

# The importance of colonoscopy in the treatment of colorectal polyps and colorectal cancer screening



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## The importance of colonoscopy in the treatment of colorectal polyps and colorectal cancer screening

**AIM:** Colorectal polyp is the most commonly encountered intestinal colon pathology in patients over 50 years of age, and 5% of which develops a "colorectal cancer". The early-stage polyps can be detected and removed endoscopically, which reduce the incidence of carcinoma. Our study is aimed to investigate the role of colonoscopy in colorectal adenoma treatment and screening for colorectal cancers, and to answer the question of whether the colorectal polyps would become malignant or not malignant by means of the comparative analysis of their histological features.

**METHODS:** In the interval between 2011 and 2016 years, endoscopic polypectomy was performed in 118 out of 1375 patients at the Endoscopy Department of the Central Customs Hospital, either with a snare loop and a biopsy clamp. The age group of the patients was between 20 and 65 years. A retrospective analysis was performed in 100 of these patients, of whom 18 were later excluded.

**RESULTS:** Grounding on the histopathological evaluation, adenomatous polyps were differentiated into tubular (65-80%), tubulovillous (25%), and villous (5-10%) adenomas. In particular, 90% of 1 cm (small) polyps were tubular.

Dysplasia was found in 42 out of the 100 polyps. The 42 patients with dysplasia were reevaluated, and 26 (61.9%) later developed a malignancy. Malignancy did not occur in the case of any of the 58 polyps without dysplasia.

The study also revealed that the size of polyps is directly correlated with their path-morphological structures. In this study, two giant polyps were detected and then treated surgically, one patient had perforation after the polypectomy, and a surgical intervention immediately was performed upon him. During the colonoscopy, three patients had bleeding, hemoclip was applied to one of those patients, and sclerotherapy was performed upon the rest of two patients. After the polypectomy, in two patients, there was a feeling of pain, fever, discomfort in the abdomen, which was assessed as a "post-polypectomy" condition.

**CONCLUSION:** Also in our experience adenomatous polyps play a crucial role in the development of colorectal cancer. Therefore, it seems quite essential to avert colorectal cancers gradually. Colonoscopy is a non-invasive method of diagnosis and a treatment of colorectal polyps. Proper and careful colonoscopy examination is indispensable in the discovery of colorectal polyps and subsequent follow-up. Timely and routine colonoscopy is considered as an important approach for thwarting the development of malignant neoplasms.

**KEY WORDS:** Adenomatous polyps, Colorectal cancer, Colorectal polyps, Post-polypectomy

## Introduction

colorectal cancer. Thus, the possibility of being cancer is much higher in patients with adenomatous polyps. Colon

cancers comprise 30% to 50% of adenomas.<sup>[2]</sup> The process of colorectal adenomas' transition to colorectal cancer is defined as one of the most common malignant neoplasms in developed countries. According to the statistics, the colorectal cancers are the third most common cause of death in the U.S. It is ostensibly that, polyps are quite common in industrialized countries stemming from many dietary and environmental factors. High levels of insulin in the blood, inflammatory diseases of the gastrointestinal tract, ulcerative colitis, and Crohn's

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disease may increase the risk of colorectal carcinogenesis.<sup>1</sup> The risk of carcinogenesis also grows in patients with hyperinsulinemia due to the proliferation and apoptosis of carcinomatous cells. Adenomatous polyps are the main cause of cancer as followed below.

“Sit” tumor, particularly “unformed” crypts located in the left hemi-colon.

“Toothed” tumor involves crypts until the basal layer. Polyp-similar tumors consisted of ectopic crypts<sup>3</sup>.

