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Economic Analysis of Medical Management Applied for Left Colostomy

C. Șavlovschi[1], D. Șerban[1], C.V. Andreescu[2], A.M. Dascalu[3], H. Pantu[1]

[1]4th General Surgery Discipline, University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania
[2]Modern Languages Discipline, University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania
[3]Ophtalmology Discipline, University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania

Rezumat

Analiza economică a managementului medical pentru colostomia stângă

Scop: Lucrarea prezintă o analiză a costurilor intervențiilor chirurgicale pentru colostomia stângă, având ca scop stabilirea unui cost mediu medical pe procedura și identificarea mijloacelor de eficientizare ale managementului economic al acestui tip de intervenție chirurgicală.
Material și metodă: S-a realizat un studiu retrospectiv pe un lot de 8 pacienți internați în Clinica IV Chirurgie SUUB în anul 2012 pentru neoplazii colice stângi cu fenomene obstructive, pentru care s-a realizat colostomie stângă. Parametrii urmăriți pe lotul de bolnavi studiat au fost reprezentați de cheltuielile medicale, împărțite în: cheltuieli medicale preoperatorii, cheltuieli medicale intraoperatorii și, respectiv, cheltuieli medicale postoperatorii imediate (pe perioada spitalizării post-operatorie).
Rezultate: S-au efectuat două tipuri majore de colostomii: anusul iliac stâng în continuitate cu lăsarea pe loc a tumorii la 6 pacienți și, respectiv, colostomia terminală și rezecția tumorii (operația Hartmann) la 2 pacienți. Costul mediu al unei astfel de intervenții chirurgicale este de 4396,807 RON, reprezentând 1068,742 euro. Analiza statistică a datelor nu a evidențiat costuri medii diferențiate în funcție de tipul de procedură. Vârsta pacienților cuprinși în studiu a fost între 49 ani și 88 ani, cu o medie de 61 ani, fără a se putea stabili o corelație între vârsta pacientului și nivelul cheltuielilor medicale.
Concluzii: Reducerea costurilor colostomiei stângi se poate realiza eficient prin scăderea numărului de zile de spitalizare pe următoarele căi: pregătirea și evaluarea preoperatorie a pacientului în regim ambulator; corectitudinea actului operator, cu reducerea incidenței complicațiilor postoperatorii precoce și a antibioterapiei - al doilea factor major de creștere a costurilor postoperatorii.

Cuvinte cheie: colostomia stângă, costuri, management eficient

Abstract

Purpose: This paper presents an analysis of surgical treatment costs for left colostomy, aiming to calculate a medium cost per procedure and to identify the means to maximize the economic management of this type of surgicale procedure.
Materials and method: A retrospective study was conducted on a group of 8 patients hospitalized in the 4th Surgery Department, Emergency University Hospital Bucharest, during the year 2012 for left colic neoplasms with obstruction signs that were operated on with a left colostomy. The followed parameters in the studied group of patients were represented by medical expenses, divided in: preoperative, intra-operative and immediate postoperative (postop. hospitalization).
Results: Two major types of colostomy were performed: left loop colostomy with intact tumour for 6 patients and left end colostomy and tumour resection (Hartmann's procedure) for 2 patients. The medium cost of this type of surgical intervention

Corresponding author: Dragos Serban, MD
4th General Surgery Discipline
U.M.F "Carol Davila" Bucharest
University Emergency Hospital
169, Splaiul Independentei, Bucharest
Romania
E-mail: dr.dragos.serban@gmail.com

was 4396.807 RON, representing 1068.742 euro. Statistic data analysis didn't reveal average costs to vary with the type of procedure. The age of the study subjects was between 49 and 88, with an average of 61 years, without it being possible to establish a correlation between patient age and the level of medical spendings.
Conclusions: Reducing the costs involved by left colostomy can be efficiently done by decreasing the number of days of hospitalisation in the following ways: preoperative preparation and assessment of the subject in an outpatient regimen; the accuracy of the surgical procedure with the decrease of early postoperative complications and antibiotherapy – the second major cause of increased postoperative costs.

Key words: left colostomy, costs, efficient management

Introduction

Medical management in the whole world is concerned by the problem of increased costs in health service, inequity in distribution of resources and the consumptions, often not justified of medical services (1,2). In the current economic environment in Romania there are few data on the costs of medical management of various diseases, as a first step in improving medical activity. Documenting the relationship between material resources consumed and the therapeutic results obtained is an important step in establishing protocols for practice with the best quality – price ratio. This paper studie comparative costs necessary to achieve the left iliac loop colostomy for malignant left colic disease (by leaving the tumour on site) or, with ttumour resection) and seeks the means of economic efficiency of this type of surgery.

Materials and Method

A retrospective, statistical study was conducted, based on cases hospitalized in the 4th Surgery Clinic, Emergency University Hospital Bucharest, in 2012 which included 8 patients who underwent left iliac colostomy for left colon cancer, using data recorded in observation sheets and operative protocols, based on the reference price recommended by CNAS on its official prices website (3) together with some random selected offers for medical supplies from the Internet, without taking into account the taxes. We decided the surgical technique that we used following our experience and other studies that were published (6,7).

The parameters followed on the studied group of patients were represented by medical expenses, divided into:

- preoperative medical expenses;
- intra-operative medical expenses;
- immediate postoperative medical expenses (during postoperative hospitalization).

The statistical analysis performed aims to establish an average medical cost per procedure and to identify the ways of decreasing costs on these patients.

Results

The average cost per patient in the study group was 4396.807 RON. The status of medical expenses and hospitalization costs recorded for each case is shown in the graph below (*Chart 1*).

