

Is Lower GI Endoscopy Still a Problem?

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ABSTRACT

AIM: To analyze the outcome of colonoscopies performed at a local hospital.

METHODS: A retrospective review of all Lower GI endoscopies performed at Fauji Foundation Hospital Rawalpindi was conducted from November 1993 through December 2011. All aspects were analyzed to record the number, quality and appropriateness of procedures, completion rate, diagnostic and therapeutic outcome and complications reported. The reasons for failure to complete were scrutinized and recorded. The procedures were carried out as such without questioning the appropriateness of indication or otherwise.

RESULTS: A total of 1431 patients underwent Lower GI endoscopic examinations between September 1993 and October 2011. The age range was from 4 to 93 years (mean 45±18.8). There were more female patients. The overall caecal intubation rate was 42%. The incomplete procedures comprised 800 (60%). The success rate of bowel preparation was (92.8%). Rectal bleeding constituted the leading indication for colonoscopy (31%). The results were normal in (46.36%) patients. The colonoscopic diagnoses could not be obtained in 117 (8%) patients owing to poor bowel preparation. Inflammatory bowel disease was the most common diagnosis (13.98%) followed by colorectal cancer (8%). Therapeutic procedures were performed in 93 patients. The most important procedural complication was perforation in 1 case only. The overall polyp detection rate was 8% in this study.

CONCLUSION: Completion rate was 42%. Rectal bleeding was the leading indication for colonoscopy followed by chronic diarrhea and abdominal pain. Colonoscopy performed for appropriate indications yields more significant findings and avoids wastage of resources. The

factors that can enhance performance at colonoscopy were proper bowel cleansing and devoting sufficient time for the examination. There is a need to develop new generation slick instruments to overcome technical difficulties.

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Key words: Coecal intubation; Colonoscopy outcome; Completion; Caecum

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INTRODUCTION

Colonoscopy is the "gold standard" procedure which is widely used in the diagnosis and treatment of colonic mucosal disorders^[1]. Besides being socially inconvenient, it is physically and emotionally distressing for the patient. It is considered to be a relatively cumbersome skill to learn and remains a demanding and challenging procedure for the endoscopist. The diagnostic colonoscopy is desirable as symptoms and lab work up do not reliably furnish pertinent information as to the underlying diagnosis. The procedure is only warranted when diagnostic or therapeutic benefit outweighs the potential risk to patient^[2]. The chronic diarrhea and abdominal pain are regarded as inappropriate indications for colonoscopy as they contribute very little in altering the management plan^[3].

The complete examination to the cecum is an important component of diagnostic colonoscopy.

The practice of regular external audit can help modify the quality and the outcome of the colonoscopies^[4]. The critical appraisal of the performance data generated as a result of the audit exercise can considerably enhance the percentage of caecal intubation and improve the performance at colonoscopy.

A retrospective 14 year review was performed at FFH, which is a referral centre for ex-servicemen, to judge the performance, to ascertain the appropriateness of colonoscopy in relation to its diagnostic yield, to determine the success rate of caecal intubation and to identify possible reasons for incomplete/failed procedures.

PATIENTS AND METHODS

A detailed scrutiny of each colonoscopy was carried out during a defined time period, examining reported reasons for incomplete examination. The reports of 1200 patients undergoing colonoscopy at FFH RWP from July 1993 to October 2011 were analyzed to identify patients who underwent an incomplete colonoscopy. An open access policy is being practiced. Data were recorded for adequacy of bowel preparation, the number of colonoscopies performed, the percentage of cecal intubation as compared to the total number of patients examined, reasons for incompleteness, adequacy of sedation, patient tolerance and duration of the procedure. Adequacy of bowel preparation was monitored by scoring bowel content and the percentage of bowel wall visualized. The influence of sedation was assessed on the percentage of total colonoscopies. Intravenous midazolam 2.5-10 mg and pentazocin 15 mg for sedation. Patients were allowed home on the same day as the examination took place, unless complications occurred. Where the procedure failed entirely or was diagnostically incomplete because of inadequate preparations or other technical difficulties, it was repeated, if possible, at a later date. Diagnostic yield was regarded as positive for each of the indications, if the lesion found could account for the symptoms and signs of the patient and justified the procedure and indication. Data analysis also took into account those cases where the procedure was incomplete, i.e. the caecum was not visualized or a diagnosis was furnished.

