

Contributions of irrigation for continence in permanent colostomy: a case study

ABSTRACT

Bowel management in the person with a permanent colostomy is important and the burden of continuous use of bags and adapters (base plates / skin barriers) on health care costs and the environment is known. When applied regularly, colostomy irrigation (CI) contributes to improving the quality of life (QOL) of the individual with a permanent colostomy by enabling improved faecal continence and reducing costs. The aim of this article was to examine the positive impact of CI on an individual's QOL and health expenditures. In this case, it was found that a patient with a permanent colostomy who had performed CI for 21 years could eliminate many of the physical and psychological problems as well as peristomal skin complications (PSCs), arising from using a colostomy appliance only. It was also determined in this case scenario that bowel management using CI was three times more cost-effective than the colostomy bag system.

Keywords Colostomy, cost analysis, irrigation, quality of life, peristomal skin complications

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INTRODUCTION

The formation of a colostomy is one of the most commonly applied therapeutic interventions for pathological conditions in the large intestine, primarily for colorectal cancer. This intervention has negative effects on the patient's QOL by altering body image, defecation habits, and lifestyles.¹ A colostomy is associated with many potential or actual problems such as economic burden, psychological and sexual problems, dissatisfaction with the changes in self-image and daily routines, travel difficulties, and fatigue.²⁻⁴

Faecal evacuation via colostomies can be managed in several methods: natural spontaneous evacuation using the stoma bag, control with medication, insertion of glycerine suppository or micro-enema into the colostomy, and colostomy irrigation.⁵ Despite its many advantages, CI has not yet achieved the popularity it deserves among healthcare practices.⁶ It is the

process of instilling 500-1500 ml of water into the colon through the stoma to stimulate colonic peristalsis, thus ensuring bowel evacuation.³ When applied at regular intervals, CI can result in no or minimal faecal evacuation between irrigations, thus achieving a level of continence for individuals.⁴ The best candidates for CI are adult patients motivated to irrigate, those who have no physical or psychological barriers, other health conditions where CI is contraindicated or issues of compliance in managing a colostomy in the descending or sigmoid colon.⁷ Physical barriers may include poor vision or poor manual dexterity whereas altered mental alertness or other mental health issues may pose psychological barriers. Irritable bowel syndromes, peristomal hernias and post radiation damage are conditions that may prevent the use of CI⁸.

CI is rarely associated with complications when administered safely and correctly. It also helps to improve the QOL of individuals with a colostomy.⁴ CI improves one's sense of psychological well-being (PWB) and can help overcome problems such as anxiety, depression, and uncertainty. In addition, CI has a positive effect on social challenges, such as the maintenance of intimate relationships as the colostomy appliance can be replaced with a low-profile stoma cap. In general, CI reduces odor and flatus, the most confronting social barriers for patients, and facilitates sleeping, eating, and traveling.⁷ Further, CI also positively affects spiritual and occupational challenges. From a spiritual perspective, CI prevents untimely noisy and porous discharge of gas

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and/or faeces, which invalidates ablution and may prevent participation in congregational prayers³. From an employment perspective, CI provides a greater sense of security with no pouch requiring emptying, freedom of movement and less likelihood of leakages^{8,9}.

Furthermore, it is reported CI has a positive economic impact by reducing costs of purchasing and disposal of ostomy equipment and contributing to decrease of peri-stomal skin complications (PSCs) compared to natural evacuation using a stoma bag.⁸⁻¹¹ As the costs of healthcare increase, medical expenses become part of the care decision-making process, since the patients may have to pay more and more out of their own pockets.⁹ The WCET 2020 International Ostomy Guideline¹² emphasizes that the socio-economic status of the individual should be taken into account in the care planning with this statement: "It is essential that the individual/family is assessed holistically to enable them to participate in care. Planning and implementation should consider individual, social, economic and health system factors." Healthcare costs are particularly critical for countries with middle/low socio-economic status where ostomy products are imported¹².

However, the literature focusing on the cost contribution of CI is insufficient. In Türkiye, there are no studies on the cost of CI. In this paper, in addition to the positive effects of CI on the individual's life, the effect of CI on healthcare costs was analyzed in a single case and the impact of waste management on environmental health was highlighted.

CASE PRESENTATION

The patient and colostomy irrigation

M.A.A. is a 54-year-old male patient working as a shepherd in animal husbandry. M.A.A. was admitted to a training and research hospital in a metropolitan city with a diagnosis of colon cancer in 2000. Following extensive medical reviews, M.A.A. underwent Abdominoperineal Resection surgery in February 2001, and a permanent colostomy was created. The patient applied for CI in the post-operative period at the stomatherapy unit of a university hospital in Türkiye. It was determined he met the necessary criteria for initiation of CI. After the patient was instructed about CI, CI was initiated in September 2001. The patient was initially advised to perform CI every 24 hours at the same hour each day for two months. The Stoma and Wound Care Nurse (WOC nurse) met with the patient one week later to assess whether the procedure was performed correctly and to answer the patient's questions. Since it was determined that there was no/minimal leakage between irrigations for two months, the CI interval was increased to 48 hours.

