

Assesment of Surgeon-Endoscopists Performance at Colonoscopy

Endoskopist-Genel Cerrahların Kolonoskopideki Performanslarının Değerlendirilmesi

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ÖZET

Amaç: Genel cerrahi uygulamaları içerisinde endoskopik girişimler giderek yaygınlaşmaktadır. Çalışmanın amacı kolonoskopik işlemlerde endoskopist-genel cerrahların performansının daha önce ortaya konmuş kalite işaretçilerine göre değerlendirilmesidir.

Materyal ve Metod: Veriler, Eylül 2008 ve Mart 2010 tarihleri arasında 2 endoskopist-genel cerrah tarafından gerçekleştirilen 164 kolonoskopik işlemin retrospektif olarak incelenmesi ile elde edilmiştir. Performansın değerlendirilmesinde Amerikan Gastrointestinal Endoskopistler Derneği (ASGE) tarafından belirlenen kalite işaretçileri kullanılmıştır.

Bulgular: 164 kolonoskopik işlem onam formu alınarak 160 hastaya uygulanmıştır. Hastaların, %75'ni (n=120) 50 yaş üzeri hastalar ve %52'sini (n=83) kadın hastalar

ABSTRACT

Objective: The aim of the study is to assess the quality and competence of surgeon-endoscopists to perform colonoscopies by measuring their performance outcomes according to ASGE quality indicators for colonoscopy.

Material and Methods: A retrospective case review of 164 colonoscopies performed between September 2008 and March 2010 by two attending surgeons. Appropriateness of indications was compared with the indications for colonoscopy published by ASGE and U.S. Multi-Society Task Force on Colon Cancer. The evaluation criteria were selected among the guidelines proposed by the ASGE.

Results: There were 160 initial colonoscopies and 4 follow-up examinations for a total of 164 colonoscopies. Demographic data of the patients showed that 48% were

Başvuru Tarihi: 29.01.2011, Kabul Tarihi: 29.03.2011

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Kolon Rektum Hast Derg 2011;21:21-27

oluşturmaktadır. Bütün kolonoskopiler ASGE tarafından belirlenen kriterler çerçevesinde gerçekleştirilmiştir. Buna göre prosedür öncesi göstergelerden endikasyonlar değerlendirildiğinde; en sık olarak; işlemlerin %37'si (n=60) tarama, %21'i (n=34) karın ağrısı ve %16'sı barsak alışkanlıklarında değişiklik nedeni ile gerçekleştirilmiştir. Barsak temizliği işlemlerin %60'ında (n=98) iyi derecede olduğu tespit edilmiştir. Prosedür sırasında işlemin kalitesinin ölçütü olarak değerlendirilen çekal entübasyon %86 işlemde gerçekleştirilmiştir. Yine işlem sırasında, kolonoskopilerin %24'ünde (n=40) 64 adet polip tespit edilmiş ve polipektomi yapılmıştır. Yapılan polipektomilerin patolojik incelemelerinde %41'i (n=26) benign polip; %59'u adenomatöz polip olarak değerlendirilmiştir. Çekuma ulaştıktan sonra çıkış zamanı standart olarak 6 dakika üzerinde tutulmuştur. İşlem sonrası kalite işaretçilerinden olan raporlama ve fotodökümantasyonda ASGE kriterleri sağlanmış olup. Hiçbir kolonoskopide işleme özgü tanımlanan perforasyon veya polipektomi sonrası kanama komplikasyonları görülmemiştir.

Sonuç: Çalışma sonuçları göstermiştir ki cerrahlar tarafından gerçekleştirilen kolonoskopiler, endikasyon ve performans belirteçleri açısından standart kalite kriterlerini karşılamaktadır. Endoskopist-genel cerrahlar kolonoskopik girişimleri başarılı bir şekilde gerçekleştirebilmektedir.

Anahtar Kelimeler: Cerrah, Kolonoskopi, ASGE, Kalite işaretçileri

Introduction

Incorporating the latest advancements in minimally invasive surgery and endoscopic procedures, the gastrointestinal system endoscopy is not only used for diagnosis but also used for treatment of gastrointestinal disease. Current indications such as endoscopic mucosal resection and natural orifice transluminal endoscopic procedures are increasingly being utilized as an alternative to surgery in the management of early-stage neoplasm of the gastrointestinal tract and some of the gastrointestinal system disease, respectively.¹ Along side these developments, the demand for gastrointestinal endoscopy is increasing and it remains an essential skill for surgeons. While numbers of endoscopies performed by surgeons are significantly increased, qualities of those

male and 52% were female. Mean age was 52 years with a range of 18 to 86 years. The all colonoscopies were performed in accordance with ASGE criteria. The most common indications were screening (37%), abdominal pain (21%) and change in bowel habits (16%). The cecal intubation rate was 86%. Among the 160 subject, 64 polypoid lesions were detected on 40 patients (26%). Of the 64 polyps subjected to biopsy, 59% were adenomatous polyp and 41% were benign polypoid lesions. No complications was seen in our series. **Conclusion:** Surgeon-endoscopists demonstrate proficiency in performing colonoscopies according to proposed guidelines.