The formation of ectopic crypts causes dysplasia. Abnormal differentiation of crypts in the basal layer leads to the development of colorectal cancer. Generally, colorectal polyps are found in various sizes, ranging from small to large-sized polyps, even pedunculated polyps. Colorectal polyps are more common in patients over 50 aged patients. Along with the elderly, illnesses are not an indication of the conduct of the examination. At the same time, the difference between colonoscopy findings (computer tomography, virtual colonoscopy, and roentgen examination) is that intervention can be interrupted.<sup>4</sup> Colorectal polyps are also the precursors of malignant derivatives. Colorectal adenomas, as the precursors of malignant neoplasms, not only are considered to be the coagulators of colorectal polyps but also play the role of “informer” lesions in the transition to the malignant derivatives as of colorectal cancer<sup>5</sup>. The colonoscopy screening is also recommended asymptomatic first-degree relatives of patients with colorectal cancer. Researchers believe that those who have colon cancer in the family are more likely to be colorectal polyps and cancers. Therefore, the colonoscopy examinations are recommended in this case<sup>6</sup>.

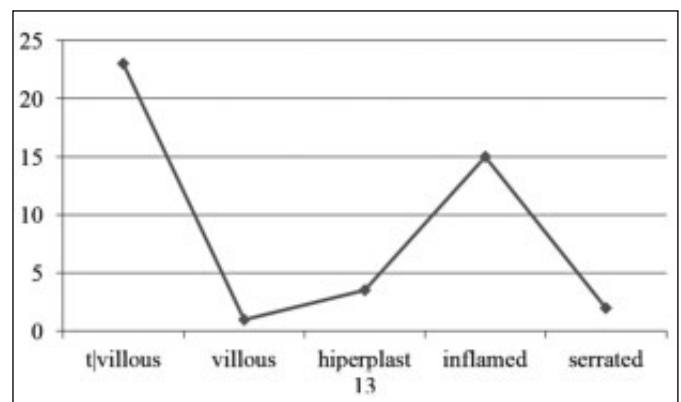
The risk of recurrence and neoplasm development mainly depends on the characteristics of the lesions, such as plurality, size, histological structure, and dysplasia: that 15% of all polyps >1 cm in size are likely to transition into the malignant tumors-over<sup>5,6</sup>. The period of 10 years and 5% of all adenomatous polyps are likely to develop into cancer. Adenomas are the main cause of 30 to 50% of colon cancers. Colonoscopy is a non-invasive method of diagnostics and treatment of colon cancer and polyps. Total colonoscopy is a complete evaluation of the colon and rectum mucosa, up to the cecum floor. The deep examination can be useful for detecting the colorectal polyps, subsequent follow-up and early detection of cancer<sup>8</sup>. The colonoscopy examination requires the special preparation, and it is important to include the full evaluation of the mucosa. The colonoscopic investigation is performed in patients over 40 years of their ages, who have a bowel complaint<sup>9</sup>. Therefore, it is crucial to conduct a complete anamnesis of the patients before the examination. Patients who are on anticoagulants, especially those with chronic illness, should undergo cautious colonoscopy scrutiny. Studies have confirmed that colonoscopy examination reduces the risk of colorectal cancer up to 60-70%<sup>3-5,10</sup>.

## Patients and Methods

Between 2011 and 2016, the endoscopic polypectomy was performed in 118 out of 1375 patients enrolled at the Endoscopy Department of the Central Customs Hospital in Azerbaijan. The polypectomy was performed with a squeezing ring and a biopsy clamp. A retrospective analysis was conducted in 100 of these patients. The age group of the patients in the study mainly was between mainly 20 and 65. 18 patients were excluded from the study group for certain reasons. The colonoscopic examination was performed in patients above 45 years aged who had gastrointestinal disorders, bleeding, bloody mucus, and constipation. The patients underwent the bowel preparation and those with cardiac problems were referred to the cardiologist's prior to the procedure was conducted. Colonoscopy was performed under the intravenous sedation, and the patients were discharged their home right after the procedure. The patient populations were composed of 60 males and 40 females respectively.

