patients with a family history of CRC (10 years earlier than the age of disease onset in the first-degree relative or 8 years after IBD diagnosis, whichever comes first) and one year after proctocolectomy with J-pouch[8].

Based on the results of screening colonoscopy and the estimated individual risk, decisions are made on the need for endoscopic surveillance and the time intervals for subsequent screening appointments (Fig. 1). The surveillance is not used in:

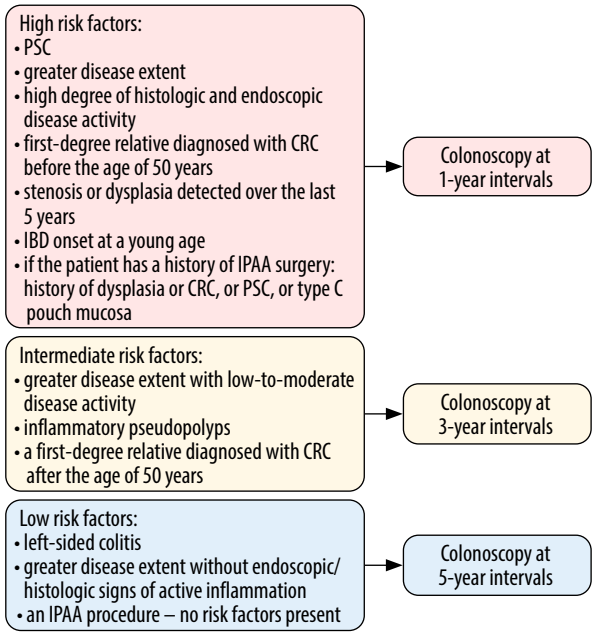
- patients with UC limited to the rectum (without involvement of the proximal large bowel);
- patients with Crohn's disease involving less than 1/3 of the large bowel;
- patients for whom the risk of performing the screening outweighs the expected benefits[7–10].

Depending on the identified risk factors for CRC, 1-yearly surveillance colonoscopy is recommended for high-risk patients, 3-yearly surveillance for intermediate-risk patients, and 5-yearly surveillance for low-risk patients. As a rule, surveillance colonoscopy should be performed in the periods of remission, which helps distinguish between inflammatory and dysplastic lesions. However, this does not mean that endoscopic surveillance should be abandoned in a patient who did not achieve complete disease remission[8–10].

According to the SCENIC consensus, endoscopically visible dysplasia can be classified into three groups:

- polypoid endoscopically visible lesions;
- non-polypoid endoscopically visible lesions;
- endoscopically invisible lesions[12].

The management depends on the type and grade of dysplasia.



IPAA – ileal pouch-anal anastomosis; **IBD** – inflammatory bowel disease; **PSC** – primary sclerosing cholangitis; **CRC** – colorectal cancer; **type C pouch mucosa** – this type of mucosa indicates atrophy and severe inflammation.

Fig. 1. CRC risk factors among IBD patients and recommended intervals for surveillance colonoscopy

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After complete removal of an endoscopically visible polypoid dysplastic lesion, a follow-up colonoscopy is recommended within 3–6 months of polypectomy and then once a year[11,12]. Patients with unresectable low-grade dysplasia may be placed under endoscopic surveillance instead of undergoing colectomy[11].

In the case of a completely removed endoscopically-visible nonpolypoid dysplasia, the recommendations are the same as for polypoid lesions[12]. A situation when it is not possible to remove the lesion during colonoscopy and it is suggested that the patient be referred for colectomy, is an exception[11].

Endoscopically invisible dysplasia is diagnosed based on random biopsies. The presence of dysplasia should be reviewed by a second pathologist, preferably a gastrointestinal pathologist. Before further therapeutic decisions are made, it is worth repeating colonoscopy with chromoendoscopy in an expert centre experienced in IBD patient surveillance. The aim of such management is to search for a potentially resectable lesion and to assess the large bowel mucosa for coexisting dysplasia. A lesion identified in the section where dysplasia was found will prompt endoscopic management, as described above, and surveillance modification. According to ECCO guidelines, if dysplasia is found without an associated endoscopically visible lesion, further management should be discussed with the patient[12]. Patients with low-grade dysplasia in UC without visible lesion may decide to undergo colectomy. Intensive endoscopic surveillance is necessary (chromoendoscopy with random colon biopsies within 3 months and then annually) in patients who refuse to undergo colectomy. As set out in the ECCO guidelines, colectomy is the treatment of choice for high-grade dysplasia[11].