Key words: Surgeon, Colonoscopy, ASGE, Quality indicators

endoscopies need to be assessed. Several recent publications in the area of quality indicators in endoscopy have influenced endoscopists to continuously assess their practice.^{2,4} A high-quality endoscopy ensures that the patient receives an indicated procedure, that correct and clinically relevant diagnoses are made (or excluded), that therapy is properly performed, and that all these are accomplished with minimum risk. The American Society for Gastrointestinal Endoscopy (ASGE) identified objective measures that could be used to define high-quality endoscopic services for the diagnosis and treatment of diseases and conditions of the digestive tract. For colonoscopy, ASGE proposed quality indicators were considered for three time periods: preprocedure,

intraprocedure and postprocedure.⁵ In this study, we assessed the quality and competence of surgeon-endoscopists to perform colonoscopies by measuring their performance outcomes according to ASGE quality indicators for colonoscopy.

Materials and Methods

We undertook a retrospective case review of all colonoscopies performed between September 2008 and March 2010 by two attending surgeons (FAG, OI) at the Zonguldak Karaelmas University, Medical Faculty, Department of General Surgery. Detailed informed consent is obtained, including specific discussions of risks associated with colonoscopy such as bleeding, perforation, infection, sedation adverse events, missed diagnosis, missed lesions, and intravenous site complications. For each procedure standard colon preparations were accomplished with phosphosoda solution and patients underwent monitored conscious sedation with intravenous midazolam and analgesia with fentanyl. Patient demographics and procedure-specific information including indications, preparation quality, endoscopy time, findings, complications and pathology are collected and maintained in hospital database. The evaluation criteria were selected among the guidelines proposed by the ASGE and outlined at Table 1. Moreover appropriateness of indications was compared with the indications for colonoscopy published by ASGE and U.S. Multi-Society Task Force on Colon Cancer.⁵

Ethics

This work has been carried out in accordance with the Declaration of Helsinki (2000) of the World Medical Association. This study was approved ethically by Zonguldak Karaelmas University, Medical Faculty Committee for Medical Research Ethics (2010/05-2). All patients provided informed written consent.

Statistical analysis

Data was extracted from procedure notes and pathology reports entered into a SPSS (Statistical Package for the Social Sciences, SPSS, v. 13.0) database program. Descriptive statistics were used to characterize the study population.

Results

Demographic data of the patients showed that 48 % were

male and 52% were female. Mean age was 52 years with a range of 18 to 86 years. There were 160 initial colonoscopies and 4 follow-up examinations for a total of 164 colonoscopies.

Preprocedure

Overall, the indication for colonoscopy was considered appropriate, according to the ASGE guidelines. The primary symptoms as indications for colonoscopy are listed in Table 2. The most common indications were screening (37%), abdominal pain (21%) and change in bowel habits (16%).

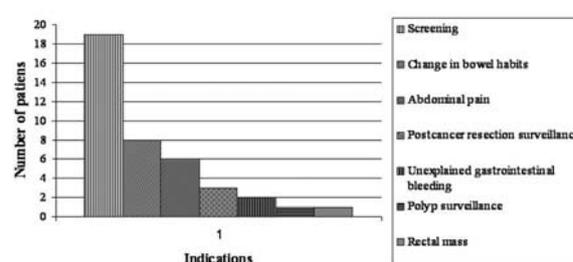


Figure 2. Number of polyp-adenoma detected patient according to indications.

In each colonoscopy, the quality of the bowel preparation was documented. Terms used to characterize bowel preparation include good, fair, and poor. “Good” is typically no or minimal solid stool with large amounts of clear fluid requiring suctioning. “Fair” refers to collections of semisolid debris that are cleared with difficulty. “Poor” refers to solid or semisolid debris that cannot be effectively cleared.⁵ Bowel cleanliness was classified as “good” for 60% of our patient.