## Results

All the patients underwent the full evaluation of the colon. Any detected polyps were treated according to their certain sizes. Small polyps were removed using biopsy forceps, and more than 0.5 cm polyps ( $\geq 0.5$  cm in size) were cut off with the squeezing ring. All detected polyps were sent to the pathological examination. Based on the histopathological evaluation, the adenomatous polyps were differentiated into the tubular, tubulovillous, and villous groups. Of the examined polyps, 65-80% were tubular, 25% were tubulovillous, and 5-10% were villous adenomas. (See Annex 1 below). Moreover, 90% of small polyps ( $\leq 1$ cm) were tubular, hyperplastic, and inflamed polyps. Tubulovillous adenomas represent 10% to 15% of polyps and usually 20% to 25% harbor a malignancy. Villous adenomas constitute 5% to 10% of



Pathohistology description of polyps.

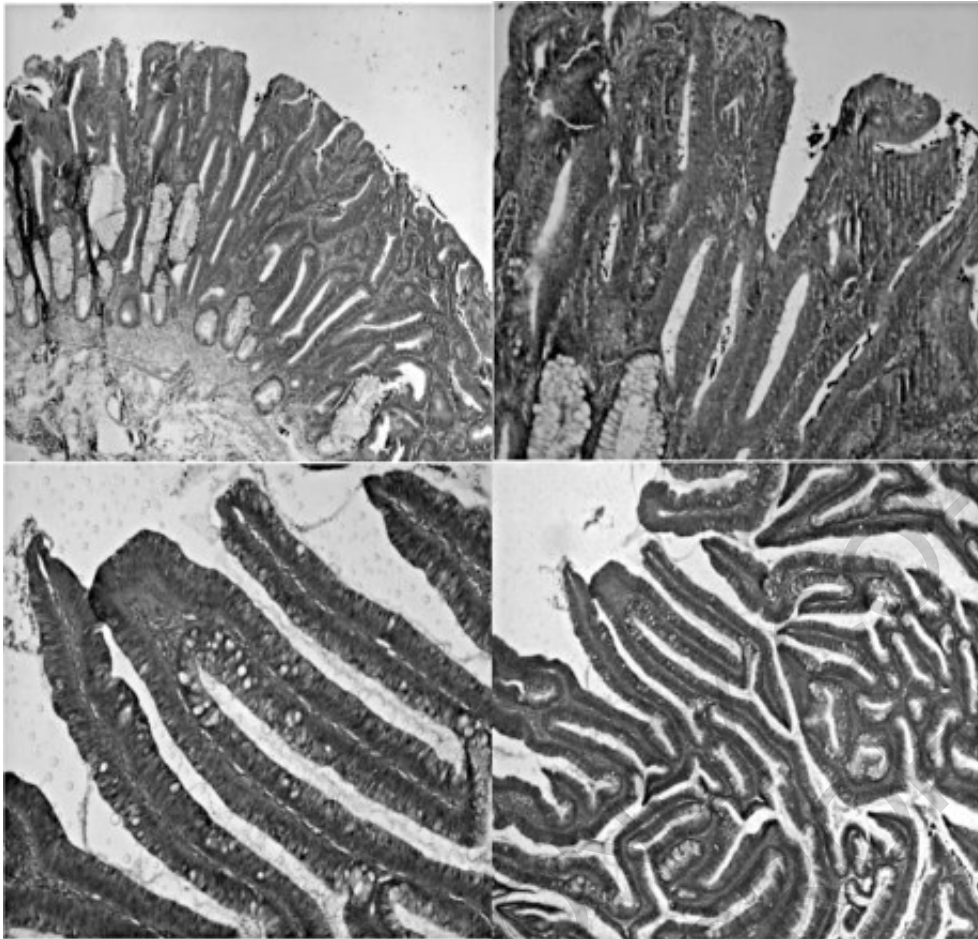


Fig. 1: As a result of the histopathological evaluation, the differentiation of adenomatous polyps into three groups including tubule, tubulovillous, and villous groups. Up) Histopathological appearance of tubulovillous polyps. Down) Histopathological appearance of the villous polyps.

the remaining polyps and 35% to 40% of the polyps are a malignancy.<sup>14</sup>

The histopathological evaluation revealed that there was tubular adenoma in 46 cases, tubulovillous adenoma in 23 cases, an inflammatory polyp in 15 cases, a hyperplastic polyp in 13 cases, a serrated polyp in two (2) cases, and villous adenoma in one (1) case. Recent studies have shown that tubular polyps are present on both sides of the colon, tubulovillous polyps are apparent on the left side, and villous polyps are mostly localized in the recto-sigmoid region (Fig. 1).

