

[97_A] Prevalence of mutations in adenomatous polyposis genes

Age at Testing	Total number of colorectal polyps		
	10-19	20-99	100+
10-19	10.0%	*	*
20-29	13.3%	28.0%	70.8%
30-39	8.0%	18.9%	57.7%
40-49	6.5%	20.4%	48.8%
50-59	1.8%	10.4%	36.7%
60-69	0.7%	6.1%	30.4%
70-79	0.7%	2.7%	10.5%
80-89	0%	5.0%	*

* Indicates $n < 10$.

[97_B] Prevalence of mutations in non-polyposis colorectal cancer genes

Age at Testing	Total number of colorectal polyps		
	10-19	20-99	100+
10-19	0%	*	*
20-29	6.7%	0%	4.2%
30-39	2.7%	1.4%	3.8%
40-49	4.9%	4.6%	2.3%
50-59	3.7%	2.4%	4.1%
60-69	4.4%	2.6%	3.6%
70-79	4.6%	3.7%	0.0%
80-89	7.7%	7.5%	*

* Indicates $n < 10$.

colorectal cancer genes remained high in all age groups and was not associated with age in patients with 10-19 ($P=0.9$), 20-99 ($P=0.3$) or 100+ polyps ($P=0.9$).

Conclusion: Older patients with multiple polyps including adenomas had lower prevalence of mutations in polyposis genes, but maintained a high rate of mutations in other colon cancer-associated genes. We recommend continued genetic testing of these patients regardless of age but would recommend MGPT to include other non-polyposis colorectal cancer genes.

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Elective Colectomy for the Treatment of Benign Colon Polyps: National Surgical Trends, Outcomes and Cost Analysis

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Introduction: Colonoscopy with polypectomy decreases the incidence and mortality of colon cancer. While endoscopic management for benign colon polyps has been demonstrated to be safer and more cost-effective than surgery, patients are routinely referred for surgical polyp removal. Little is known about this practice. We aimed to determine the trends, outcomes and costs of colectomy in the management of benign colon polyps.

Methods: We queried the national Veterans Affairs Surgical Quality Improvement Program (VASQIP) database for colectomy procedures, using CPT codes, between 2000-2014. We linked this to the national VA Corporate Data Warehouse (CDW) to assess patient, pathology and hospital cost data. We measured rates, complications and costs associated with colectomy for benign polyps. We analyzed the pathology characteristics of a random sample (9.5%, $n=642$).

Results: Of the 60,494 colectomies performed, we identified 7,102 Veterans who had a colectomy for benign polyps. Colectomy for benign polyps increased from 6% ($n=213$) in 2000 to 18% ($n=614$) in 2014, $P<0.001$. The number of colonoscopies tripled from 131,326 to 381,333, $P<0.001$. However, the percent of colectomies performed for colon cancer decreased from 40% ($n=1,674$) to 31% ($n=1,065$) (Figure 1).

Patients had a mean age of 66 (SD 8.8, 27-92) years. The majority were men (97%) and ASA class III (71%) (Table 1). Based on pathology, 80% ($n=514$) of patients underwent a right hemicolectomy. The median polyp diameter was 25mm (IQR 15-35mm). Histology of the surgically resected polyps predominantly showed adenoma 63.4%, with only 6.4% of surgical specimens showing submucosal invasion and 27.6% high-grade dysplasia. 3.6% of specimens contained no residual lesion. The 30-day mortality was 1.2% and complication rate was 19.7% (Table 2). 5.4% of patients required repeat surgery. The median cost of colectomy was \$22,712 (IQR: \$16,621-32,508) for open and \$20,697 (IQR: \$14,905-29,268) for laparoscopic. Costs increased to \$32,460 (IQR: \$20,842-54,665) and \$27,639 (IQR: \$19,752-45,748), respectively, if any complications.