The described surveillance is recommended in the case of lesions removed from the involved bowel segment. The recommendations for endoscopic surveillance after polypectomy of an adenoma located in a non-inflamed bowel segment are identical to those for sporadic adenoma (as discussed later in the article).

POST-POLYPECTOMY ENDOSCOPIC SURVEILLANCE

In 2020, the European Society of Gastrointestinal Endoscopy (ESGE) published an update of the 2013 recommendations for post-polypectomy endoscopic surveillance[13]. The authors of the recommendations placed particular emphasis on the quality of colonoscopies and the optimisation of the time intervals between examinations, which was intended to reduce CRC mortality rates. The recommendations presented below have been developed for patients who underwent high-quality colonoscopy and had at least one polyp completely removed.

Adenoma detection rate (ADR) and the caecal intubation rate (CIR) are basic quality indicators for colonoscopy. Achieving acceptable colonoscopy quality indicators directly depends on adequate bowel preparation. Various tools are used to assess bowel preparation, e.g. Ottawa, Aronchick, Lieberman or Boston. The Boston Bowel Preparation Scale (BBPS), which is recommended by ESGE, divides the bowel into three segments: right colon (cecum + ascending colon), middle colon (transverse colon) and left colon (descending colon, sigmoid colon and rectum). Each segment is classified from 0 to 3 (0 – solid faeces, 3 – no residual soiling). A score of ≥2 for each assessed bowel segment indicates adequate preparation for colonoscopy. Poor bowel preparation (BBPS <6 or <2 in any segment) means that the examination must be repeated within one year. As set out in the current guidelines, assessment of polypectomy completeness and precise morphological assessment of the detected polyps using the Paris classification (Fig. 2) is an equally important component of colonoscopic quality[13,14].

Post-polypectomy endoscopic surveillance in practice means performing a follow-up colonoscopy. The timing of surveillance colonoscopy depends on multiple factors, such as the histopathological characteristics, the number and size of the removed polyps, the quality of the colonoscopy performed and patient-related factors (age and comorbidities). Since adherence to endoscopic surveillance guidelines is essential for maintaining proper quality of examinations, ESGE recommends that the physician performing colonoscopy is responsible for scheduling another screening.

Post-polypectomy endoscopic surveillance is not available for patients who have had 1–4 adenomas <10 mm with low-grade dysplasia completely removed during first colonoscopy, regardless of the presence of a villous component, or any non-dysplastic serrated polyp <10 mm in size (Fig. 3). ESGE recommends that these individuals return to the screening programme or, if it is not possible, undergo another colonoscopy after 10 years.

Endoscopic surveillance is recommended in all patients who underwent total rection of:

- ≥1 adenoma ≥10 mm in size or with high-grade dysplasia;
- serrated polyp ≥10 mm in size or with dysplasia;
- ≥5 adenomas.

ESGE recommends initial surveillance colonoscopy at 3 years, and if no lesions requiring surveillance are detected at that time, subsequent colonoscopy should be scheduled in 5 years. Again, if no lesions requiring surveillance are detected after this time, screening may be resumed. However, if a lesion requiring surveillance is detected at any follow-up, surveillance colonoscopy should be repeated at 3 years (Fig. 3).

Genetic testing is recommended for adenoma burden ≥10:

- ≥10 adenomas – diagnosis for syndromes predisposing to cancer;
- ≥20 adenomas – diagnosis for *APC* and *MUTYH* mutations[13].