Polyps were also evaluated for their size, the polyps up to 1 cm in size constitute 80, between 1-3 cm they are 17, and polyps, which are more than 3 cm are 3. Polyps of less than 1 cm are usually polyps in hyperplastic, inflammatory or tubular structures. The chosen study revealed that the size of polyps is directly correlated with their pathomorphological structures. Pursuant to this, the polyps that are of  $\leq 0.5$  cm in size tend to be more hyperplastic ones than 13 removed polyps hyperplastic. At the same time, the polyps were evaluated on whether dysplasia was present or not. 42 polyps have dysplasia, and 58 of them do not have dysplasia. Dysplasia was detected in 22 out of 46 tubular polyps, and in 19 out

of 23 tubulovillous polyps. The patients with tubular adenomatous polyps were asked to undergo the follow-up examination once a year and those with tubulovillous polyps were asked to take the follow-up examination once every 6 months. These 42 patients were revalued, and in 26 out of them (61,9%) malignancy later

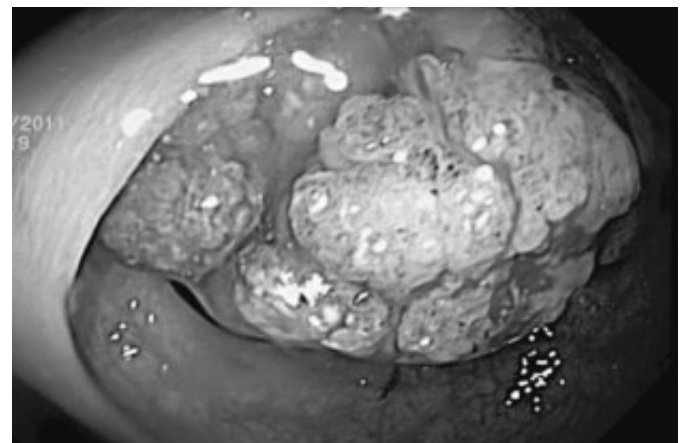


Fig. 2: The presence of giant villous polyp during their colonoscopy examination. Endoscopic image of the giant villous polyp.