Currently, M.A.A. has been undertaking CI every 48 hours for more than 21 years. For 13 of these years, however, he has been reusing the CI sets and stoma caps provided in exchange for his prescribed colostomy equipment which was last issued in 2008. The reason for washing and re-using the CI sets is discussed below.

Although confronted with these challenges, M.A.A. stated during an interview that since CI eliminated the problems of noise, leakage, odour and flatus his previous levels of anxiety and sleep deprivation caused by these issues were reduced. Moreover, he reported that he did not experience any skin complications in the past 21 years and did not pay for any additional medical examination or associated material costs. The photographs shared by M.A.A. showed that his peristomal skin was healthy (Figure 1-2). M.A.A. stated that he lived very happily with his sheep in the mountains and his only request from us was to seek the inclusion of the CI set and stoma cap in the scope of payment for the irrigation procedure, from which he benefited immensely as did the healthcare system.

COLOSTOMY IRRIGATION AND HEALTH ECONOMICS

M.A.A. has health insurance encapsulated within the general framework of health insurance, however, CI sets and stoma caps are not covered by health insurance in Türkiye. The ostomy supplies that are covered by health insurance for colostomy patients are prescribed bimonthly per the treating doctor's prescription and include 60 bags, 20 adapters and 2 pastes. Between 2001 and 2008, M.A.A. received a prescription for colostomy bags, adapters and pastes and exchanged them for CI sets and stoma caps from the company who supplied his ostomy equipment. Between 2008 and 2021 (13 years), as the patient could not exchange his colostomy equipment, he



Figure 1: Insertion irrigation cone into the stoma



Figure 2: Stoma cap, stoma and peri-stomal skin

did not have any newly prescribed colostomy equipment and continued using them by cleaning them (washing irrigation bags and sleeves).

The authors contacted the company in Türkiye M.A.A. purchased his colostomy equipment from and obtained prices for the equipment used. These prices included the two-month standard material prescription price (60 bags, 20 adapters, and 2 pastes), the price of the CI set and the stoma caps. From the prices obtained the estimated cost of the equipment was calculated to be TRY 45,288, assuming most patients with a colostomy would have a natural spontaneous evacuation with a colostomy bag and adapter on average daily between 2001 and 2022, even if no complications occurred. However, the cost of bowel management using a CI set and stoma cap in 2001-2022 was TRY 13,269. If the MAA had not re-used the available materials and had continued to receive a fresh CI set and stoma cap every six months, the cost would have been TRY 42,244.

This cost difference and the benefits that MAA has described in this singular case has demonstrated that CI is a cost-effective approach that positively impacts healthcare costs and the patient's overall QOL. In addition, the fact MAA reportedly never developed a PSC in 21 years that required medical or nursing treatment which when compared to the known average economic burden of prevention and treatment of PSCs and the use of healthcare resources may be a notable gain.

In this case, the above data were obtained via interviews conducted with M.A.A., review of his medical records and liaison with the company from which he obtained his supplies. Informed consent was provided by M.A.A. to publish his case details and associated images (Figures 1 and 2).

DISCUSSION

In the literature, the CI usage rate ranges between 2 to 4%⁶. However, in addition to this case, the authors personal experience and literature suggest that CI has many benefits such as providing fecal continence, eliminating the need for an ostomy bag, providing a sense of security by preventing leaks, and providing comfort^{8,10}. It also has a positive financial impact by reducing the cost of ostomy supplies, PSC interventions, and visits to healthcare facilities such as hospitals or stoma therapy clinics¹⁰. In accordance with the literature^{7,13}, M.A.A also mentioned that he continued his usual daily activities with CI, that his anxiety and sleeping problems previously caused by noise, leakage, odour and flatus were eliminated, and that resolution these issues were positive results on the main factors affecting his peristomal skin health and QOL. The impact of CI on complications and costs was demonstrated in this case. It is certainly not possible to make generalised or assertive conclusions based on a single case. Nonetheless, a recent systematic review of stoma complications reported that long-term colostomy complications across all stoma types was 26.5% (2.0–100%). Further, across all stoma types PSCs accounted for the highest incidence of complications at 14.0% (2.4–46.2%). Those with end colostomies had the highest

incidence of complications, with 62.6% (2.0–100%) of patients affected.¹⁴

It is remarkable that no complications developed in our case. Certainly, health-related social factors, such as the fact that M.A.A. is relatively young and leads a quiet, active life in the countryside, should not be overlooked. Another issue is the impact of CI on the reduction of healthcare costs. In this specific case, the cost of the materials used by M.A.A. for CI in 21 years was calculated three times lower than in the case of spontaneous evacuation with the bag system. The estimated cost projection of potential PSC complications was not included in these costs. It has been estimated however that the average cost of ostomy supplies increased sixfold over seven weeks for people with PSCs.¹⁵ Therefore, the prevention of PSCs with CI also eliminates the need for patients to pay for additional medical examinations and supplies¹⁶. Further, in agreement with the literature which suggests the main contributor to the development of PSCs is leakage^{16,17}, no or minimal leakage between irrigations was considered as one of the factors preventing the development of PSCs in this case.