In the case of a piecemeal resection of a ≥20 mm polyp or if there is any doubt about the completeness of polypectomy, ESGE recommends an early surveillance colonoscopy at 3–6 months of the initial examination and at 12 months if there is no evidence of local recurrence, especially in patients at high risk of recurrence (large lesions, high-grade dysplasia, multiple polyp fragments after

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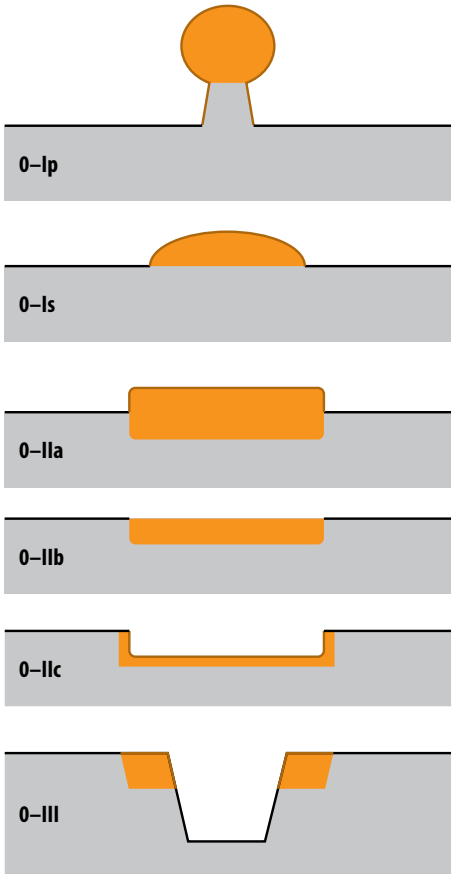

Type	Name
0–Ip	Protruded, pedunculated
0–Is	Protruded, sessile
0–IIa	Superficial, elevated
0–IIb	Flat
0–IIc	Superficial shallow, depressed
0–III	Ulcerated, excavated

Fig. 2. The Paris classification for superficial tumors in the gastrointestinal tract

resection) (Fig. 3). ESGE also recommends evaluation of the post-piecemeal polypectomy site using advanced endoscopic imaging techniques. Biopsy of the post-polypectomy scar can be abandoned provided that an advanced imaging protocol with chromoendoscopy is used by an experienced endoscopist.

A family history of CRC does not increase the risk of advanced neoplasia (adenocarcinoma, adenoma ≥10 mm or high-grade dysplasia), and therefore ESGE suggests against shortened surveillance intervals in patients with a family history of CRC[13,15].

Decisions to perform colonoscopy earlier than the planned endoscopic surveillance in patients reporting clinical symptoms such as fatigue, anaemia, blood or mucus in stools should be made individually depending on the clinical situation[13].

ESGE does not recommend faecal immunochemical test (FIT) for surveillance due to the lack of sufficient evidence of efficacy. A positive FIT performed for other indications may become the basis for an earlier colonoscopy than planned as part of surveillance.

ESGE and other authors suggest discontinuing post-polypectomy endoscopic surveillance at the age of 80 years, or earlier if life expectancy is limited by co-morbidities[16].

POST-SURGERY ENDOSCOPIC SURVEILLANCE FOR CRC PATIENTS

All patients after radical treatment of CRC should be offered oncological surveillance, an integral part of which is endoscopic surveillance[17]. High-quality colonoscopy should be performed before surgical treatment. If this was is possible, ESGE recommends endoscopy within 6 months of the procedure. Perioperative colonoscopy should be done before commencing chemotherapy, but it should not delay it[17].

Patients undergoing surgery for CRC are at increased risk of metachronous cancer, i.e. cancer that develops during the follow-up period after detecting the primary cancer, including in the early postoperative period. The majority (over 75%) of CRCs detected during endoscopic surveillance arise from previously undetected or incompletely resected adenomas[18].

Surveillance intervals other than those suggested by ESGE are not recommended due to the lack of evidence of benefit. Furthermore, it should be noted that the surveillance guidelines described below also apply to patients after radical treatment for pT1 CRC (submucosal invasion), according to the TNM classification, using endoscopic techniques[17].

The first surveillance colonoscopy should be performed 1 year after radical CRC surgery or after high-quality colonoscopy performed within 6 months of surgery. The aim of the examination is to detect early recurrence of primary and/or metachronous cancer. Follow-up colonoscopy should be performed after 3 years and then after 5 years[17]. Its aim is to prevent CRC by detecting early neoplasia.