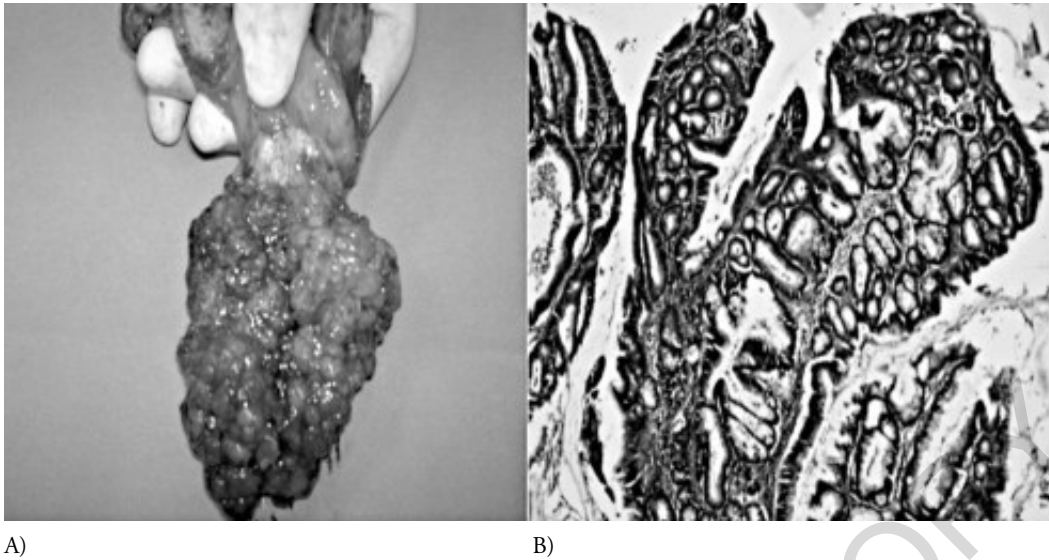


Fig. 3: Illustration of polyps in both macroscopic and microscopic sizes.  
A) Macroscopic images of the polyps;  
B) Microscopic description of the polyp.

developed, however, in the rest of 16 patients, (38,1%), as well as in any of 58 polyps with dysplasia, the malignancy was not detected. Considering the presence of giant polyps during the colonoscopy examination, their location in the recto-sigmoidal junction and its size of 3 cm were not endoscopic polypectomy, but rather prepared for the surgical operation with the surgical resection (Fig. 2).

Both patients were treated with “Low Anterior Resection”. There was no complication after the post-operative period, and patients were discharged on the sixth day right after the operation. During the investigation, and the pathohistological diagnosis, inflammatory villous adenoma, and low dysplasia were detected in one patient, and the tubular-villous polyps of colon, And High Dysplasia Were Detected In Other Patients During The Pathohistological Diagnosis (Fig. 3).

During the polypectomy, three patients had bleeding; one required the clip placement and the sclerotherapy was performed in the rest of two patients. During the procedure, the bleeding was monitored in one patient and right after the sclerotherapy intervention was applied upon him. However, in two patients, bleeding began two weeks after the colonoscopy intervention. Bleeding happened near the hepatic flexure in one patient while having polypectomy. Afterward, hemoclip and sclerotherapy right after were applied upon the patient. Bleeding happened, while the other patient had the polyp in the sigmoid colon, after then both sclerotherapy and coagulation were performed on the patient.

The perforation was observed in one patient after the polypectomy. The day after procedure, he had been referred to the clinic because of pain, high fever, and foam feelings, and the patient had abdomen CT: Free air in the abdominal cavity, peri-sigmoidal area edema was detected. In this regards, sigmoid colon walls had minimally thickness. The patients were subsequently perfora-

ted in the recto-sigmoid region after the polypectomy. The patient was prepared for the surgery and the sigmoid colon resection was resected upon him. The inflamed tubulovillous adenoma and high dysplasia have been detected because of pathological examination of the polyps taken from the patient. The day right after the process of polypectomy, the other two patients had acne pain, dyspepsia, and discomfort complaints. Upon the examination, the patients were clinically evaluated, and consequently, C-reactive proteins were detected high in both patients after having the blood tests and one patient was done total abdominal CT: Edema has been monitored in the peri-sigmoidal area. Both patients received antibiotic and patients were taken into the custody. Upon a week of antibiotic treatment and bowel rest the complaints got from the patients have been completely overlooked and they returned to their normal life. We evaluated the conditions of those patients as “post-polypectomy”. The response to the pathology of the polyp from a patient was tubulovillous adenoma and the tubular adenoma from another patient. Consequently, we would like to point out that the size of the polyps was bigger than 1 cm, in two patients whose conditions were evaluated “post-polypectomy”, and in another perforated patient. The polypectomic interventions on the right side of the colon carry a far more serious risk.

## Discussion

Colorectal carcinomas are a multifactorial disease. It has been shown that CRC develops from existing colorectal polyps, especially in a few years after adenomas <sup>1</sup>. The conversion of adenomatous polyps to carcinoma is a widely investigated process and is commonly known as the adenoma-carcinoma sequence <sup>7</sup>. The important role of polyps in malignancy in the colorectal cancer deve-

lopment mechanism and their timely detection is of great importance in preventing cancer. Hence, colonoscopy is considered as a non-invasive method of a diagnosis and a treatment of colorectal polyps <sup>4,6</sup>.