The colonoscopy data were perused for indication, level of colon attained, completion rates, diagnostic findings and apparent reasons for failure. The corresponding histopathology reports were evaluated similarly. Biopsies were generally not performed where the findings were macroscopically normal, except in cases of inflammatory bowel disease surveillance. The diagnosis of carcinoma was made by biopsy or polypectomy. Patients were divided into two groups: group 1 consisted of patients aged <45 years and group 2 patients \geq 45 years. Details of referral, examination, endoscopist, complications and follow-up were recorded. The performance of each operator was evaluated at colonoscopy. The views of nursing staff were also sought. The data obtained during the fourteen years was compared trying to identify the factors that would improve the quality of the procedure. Completion rate as well as complications reported during or post colonoscopy. All patients were called back 1 month later to identify any related post-procedural complication. Details of referral, examination, endoscopist, complications and follow-up were recorded. All the procedures were performed by three experienced colonoscopists using Olympus GIP colonoscopes. Frequencies and percentages of indications and colonoscopic diagnoses were calculated using SPSS.

RESULTS

During the 14-year study period 1431 lower GI endoscopies were performed in all. Of which four hundred were planned Limited colonoscopies.

The mean age of subjects was (45 \pm 18.8) years and ages ranged from 4 to 90 years. Seventy percent procedures were carried out on an outpatient basis. The patients comprised 827 (57.8%) females and 604 (42.2 %) males. Seven hundred and fifteen patients (44%) were less than 55 years. Female patients outnumbered males by 1.5:1. The caecum was accessed/visualized in 433 procedures thus giving a cecal intubation rate of 42%.

Ninety three percent were symptomatic and 7% were having surveillance or follow-up colonoscopy. The colonoscopies were

incomplete in 800 patients. The causes identified for incomplete procedures included excessive looping/ redundancy in 53%, sharp angulation 24%, intolerance and patient discomfort 15% most often constrained colonoscopy. One hundred and seventeen (8%) studies were suboptimal owing to poor preparation. In addition, completeness of colonoscopy was also impacted by colonic narrowing and previous abdominal surgery in <1 percent of cases. One hundred eighteen patients underwent repeat colonoscopy after incomplete colonoscopy. There was a significant correlation between reasons for endoscopic failure and inadequacy of indication. The snare polypectomies were performed in 93 patients. In addition, lower GI endoscopies were analyzed for diagnostic yield also. Only 50% of all lower GI endoscopies had positive findings. Positive findings were found in 70% of cases deemed appropriate compared with only 15% found in cases judged inappropriate. Lower GI endoscopy identified a problem that explained the symptoms in 175 (10%) cases. Normal findings reported in 60 (13%) of the 433 cases who had had a complete examination. Rectal bleeding accounted for a diagnostic yield of 67%. Diverticular disease (14) cases, Angiodysplasia (4) cases and Tuberculosis of abdomen (12) cases consisted of the lowest proportion of yield pathology respectively. Previously undiagnosed haemorrhoids were noted in 20% of colonoscopies as a cause of bleeding. Dual/multiple pathology contributed to 5% of the total yield with various combinations of polyps, haemorrhoids, cancer, amebiasis and colitis. The diagnostic yield for polyp was 6% .

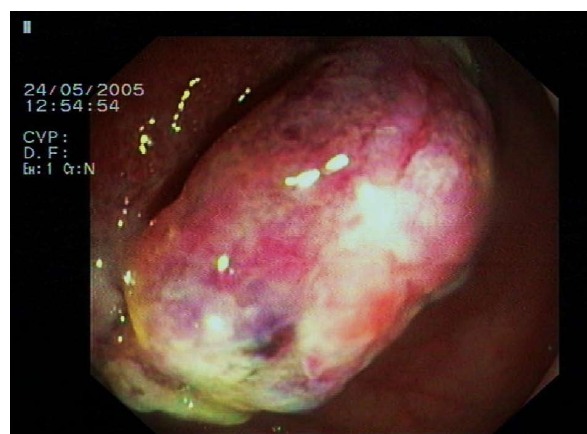


Figure 1 Colonic polyp.