One factor that should not be disregarded is that M.A.A. used the CI set, stoma cap and irrigation elimination bags for far longer than the manufacturer's recommended period of use. While, in this current case, M.A.A. did not experience any secondary PSCs or infections, we, the authors, as WOC nurses, advise our patients to use all ostomy equipment in accordance with the manufacturer's instructions. However, this case has led the authors to conclude that companies should perhaps review the duration of use of these disposable materials that pose a risk to nature to see whether an extension of wear time is feasible thereby reducing tangible and environmental costs.

In addition, using CI results in less material consumption than natural spontaneous evacuation using an ostomy bag, which contributes negatively to the environment, plastic consumption, and waste management. The disposal of materials such as used adapters/bags and the impact on landfills was also a focus of comments on the environmental aspects of CI. It is a reasonable consideration to minimize plastic waste as the importance of our environment and our impact on it will be increasingly critical in the future.⁹

CONCLUSION

In this case, it was demonstrated that CI was a cost-effective approach and contributed positively to the physiological and psychosocial well-being parameters. The fact that the patient did not develop PCS contributed significantly to reducing healthcare costs. It is recommended that WOC nurses offer CI as an option to all eligible patients with a permanent colostomy irrespective of whether it is time-consuming, and that the CI set should be included in the scope of the payment system for ostomy equipment within Türkiye .

Further, it should be recognized that, despite the valuable information in this case, the management of bowel evacuation in this patient from a different culture relied entirely on his

planning and feedback. It is also important to note that the frequency of use of the CI material differed from the manufacturer's instructions.

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ETHICS STATEMENT

The first author of this study is Ayise Karadag, and the second author is Havanur Kilic. All authors contributed equally at all parts of the manuscript. The study was adhered to the Declaration of Helsinki. As all authors, we guarantee that we have approved this manuscript's final version and that the study's original version has not been previously published or evaluated in another journal. The authors declare that they have no conflict of interest and have not received any special support/funding from any financial institution.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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CARE guidelines for case reports: 13-item checklist

Please indicate in which section each item has been reported in your manuscript. If you feel that an item does not apply to your manuscript, please enter N/A.

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No.	Description	Section #
Title		
1	The area of focus and “case report” should appear in the title	1
Keywords		
2	Two to five key words that identify topics covered in this case report	1
Abstract		
3a	Introduction—What is unique about this case? What does it add to the medical literature?	1
3b	The main symptoms of the patient and the important clinical findings	N/A
3c	The main diagnoses, therapeutics interventions, and outcomes	N/A
3d	Conclusion—What are the main ‘take-away’ lessons from this case?	1
Introduction		
4	Briefly summarize why this case is unique with medical literature references	1
Patient information		
5a	De-identified demographic information and other patient specific information	2
5b	Main concerns and symptoms of the patient	2
5c	Medical, family, and psychosocial history including relevant genetic information	N/A
5d	Relevant past interventions and their outcomes	N/A
Clinical findings		
6	Describe the relevant physical examination (PE) and other clinical findings	N/A
Timeline		
7	A timeline of relevant information from the patient’s history and this episode of care	2,3,4
Diagnostics assessment		
8a	Diagnostic methods (such as PE, laboratory testing, imaging, surveys)	N/A
8b	Diagnostic challenges (such as access, financial, or cultural)	N/A
8c	Diagnostic reasoning including a differential diagnosis	N/A
8d	Prognostic characteristics (such as staging in oncology) where applicable	N/A
Therapeutic intervention		
9a	Types of intervention (such as pharmacologic, surgical, preventive, self-care)	2
9b	Administration of intervention (such as dosage, strength, duration)	2
9c	Changes in intervention with rationale	2,3,4
Follow-up and outcomes		
10a	Clinician and patient-assessed outcomes when appropriate	3,4
10b	Important follow-up diagnostic and other test results	N/A
10c	Intervention adherence and tolerability (how was this assessed?)	2
10d	Adverse and unanticipated events	N/A
Discussion		
11a	Discussion of the strengths and limitations in your approach to this case	3,4
11b	Discussion of the relevant medical literature	3,4
11c	The rationale for conclusions (including assessment of possible causes)	4,5
11d	The primary “take-away” lessons of this case report	5

Patient perspective		
12	When appropriate, the patient can share their perspective on their case	3
Informed consent		
13	The patient should give informed consent	3

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