Intraprocedure

The cecum was intubated with identification of landmarks and a photograph of the cecum was taken (Fig. 1). The cecal intubation rate was 86%. Reasons for failure of cecal intubation classified as poor bowel preparation (n= 22), tumor (tumor related complications; stricture, obstruction and perforation risk) (n=9), patient discomfort and intolerance (n=13), and previous abdominal surgery and redundancy (n=16). At some cases cecal intubation were not possible for more than one reason. The all tumor patient had no bowel preparation, carried serious risk associated with perforation due to stricture and incomplete obstruction and 3 of them had previous abdominal surgery. During the procedure 5 tumor patient had complained severe abdominal discomfort. 10 patients

had both poor bowel preparation and redundancy and 3 of them had bradycardia resulted in emergent termination of procedure. At 3 patient previous abdominal surgery, poor bowel preparation and intolerance to colonoscopy resulted in a failure at the cecal intubation.



Figure 1. Landmarks for cecal intubation. A: Ileocecal valve, B: Crow's-foot or "Mercedes Benz sign" C: The appendix orifice, D: Intubation of ileum and visualization typical ileum surface-like coral or lambs wool.

Among the 160 subjects, 64 polypoid lesions were detected on 40 patients (26%). Most notably, men older than 50 years had a higher incidence of polypoid lesions (n=28) compared with women older than 50 years (n=12) (Table 3). Screening colonoscopy was the most common indication in the polyp detected patients (Fig. 2). Of the 64 polyps subjected to biopsy, 59% were adenomatous polyp and 41% were benign polypoid lesions. The pathologic diagnosis of the rest of 1% of biopsies were

Table 1. Quality indicators for colonoscopy.

A) Preprocedure
1. Appropriate indication
2. Informed consent
3. Bowel preparation
B) Intraprocedure
1. Cecal intubation rates
2. Detection of polyps-adenomas
3. Withdrawal times
C) Postprocedure
1. Procedure report
2. Photo documentation
3. Complications
a. Perforation
b. Post-polypectomy bleeding

Table 2. Indications for colonoscopy.

Indications	Number of patients n(%)
Screening	60 (37)
Abdominal pain	34 (21)
Change in bowel habits	27 (16)
Postcancer resection surveillance	22 (13)
Unexplained gastrointestinal bleeding	10 (6)
Rectal mass	6 (4)
Abnormal radiographic finding	3 (1.8)
Polyp surveillance	2 (1.2)

diagnosed as a chronic inflammatory changes with normal colonic mucosa.

For each colonoscopy withdrawal time, the time at which the cecum was reached and the time at which the scope was withdrawn from the anus, was noted and it was standardized at minimum 6 minutes.

Table 3. Results of polyp- adenoma detected patients.

	Number of patients
Ages (years)	
Age>50	36
Age<50	4
Gender	
Male	28
Female	12
Number of polypoid lesion detected in a single procedure	
Polypoid lesion>5	2
Polypoid lesion<5	38
	Number of polypoid lesions
Pathological results	
Benign polyp	26
Adenoma	38

Postprocedure

A complete and accurate report included photo documentation of abnormalities, describing the procedure and findings, was completed immediately after the procedure.

In our series, procedure specific complications such as postpolypectomy bleeding and perforation did not occur.

Discussion

According to literature, surgeon-endoscopists have demonstrated the ability to perform colonoscopies well, with good overall performance and low complication rates. Surgeon competence in performing colonoscopy has been the subject of several reports. Reed *et al.*⁶ presented a favorable complication rate of 0.10% among non-fellowship-trained surgeons, concluding that no specific fellowship training was required. Wexner *et al.*⁷ performed a large prospective analysis of 13,580 colonoscopies that further demonstrated the surgeon's ability to perform endoscopies rapidly and successfully with low morbidity and mortality rates. However, performing colonoscopy without a complication is no single criteria used to guide the presumed technical 'competence' of an endoscopist. Rather, there are a number of criteria which, when combined, may be used to determine an overall assessment of quality.⁸ Thus, some specialist societies have developed guidelines for colonoscopy quality indicators which are easy to adopt their daily colonoscopy practice. Recently ASGE and ACG Taskforce have proposed quality indicators emphasized appropriate indications and other objective criteria such as an adenoma detection rate and a cecal intubation rate. As these guidelines more easy to applied our daily practice, we used these indicators to asses the appropriateness and competency of the colonoscopies performed by surgeon-endoscopist.

In our study we observed that our performance at the colonoscopy meet the ASGE quality criteria. On the other hand there are five indicators that need to be discussed when considering quality indicators in colonoscopy: indications, cecal intubation rates, adenoma detection rates and complications.