As with polypectomy, ESGE and other authors suggest discontinuing endoscopic surveillance at the age of 80 years, or earlier if life expectancy is limited by co-morbidities. The risk associated with colonoscopy is higher than the expected benefits in this group of patients as a result of competing risk of mortality due to other diseases[13,17].

CONCLUSIONS

Colonoscopy is a valuable diagnostic and therapeutic tool that enables prevention and monitoring of both patients at risk and those without comorbidities or family history. The procedure offers safe removal of precancerous lesions. Apart from the clinical situations described above, colonoscopy is recommended to screen asymptomatic patients between 50 and 65 years of age. In this context, it seems important to use this tool consciously and wisely, which is why it is worth familiarising with and applying the discussed guidelines in everyday practice.

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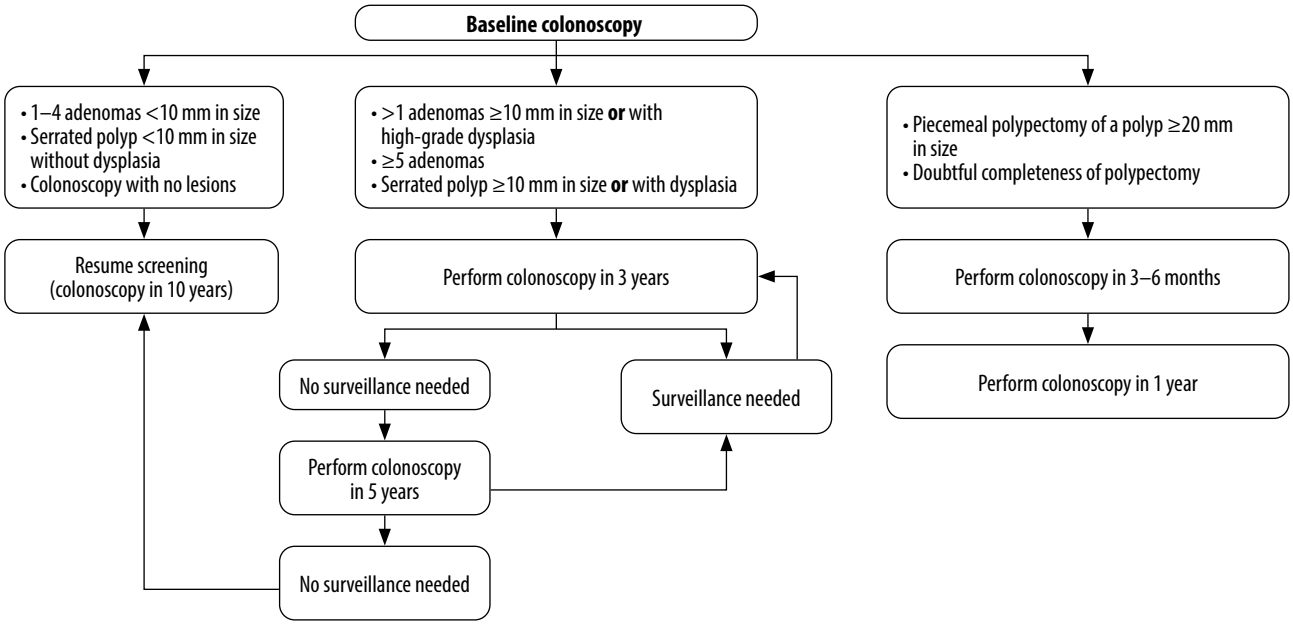

Fig. 3. Post-polypectomy endoscopic surveillance

Conflict of interest

The authors do not report any financial or personal connections with other persons or organisations which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

Author contributions

Original concept of study: MW, BK, PW, BO. Collection, recording and/or compilation of data: MW, BK, MP, BO, MR. Analysis and interpretation of data; final approval of manuscript: MW, BK, MP, PW, BO, MR. Writing of manuscript: MW, MP, BO, MR. Critical review of manuscript: PW, BO.

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