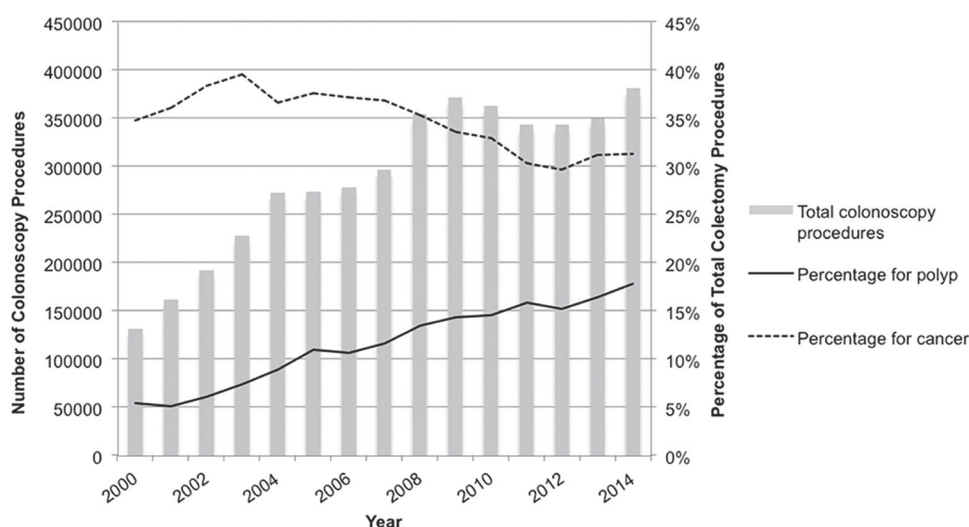
Conclusion: In our large VA national cohort, the rates of colectomies for benign adenomas significantly increased by three-fold over a 15 year period, and were associated with significant mortality, morbidity and cost. In the most recent year, 2014, close to a fifth of colectomies were performed for benign polyps. Future efforts should focus on determining physician and patient factors that drive these practice patterns.

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The Risk Predictive Values of ACG Classification in a Cohort of Colon Ischemia: Refining the Definition of Mild Disease

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Introduction: Although most cases of colon ischemia (CI) are mild and self-limiting, when severe it implies high mortality rates. We aimed to evaluate the risk predictive value of the classification proposed by American College of Gastroenterology (ACG) guidelines (2015), created to provide a management algorithm.



[98A] Comparison of aggregate colonoscopy procedures completed and percentage of colectomy cases completed by indication for surgery.

Patient Characteristic	Elective Colectomy for Polyp N=7,102	Randomly Selected for Review of Pathology N=642	P Value
Age, years			
Mean (SD)	66.0 (8.8)	66.0 (8.4)	0.88
Range	27, 92	41, 92	
Race			0.97
White (not of Hispanic origin)	4,530 (70.7)	407 (70.2)	
Black (not of Hispanic origin)	1,190 (18.6)	111 (19.1)	
Hispanic	254 (4.0)	24 (4.1)	
Other	434 (6.8)	38 (6.6)	
Males	6,873 (96.8)	619 (96.4)	0.59
BMI, kg/m²			
Mean (SD)	28.9 (5.7)	29.0 (5.8)	0.61
Range	9.4, 59.6	16.3, 49.4	
Comorbidities¹			
Smoker	2,411 (34.0)	229 (35.7)	0.34
ETOH (>2 Drinks/day)	848 (12.0)	64 (10.0)	0.11
Diabetes on medication ²	1,803 (25.4)	155 (24.1)	0.45
Congestive Heart Failure	60 (0.8)	2 (0.3)	0.12
CVA with deficit	226 (3.2)	18 (2.8)	0.57
Severe COPD	1,026 (14.5)	101 (15.7)	0.33
ASA³ Classification			0.52
I	17 (0.2)	0	
II	1,595 (22.5)	148 (23.1)	
III	5,054 (71.2)	451 (70.3)	
IV	436 (6.14)	43 (6.7)	

[98B] Patient Demographics.

Methods: A retrospective multicenter study was conducted on adult patients with definite CI (clinical, endoscopic, pathologic and culture criteria), between 2013 and 2016. Data was collected on clinical presentation, including comorbidities, organ failure, management and outcome. Cases were evaluated according to ACG risk factors (RF) (gender, systolic blood pressure, heart rate, abdominal pain without rectal bleeding, BUN, Hb, LDH, serum sodium, WBC). Cases were classified as mild (0 RF), moderate (1-3 RF) and severe (>3 RF or any of the following: peritoneal signs, pneumatosis or portal venous gas, gangrene, pan-colonic or isolated right-colon ischemia).