Other disorders, predominantly pseudo membranous colitis were found in 2 cases. The ulcerative colitis was diagnosed in 12% of new cases. The diagnostic yield for iron deficiency anemia (26%) consisted predominantly of ulcerative colitis, hemorrhoids, carcinoma of colon and angiodysplasia. Together affording 27.7% of the combined yield. Abdominal pain was responsible for a diagnostic yield of 22.2%.

Among the patients with altered bowel habit, the diagnostic yield obtained was 29%. The additional findings noted during lower GI endoscopy were radiation proctitis 1, vascular malformation 1 and worm infestation 2.

Most of the cases of colorectal cancers (80%) were detected in distal colon (Figure 2) and 20% in the ascending colon (Figure 3).

The incidence of colorectal cancers in group 1 was 20%. Only one procedure-related complication during the colonoscopy (including the 93 patients who underwent polypectomy) occurred i.e. perforation in a case of advanced ulcerative colitis. No patient died within 30 d of undergoing colonoscopy.

Spectrum of Indications	Frequency of outcome/disease distribution									Total
	IBD	CRC	Hemorrhoids	Amebic Colitis	Polyps	TB	Diverticuli	Rectal Ulcers	Normal	
Chronic Diarrhea	49	34		23	6		3		182	297
Hematochezia	121	46	60	4	62	3		39	168	503
Hepatic Metastais		8			1	2			19	30
Anemia	16	5	15	3		1			82	122
Mass Abdomen	1	31			4			2	83	121
Ulcerative Colitis (new+review)	58	1		3	3		1		7	73
Chronic Pain Abdomen	21				10	4	2	2	132	171
Constipation		1		3	2		1	1	39	47
Altered Bowel Habits	2	2			2		1		17	24
Subacute Intestinal Obstruction	2	3						2	11	18
Radiological Filling Defects					1				12	13
Suspected Ileocecal TB		1			2		1		8	12
Total	270	132	75	36	93	10	9	46	760	1431

DISCUSSION

Colonoscopy is the optimal procedure for examining the colon. To improve the quality of colonoscopic procedures, the ASGE recommends that 10 indicators pertaining to the assessment of quality of lower GI endoscopy should be routinely checked on all patients undergoing lower GI endoscopy^[5,6].

The factors that determine the difficulty of colonoscopy include length of colon and individual segments, mobility and tortuosity, low body mass index and extremes of age, presence of colonic pathology and previous pelvic surgery, lower pain threshold and prolonged procedures, acute colonic angles and sharp bends. Besides, the success at colonoscopy is contingent upon the training level, the innate dexterity and endoscopic talent, the ambition, motivation, dedication and experience of the operator. The additional factors that modify successful outcomes in colonoscopy are; the expertise of the colonoscopist; the quality of the bowel preparation for the procedure; the appropriate use of sedation; the time constraints and pressures for the examination; and the number of procedures carried out during the given session.

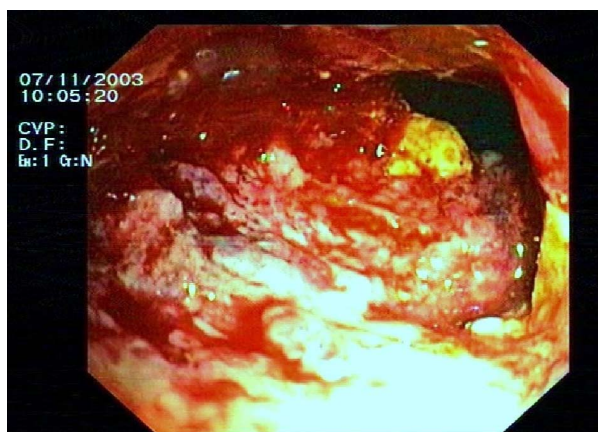


Figure 2 Carcinoma Rectum.

