

Cost of colectomy in ulcerative colitis patients

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Introduction

- The primary goal of treating ulcerative colitis (UC) is to reduce the inflammation that triggers symptoms. In many cases colectomy may be required when medical therapy fails
- The prognosis of UC has changed greatly, in particular due to the improvement of therapeutic tools and strategies, with a life expectancy for UC patients similar to that of the general population
- Colectomy is a staged-procedure with several surgeries and related-inpatient hospitalisation, which carries an important economic burden (Odes 2006)
- Postcolectomy surgical procedures and complications occur frequently after colectomy (Loftus 2009)

Objective

- To estimate the cost of colectomy in ulcerative colitis patients in Spain (COSCOL Study)

Methods

- **Study design**
 - Retrospective audit undertaken at 35 centres which reviewed the medical records of UC patients who had undergone total colectomy between 2000 and 2005
 - Time horizon: patients were followed up for a period of at least 2 years after the initial colectomy
- **Cost estimation**
 - Cost evaluation (€, 2009 values)
 - Unitary cost data were collected from:
 - The Spanish Database of Health Costs e-Salud (Oblikue Consulting 2009)
 - The Spanish Catalogue of Medicinal Products (Consejo General de Colegios de Farmacéuticos 2009)
 - Resources have been determined in the first 2 years after the initial colectomy and in the years of follow-up after 2nd year
- **Data collection**
 - Demographical and clinical data
 - The following direct medical costs related to colectomy were considered:
 - Surgeries and associated inpatient hospitalisations (surgical hospitalisation) to complete colectomy
 - Surgeries and inpatient hospitalisations (surgical hospitalisation) due to colectomy complications
 - Inpatient hospitalisation without surgery
 - Laboratory and diagnostic tests
 - Outpatient visits
 - Drug costs

- Data available on 209 patients with total colectomy due to ulcerative colitis (Table 1, Table 2)
- Average mean total cost per patient was € 31,613 (Table 3, Table 4):
 - Most of the costs (€ 27,110, 86%) occur in the first 2 years after the initial colectomy
 - Surgeries and related-inpatient hospitalisations accounted for the majority (76%) of total costs, followed by medical hospitalizations (8%), laboratory and diagnostic tests (7%), visits (5%), and drug costs (4%).
 - Surgical hospitalisation for staged surgeries to complete colectomy accounted for the 66% of total costs (29% due to surgery procedure costs and 71% for inpatient hospitalisation).
 - Surgical hospitalisation costs due to colectomy complications accounted for a 10% of total costs

- Mean total costs per final surgery performed were (Table 2 and Fig. 1):
 - Proctocolectomy with ileal pouch anal anastomosis: € 30,281 (54% of patients)
 - Proctocolectomy with ileostomy: € 34,367 (31% of patients)
 - Proctocolectomy with IPAA followed by permanent ileostomy (pouch failure): € 46,928 (3% of patients)
 - Colectomy with ileorectal anastomosis: € 19,721 (5% of patients)
 - Colectomy with ileostomy and rectal remnant: € 31,466 (7% of patients)

Table 1. Socio-demographic and baseline characteristics. COSCOL Study patients

	Value/N	Percentage
Number of patients	209	100
Females	93	44.5
Age, mean (SEM) (years)	41.6 (13.2)	
Years since diagnosis, mean (SEM)	5 (6.3)	
Smoking habit		
Smoker	18	8.6
Non-smoker	128	61.2
Ex-smoker	61	29.2
Use of immunomodulators	143	68.4
Azathioprine / mercaptopurine / methotrexate only	44	30.8
Cyclosporine only	40	28.0
Both	59	41.2
Extension		
Left-sided	41	19.6
Extensive	168	80.4
Proctitis	0	0
Reason for colectomy		
Treatment failure	131	62.7
Severe complications	61	29.2
Other	17	8.1
Colectomy performed as an emergency procedure	74	35.4

Table 2. Type of colectomy

	N	Percentage
Proctocolectomy with ileal pouch anal anastomosis (IPAA)	113	54.1
Proctocolectomy with ileostomy	64	30.6
Proctocolectomy with IPAA and ileostomy	7	3.3
Colectomy with ileorectal anastomosis	11	5.3
Colectomy with ileostomy and rectal remnant	14	6.7
Total	209	100