The proper and careful colonoscopy examination is not only essential to detect colorectal polyps and but their subsequent follow-up process. Adenomatous polypectomy and their control in the polyps reduce the risk of colorectal carcinogenesis. So that there is a dependence on the size of the colorectal polyps and the likelihood of cancer in polyps.

- <1 cm = <1% risk of being cancer
- 1 cm = 10% probability of being cancer
- 2cm = 15% probability of being cancer

The size of the polyps is considered to be the biomarker of their malignancy. The risk of malignancy increases as the size of the polyps grows <sup>1</sup>. Colonoscopy inspection reduces the risk of colorectal cancer up to 60-70%. In this regard, patients with negative results of the examination are also desirable to undertake the colonoscopy examination every 10 years.

The majority of small-sized polyps have no potential of being malignancy, but the large-sized polyps and polyps with the villous component are considered the high-risk malignancy. Polyps with high dysplasia and villous components move towards aggravation <sup>3</sup>. Timely removal of colorectal polyps, their path-morphological overlooking, and histological deterrence prevent the formation of malignant veins of the colon and rectum. However, the examination does not go without complications.

The most common complications in polypectomy are bleeding and perforation, which are the most commonly encountered bleeding in the complications. The risk of hemorrhage amid the polypectomy constitutes 1.7%. These bleeding may occur during the procedure or may be delayed. The bleeding during the investigation is suspended by sclerotherapy and hot biopsy, and in some cases, late bleeding can be observed. Delayed bleeding usually takes place within 7 to 12 days, occurs statistically of 2% in cases. Bleeding may vary depending mainly on the size of the polyp and blood supply. Therefore, the best option for both early and delayed bleeding is the endoscopic intervention. The bleeding occurs during the process of polypectomy is endoscopically prevented, which includes sclerotherapy, hemoclip, and coagulation <sup>1</sup>. Another most common aggravation is a perforation. Perforations are detected in 0.04 to 2.1% of the colonoscopy polypectomy. The perforation usually happens because of the thermal necrosis of the intestinal wall. Simultaneously, perforations are more common in older patients and in patients with diverticula. If the patient experiences pain and peritoneal irritation after polypectomy, then there is an urgent need for thinking about "perforation" and confirmation of the diagnosis. Small perforations can be treated with hemoclip <sup>13</sup>. However, patients refusing the colonoscopy examination

sometimes prevent the polyps from being detected in time and cause their non-symptom development up to the giant polyps. Patients' complaints to the clinic usually relate to the pain, bleeding, intestinal obstruction, and permanent diarrhea related complaints.

In such cases, the surgeons face the dilemma of whether an endoscopic treatment or a surgical intervention has to be applied. Although the best option in the treatment of colorectal polyps is endoscopic, the giant polyps cannot be treated endoscopically, due to their large size and being anatomically placed in a difficult site (more recto-sigmoid junction). This is the narrowest place in the intestinal area, where the aggravation is often followed by differently clinic interventions. In this case, the surgical interventions usually, are in the center stage <sup>12</sup>. The important role of polyps in malignant tumors in the formation of colorectal cancer and their timely detection is of its great importance in preventing cancer.

Therefore, it has been noted that the importance of timely colonoscopy, as the timely detection of polyps is considered to be pivotal for the deterrence of malignant neoplasms. Various features such as size, number of adenomas, histological type, and grade of dysplasia are predictors of malignant potential determination.

## Conclusion

This study supports the role of colonoscopy in detecting colorectal polyps and endoscopic intervention before their malignancy. Although there are numerous studies in this direction, literature has still not lost its relevance in a medical sphere. It is already known that colorectal polyps are precursors of colorectal cancers. The study also referred to different monographs from well-known scholars. The chosen study was opted for as a significant and relevant unit field. However, multilevel studies are needed to investigate the chosen study in depth for more extensive work.