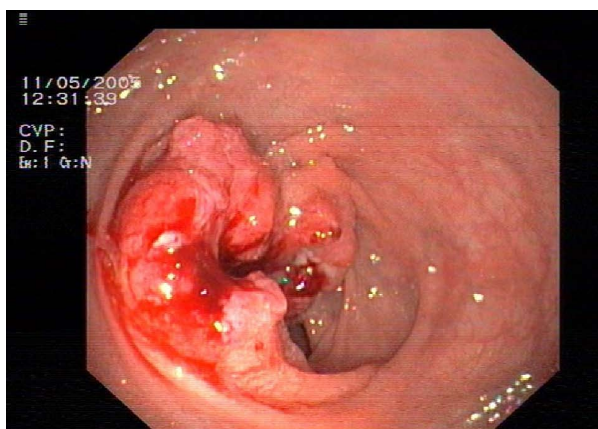


Figure 3 Colonic malignancy.

Documenting colonoscopy completion rate is an important aspect of colonoscopy as it is one of the indicators of quality of the procedure. The cecal intubation rate is regarded as an indicator of endoscopic competence and technical expertise and is a key measure for improvement of the success rate. There are certain laid down standards regarding the colonoscopy completion rates. The rate of coecal intubation is not always optimal in routine practice. The published completion rates frequently fall short of the acceptable 90% benchmark. The success of reaching the cecum varies widely from 75-95% and experienced endoscopists are expected to attain a benchmark success of 90%^[7,8,9]. However, in routine practice the published colonoscopy completion rates vary substantially^[10,5,6,11,14] and studies suggest they often fail to achieve the desirable 90% completion rate to caecum considered acceptable by authorities^[11,12]. The success of cecal intubation also drops with successive procedures as the operator's fatigue sets in with prolonged sessions. Some of the factors are beyond the control of the operator like suboptimal patient preparation, extensive diverticuli and obstructing colonic lesion^[11,13].

The observations suggest that cecal intubation rates go up with increasing endoscopic experience of the operator and a minimum volume of at least 200 procedures annually is desirable to keep up the desired endoscopic competence and performance level.

Although a higher procedure volume does not guarantee higher colonoscopy completion rates but in practice low volume endoscopists have lower cecal intubation rates. The endoscopist-specific parameters like age, gender, experience level, annual procedure volume, insertion and withdrawal times can also affect the cecal intubation rates.

To be declared endoscopically competent during the training, a minimum of 200 hands-on colonoscopies with the aim of attaining a high percentage of total colonoscopies are desirable. The minimum annual procedure volume required for up keeping the endoscopic competence among trained endoscopists is currently unavailable. To maintain continuity and good technical skills, the majority of the fellows are required to perform a greater number (average 1000 procedures) of examinations. These recommendations are not applicable to polypectomy skills but generally refer to diagnostic colonoscopy. A study conducted by Robinson *et al* showed that the nature of indication determined the rate of total colonoscopies and was impacted by the paramount desire to reach the coecum. This was 93% when considered "essential", 86% when taken "desirable", but dropped to 45% when regarded "optional"^[14].

Of the evaluable 1066 patients, colonoscopy was completed in 433 cases in the present study. The overall caecal intubation rate in the current study was 42%.

The results indicate that the completion rate in the current study fell markedly below the recommendations. The results obtained are discordant with results from other studies^[7,8,9]. The incomplete procedures may have an adverse impact on any successful future national colorectal cancer screening programme. The determinants of

performance at colonoscopy are: the judicious use of analgesia during the examination; the quality of the colonic cleansing; the time devoted for the procedure, the qualification and the skill of the operator, the level of training of the endoscopist^[12]; and the degree of motivation to obtain optimal results. The use of proper sedation and analgesia can lead to the progressive increase in cecal intubation rate. There were a large proportion of poorly sedated patients owing to the fear of increased incidence of complications. This can explain the low rate of coecal intubation. The lack of motivation for completing procedure could be explained by the fact that the strength of the request for colonoscopy originating in non-gastroenterological departments might look less convincing and robust to the endoscopist, thus diminishing the motivation for total colonoscopy. This was perhaps one of the reasons for lack of completion

In one study, the crude completion rate for the colonoscopies done in 2002 jumped to 88.8%^[15]. After the endoscopic audit. Looping which occurs more frequently during routine colonoscopy 16 and poor bowel prep are the main reasons for endoscopic failure in published literature. The results of our study conform to these studies. Moreover, technical maneuvers that prevent loop formation and facilitate passage of colonoscope may have been less often employed to ward off failure owing to lack of adequate time.