Results: 349 cases with the clinical diagnosis of IC were analyzed. 193 met inclusion criteria of definitive diagnosis (63% females; mean age 72 years (± 13)). ACG classification of mild, moderate and severe disease was attributed respectively to 21% of patients (0 intra-hospital deaths), 45% (2 deaths) and 34% (12 deaths). The number of ACG RF was: 40% with 0 RF, 8% with 1, 9% with 2, 15% with 3, 16% with 4, 8% with 5, 4% with 6 and 1% with 7. No patient with 0 or 1 RF died. Only 1 patient with 2 RF died. The remaining 13 deaths were verified with at least 3 RF. The univariate analysis revealed a statistical correlation between RF and intra-hospital or 30-day mortality as well as the need for surgery ($P < 0.001$, $P < 0.001$, and $P = 0.006$, respectively). ACG classification presented high predictive accuracy for in-hospital and 1-month mortality with an AUROC of 0.78 and 0.79 ($P < 0.001$), respectively. For a cutoff of 2 ACG RF, the sensitivity (SE) for death was 100%, specificity (SP) was 52%, with a positive predictive value (PPV) of 14% and negative predictive value (NPV) of 100%. For 3 ACG RF the results were: SE 93%, SP 61%, PPV 16% and NPV 99%. Three or more RF had an OR of 20.2 (95%CI: 2.59-158) for intra-hospital and 18.4 (95% CI: 2.34-144) for 1-month mortality.

Conclusion: No patient in this cohort with less than 2 ACG RF died, suggesting that mild disease of ACG classification may include 0 and 1 RF without changing prognosis. Short-term mortality risk increases significantly in patients with at least 3 ACG RF.

to examine the effect of sequential fecal microbiota transplant(s) (FMT) with selective use of oral vancomycin on hospitalization-associated mortality rates in severe/complicated CDI patients not eligible to undergo surgery due to significant medical comorbidities.

Methods: We conducted a retrospective cohort study by examining the EMR and FMT database between 2009-2016 at a tertiary referral center where an inpatient FMT program was implemented in 2013. FMT has been routinely offered to all qualifying patients since Jan of 2013. Inclusion criteria were: A) severe/complicated CDI per ACG guidelines, B) no response to vancomycin after ≥ 5 days of therapy C) not eligible for colectomy due to underlying medical status per surgical consultation. We compared baseline characteristics and rates of 30-day mortality between patients who received FMT(s) and those who did not. Adjusted effect of FMT was estimated using the penalized logistic regression using the Firth's approach.

Results: 32 hospitalizations with severe/complicated CDI not eligible for colectomy by the surgical team were identified; 17 patients continued medical therapy and 15 were treated with sequential FMT protocol. Of those cured by FMT, an average of 1.83 ± 0.7 FMTs were needed. Serum albumin and WBC were comparable between groups (Table 1). Regarding prognostically important variables, patients receiving FMT were significantly older (mean 75 vs 59 years, $P < 0.001$) and more commonly had toxic megacolon (40.0% vs 5.9%, $P < 0.033$), although rates of acute kidney injury (AKI) were slightly lower (73.3% vs 100%, $P = 0.038$) compared to patients who did not receive FMT. Importantly, patients receiving sequential FMT instead of routine medical therapy had decreased CDI-related mortality (20.0% vs 82.4%, $P = 0.001$) and all-cause mortality (20.0% vs 94.1%, $P < 0.001$). These results remained the same after controlling for factors that significantly differed between those who received FMT and those who did not, including age, AKI, and toxic megacolon.

Conclusion: An inpatient FMT protocol utilizing sequential FMT decreases mortality in high-risk patients compared to routine medical therapy in patients with severe/complicated CDI who are not eligible for colectomy due to poor medical status.

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Fecal Microbiota Transplant Decreases Mortality in Patients With Refractory Severe and Severe Complicated *Clostridium difficile* Infection Not Eligible for Colectomy

2017 Fellows-in-Training Award (Colon Category)

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Introduction: In patients with severe/complicated *Clostridium difficile* infection (CDI) non-responsive to medical therapy, mortality approaches 80% if colectomy is not offered as salvage therapy. We aimed

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Inpatient Fecal Microbiota Transplant Program Decreases Mortality and Colectomy in Severe and/or Complicated *Clostridium difficile* Infection

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Introduction: Fecal microbiota transplantation (FMT) is recommended for recurrent *Clostridium difficile* infection (CDI). However, surgery still remains the standard of care for severe and severe-