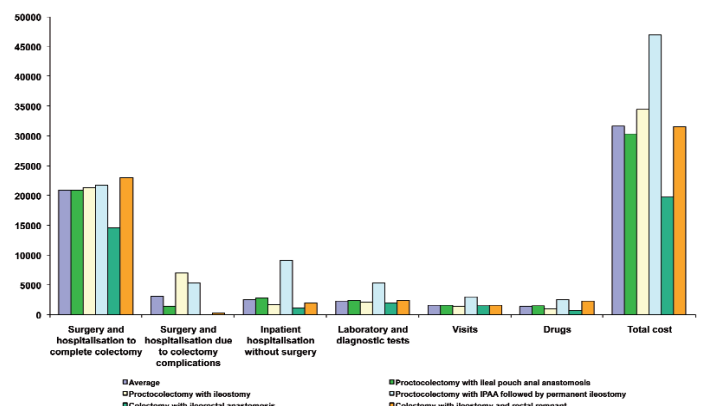
Table 3. Consumption of resources per patient. Mean values, 95% confidence interval lower limit (CI 95% LL) and upper limit (CI 95% UL), minimum and maximum

	Mean	CI 95% LL	CI 95% UL	Minimum	Maximum
Surgery and hospitalisation to complete colectomy					
Surgeries (number)	2.07	1.79	2.35	1	5
Inpatient hospitalisation (days)	41.85	36.18	47.53	2	168
Surgery and hospitalisation due to colectomy complications					
Surgeries (number)	0.79	0.68	0.90	0	8
Inpatient hospitalisation (days)	12.23	10.57	13.89	0	128
Inpatient hospitalisation without surgery (days)	8.61	7.44	9.78	0	158
Laboratory and diagnostic tests (number)	77.15	66.69	87.61	0	482
Visits (number)	24.66	21.32	28.00	0	137
Drugs (days)	998.68	863.28	1,134.07	0	10,391

Table 4. Total estimated cost per ulcerative colitis patient with colectomy (€, 2009). Mean values, 95% confidence interval lower limit (CI 95% LL) and upper limit (CI 95% UL)

	Mean	Percentage	CI 95% LL	CI 95% UL
Surgery and hospitalisation to complete colectomy	20,815.47	65.8	19,293.65	22,337.30
Surgery				
0-2 years	5,734.62		5,422.04	6,047.19
>2 years	266.29		133.35	399.24
Hospitalisation				
0-2 years	14,429.60		13,053.89	15,805.32
>2 years	384.96		176.80	593.12
Surgery and hospitalisation due to colectomy complications	3,069.67	9.7	1,912.29	4,227.05
Surgery				
0-2 years	888.46		635.43	1,141.50
>2 years	144.91		50.90	238.91
Hospitalisation				
0-2 years	1,132.54		584.59	1,680.50
>2 years	903.76		478.92	1,328.61
Hospitalisation without surgery	2,490.37	7.9	1,706.52	3,274.22
0-2 years	1,672.97		1,030.00	2,315.94
>2 years	817.40		474.46	1,160.33
Laboratory and diagnostic tests	2,327.81	7.4	2,047.11	2,608.52
0-2 years	1,670.31		1,484.51	1,856.10
>2 years	657.51		503.29	811.73
Visits	1,554.73	4.9	1,349.39	1,760.06
0-2 years	886.59		788.11	985.07
>2 years	668.13		525.52	810.75
Drugs	1,354.09	4.3	961.90	1,746.27
0-2 years	694.42		512.62	876.22
>2 years	659.67		382.34	936.99
Total cost	31,612.14	100	28,869.94	34,354.34
0-2	27,109.51	85.8	24,922.69	29,296.34
>2	4,502.63	14.2	3,477.56	5,527.69

Figure 1. Total costs per ulcerative colitis patient with colectomy according to the type of colectomy



- The burden of colectomy due to ulcerative colitis has a high impact on the patient and the society, with a mean total costs per patient of € 31,613
- Surgery and related-hospitalisations accounted for more than three quarters of total cost, which is produced mainly in the first 2 years
- Seventy six percent of total costs is due to the surgical hospitalisation to complete colectomy
- Comorbidities with or without surgeries accounted for 18% of total average cost of colectomy