In another study, the main reasons for incompleteness included retained stool (2.2%), excessive bowel looping (2.2%), participant discomfort (1.3%), and impassable and non-negotiable obstructing lesions or cancers of large bowel (13%)^[7,13]. Taking into account the views of underperforming endoscopists and nursing staff of the endoscopic unit can perhaps help devise consensus on methods of improving completion rates. The trained nursing staff can provide good input on the performance.

The predominant indications for colonoscopy were rectal bleeding (70%), chronic diarrhea 40%, and altered bowel habit. One patient had been on anti-tuberculous chemotherapy for 12 months before being diagnosed as having ulcerative colitis at colonoscopy (Figure 4). One case of colonic polyps presented with upper GI bleed. The gastroscopy revealed myriad gastric polyps (Figure 5).

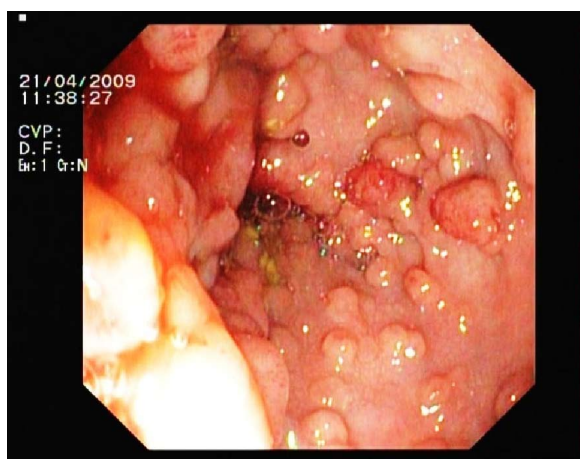


Figure 4 Ulcerative colitis.

The colonoscopy subsequently showed multiple distal colonic polyps. The colonic polyps were removed at Lower GI Endoscopy. Gastric polyps could not be removed.

By identifying the deficiencies and suggesting the corrective measures, a regular colonoscopy audit program coupled with detailed exploration of the performance data gathered at lower GI endoscopy can improve the success rate of cecal intubation even for the underperformer^[17].

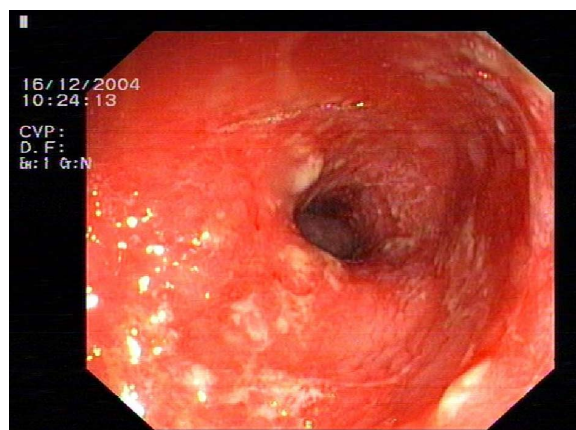


Figure 5 Gastric Polyps in a patients with colonic polyps.

CONCLUSION

A significantly low completion rate was achieved, compared with published results. The chief reasons for endoscopic failure were excessive bowel looping, patient discomfort, poor preparation and obstructing lesion. Reasons for failure to complete colonoscopy to the caecum were in keeping with the published results. Some of the measured indicators were outside desirable/standard limits: cecal intubation rate (42%), inadequate bowel preparations (8%), inappropriate procedures (19%), normal procedures (46.3%), and yield for neoplasia (8%). Adherence to quality standards appears to be inadequate. The yield for chronic diarrhea was 40% contrary to previous studies. Patients with chronic diarrhea are being appropriately investigated with colonoscopy unlike previous studies. The effectiveness of colonoscopy can be improved further by employing the instrument of audit, optimizing the performance of endoscopists and improving the bowel preparation. There is a need perhaps to develop newer generation of instruments to facilitate the passage of colonoscopes and innovative bowel cleansing solutions to quickly and reliably empty the bowel.

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