## Acknowledgment

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## Riassunto

La presenza di un polipo nel tratto colo rettale rappresenta la patologia del grosso intestino di più frequente riscontro nei pazienti di età superiore a 50 anni e nel

5% dei quali si ha l'evoluzione verso il tumore del colon e rispettivamente del retto". L'individuazione del polipo allo stadio precoce e la sua rimozione per via endoscopica riduce l'incidenza del carcinoma colo-rettale.

Il nostro studio ha lo scopo di indagare il ruolo della colonscopia nel trattamento degli adenomi coloretali e lo screening per i tumori del colon-retto, e di rispondere alla domanda se i polipi del colon-retto possono diventare maligni o restare benigni attraverso l'analisi comparativa delle loro caratteristiche istologiche.

Nell'intervallo tra il 2011 e il 2016, durante il quale la polipectomia endoscopica è stata eseguita su 118 su 1375 pazienti presso il Dipartimento di Endoscopia dell'Ospedale Centrale delle Dogane, con un ciclo di rullante e un morsetto per biopsia. Il gruppo di età dei pazienti era tra 20 e 65 anni. Un'analisi retrospettiva è stata eseguita in 100 di questi pazienti, di cui 18 sono stati successivamente esclusi.

Basandosi sulla valutazione istopatologica, i polipi adenomatosi sono stati differenziati in adenomi tubulari (65-80%), tubulovillosi (25%) e villosi (5-10%). In particolare, il 90% dei polipi da 1 cm (piccoli) era tubolare. La displasia è stata trovata in 42 dei 100 polipi. I 42 pazienti con displasia sono stati rivalutati e 26 (61,9%) successivamente hanno sviluppato una neoplasia. La malignità non si è verificata nel caso di uno qualsiasi dei 58 polipi senza displasia. Lo studio ha anche rivelato che la dimensione dei polipi è direttamente correlata con le loro strutture morfologiche.

In questo studio sono stati individuati due polipi giganti e quindi trattati chirurgicamente; in un paziente la polipectomia è stata seguita da una perforazione, e si è immediatamente intervenuti chirurgicamente. Tre pazienti hanno presentato emorragia durante la colonscopia, e l'emostasi è stata effettuata in uno con una clip e negli altri due con scleroterapia. Dopo la polipectomia due pazienti hanno accusato sensazione di dolore, febbre, disagio nell'addome, sintomi valutati come una condizione di "post-polipectomia".

In conclusione anche nella nostra esperienza i polipi adenomatosi svolgono un ruolo cruciale nello sviluppo del cancro del colon-retto, e quindi sembra abbastanza essenziale poter prevenire lo sviluppo dei cancri del colon-retto, con la colonscopia, che è un mezzo non invasivo di diagnosi e per il trattamento dei polipi coloretali. Una colonscopia adeguata ed accurata è indispensabile per la scoperta dei polipi coloretali e per il successivo follow-up. La colonscopia tempestiva e di routine è considerata un approccio importante per contrastare lo sviluppo di neoplasie maligne.

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## Commento e Commentary

PROF. NICOLA PICARDI  
già Ordinario di Chirurgia Generale

*La domanda posta dagli autori è sostanzialmente già ampiamente risolta con la conferma della concreta possibilità di una sequenza evolutiva del cancro polipo nel caso di polipi adenomatosi, preceduta da una grave displasia e in particolare in alcune particolari sindromi a base genetica (Cronkhite-Canada, ecc.).*

*L'esperienza riportata dagli autori non è particolarmente significativa in termini numerici, ma conferma i dati della letteratura che testimoniano il ruolo fondamentale della colonoscopia corretta e attenta come strumento diagnostico ma anche come controllo e monitoraggio del follow-up.*

\* \* \*

*The question posed by the authors is substantially already largely resolved confirming of the concrete possibility of an evolutionary polyp-cancer sequence in the case of adenomatous polyps, preceded by severe dysplasia and particularly in some particular genetic-based syndromes (Cronkhite-Canada, etc.).*

*The experience reported by the authors is not particularly significant in numerical terms, but confirms the literature data witnessing the fundamental role of proper and careful colonoscopy as diagnostic tool but also as control and monitoring of the follow up.*