Performing colonoscopy with an appropriate indication is the most important question to ask ourselves as an endoscopist-surgeon. Appropriate use of colonoscopy was evaluated in many studies. In these studies, which divided indications into appropriate, uncertain, and inappropriate, and looked at high-volume European centers, 21% to 39% were classified as inappropriate.⁹ All of our examinations performed with an indication that was classified as generally indicated according to

the ASGE guidelines. In our study screening was the leading cause of colonoscopy. Chronic abdominal pain made up 21% of the indications for colonoscopy in our series. As our 25% of our patients under 50 years old, we also evaluated common indications at patients younger than 50 and, chronic abdominal and screening found to be the most common indications. For the follow up of patient had a polypectomy or a cancer resection, we used recommended postpolypectomy and post-cancer resection surveillance intervals. However, recent surveys showed that postpolypectomy surveillance colonoscopy was frequently performed at intervals that were shorter than those recommended in guidelines.^{10,13} Besides surgeons were more likely than gastroenterologists to use short intervals.¹⁰

It should be considered that cecal intubation is not the only criteria used to guide the presumed technical 'competence' of an endoscopist.⁸ The study of Cotton *et al.*⁴ showed that 69 endoscopists at seven major centers, only 55% of endoscopists achieved cecal intubation of over 90% and mean time to completion of procedure took more than 40 min among 27% of the endoscopists. With 9% of endoscopists, cecal intubation was less than 80%. In our study, the cecum was intubated in 86% of all colonoscopies. Inadequate bowel preparation, excessive looping due to previous abdominal surgery and redundancy are the most common reasons why the cecum cannot be intubated in all patients. It should be kept in mind that a higher intubation rate does not necessarily ensure adequate or superior endoscopic competence. ASGE suggested that effective colonoscopists should be able to intubate the cecum in $\geq 90\%$ of all cases and in $\geq 95\%$ of cases when the indication is screening in a healthy adult.^{15,16} A previous study at the Mayo Clinic showed that cecal intubation rates increase with increasing years of experience (median greater than nine years).¹⁷ Endoscopists with fewer than five years of experience, performing over 200 colonoscopies/year had higher completion rates compared with those doing less than 200 procedures/year.¹⁷ This study suggested that high volume physicians appeared to have improved completion rates.

Polyp-adenoma detection rate is another marker that is used in assessing competency in colonoscopy. According to ASGE, as the fundamental goal of colonoscopy is detection of neoplastic lesions in the colon, the most

important quality indicator for colonoscopy is adenoma detection rate. Among healthy asymptomatic patients undergoing screening colonoscopy, adenomas should be detected in $\geq 25\%$ of men and $\geq 15\%$ women more than 50 years old.⁵ In our study the overall polyp detection rate was 24%. There are variable polyp detection rates in the literature.¹⁸ Barclay *et al.*² found an overall detection rate of 23.5% for neoplastic lesions in all patients screened by a group of 12 experienced gastroenterologists. A study from the Mayo clinic demonstrated that higher adenoma rates were associated with longer colonoscopy withdrawal times.⁹ It is recommended that the withdrawal phase of colonoscopy in patients without previous surgical resection should last at least 6 minutes on average.⁵

The most important and procedure specific complications are bleeding and perforation for colonoscopy.⁵ In our study none of these complications occurred. The ASGE reports a postpolypectomy bleeding risk of less than 1%. This risk ranges from 0.07% to 3% across the literature.²⁰ Anderson *et al.*²¹ demonstrated a 0.19% perforation rate in 10.486 colonoscopies. Iqbal *et al.*²² performed a retrospective review of 78.702 colonoscopies in the surgical literature, finding a perforation rate of only

0.084%. Perforations occurred in 0.9 of 1000 colonoscopies and bleeding in 4.8 of 1000 colonoscopies, with endoscopic biopsy or polypectomy demonstrating increased risk in all categories. Although our cecal intubation rate was lower than the expected intubation rates quoted in the literature, we were not urgent about to reach the cecum. Thus no complication, especially perforation, occurred in our study.

The goal of this study was to document the safety and outcome of colonoscopies performed by surgeon-endoscopists according to quality indicators proposed by ASGE. The study showed that ASGE quality indicators for colonoscopy were easy to apply to our daily practice and sufficient to measure our competence at colonoscopy. Overall, surgeon-endoscopists demonstrate proficiency in performing colonoscopies according to proposed guidelines. On the other hand as the study is the relatively small sample size; some of our results may be failed to meet results published at the literature. However, we continue to collect sample data prospectively and look forward to reporting this in the future.

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