The inventory of surgical techniques used showed that there were two major types of colostomy: left iliac colostomy with the tumour left in place, in 6 patients and, respectively, tumour resection and terminal colostomy (Hartmann's procedure) in 2 patients, the proportion between the 2 types of interventions being 3:1.

According to the nature of the intervention, they were:

- absolute emergency (1 patient diagnosed intraoperatively, in which surgery was required by clinical and para-clinical occlusion evidences);
- delayed emergency (2 patients whose presentation to the emergency room was due to a subocclusive clinical syndrome and whose general condition worsened before a clear ethiologic diagnosis could be established that was also determined intraoperatively);
- chronic treatment, by appointment (5 patients).

Expenses distribution incurred due to the character of the intervention shows higher values in delayed emergency cases, without registering statistically significant differences between the 3 subgroups. (*Chart 2*)

The age of patients enrolled in the study was between 49 and 88 years, with an average of 61 years without the means

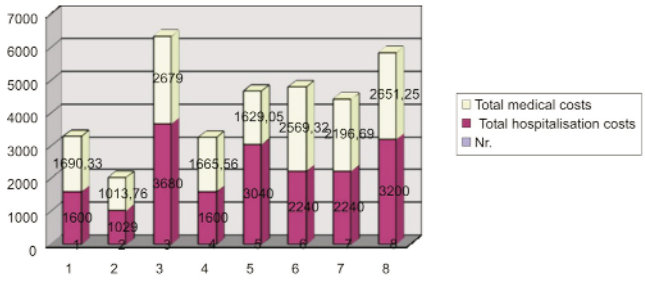

Chart 1. *Medical costs vs hospitalisation costs*

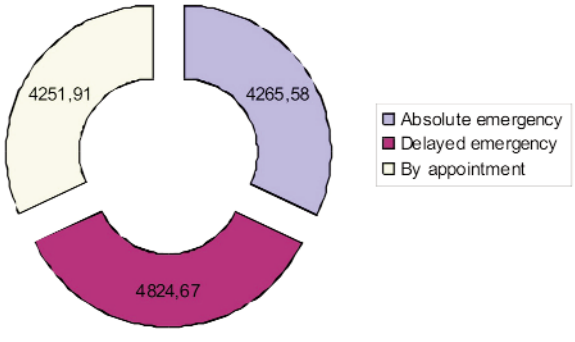

Chart 2. *Costs vs nature of interventions*

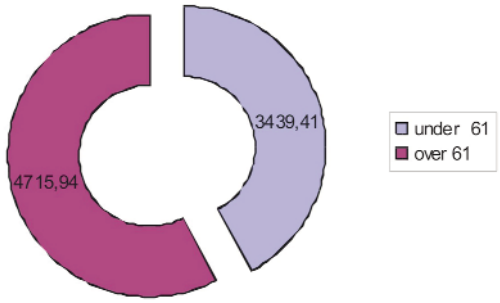

Chart 3. *Medium costs vs age*

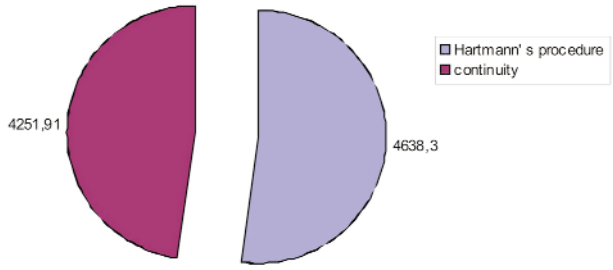

Chart 4. *Total ponderate cost vs type of surgery*

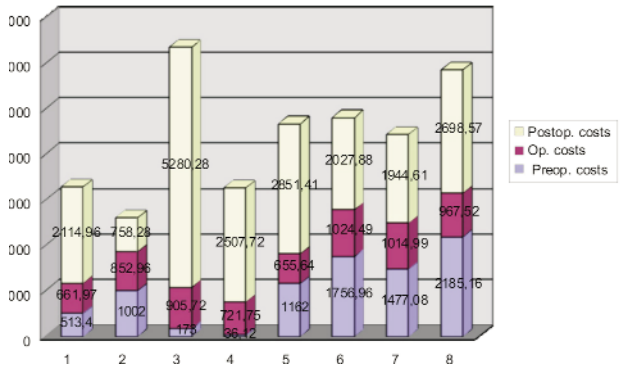

Chart 5. *Distribution of pre-op, intra-op and post-op costs*

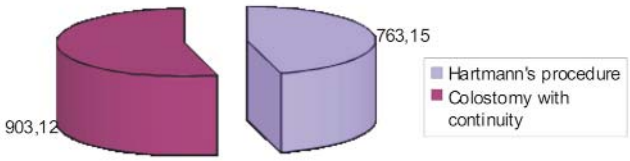

Chart 6. *Medium intra-operatory costs per type of procedure*

to establish a correlation between patient age and medical spending. However the average expenditures in patients under 61 years of age is significantly lower than patients older than 61 years. This is due, largely, to associated tares that increased the length of hospitalisation required pre and postoperatively. (*Chart 3*)

The study group was dominated by females in a 5:3 ratio to males, with no significant differences in terms of cost distribution according to sex.

Study distribution costs correlated to the type of surgery revealed no notable differences between subgroups. (*Chart 4*)

Dividing the costs into actual medical expenses (including drugs and medical supplies needed in the medical management of these patients) and medical lodging expenses (including accommodation and meal expenses for these patients) shows a high importance of the last in the total expenditures and represents the easiest way to reduce these costs. (*Chart 5, Table 1*)

The average intraoperative costs for the 2 procedures practised in patients in the study group were also calculated (Hartmann surgery and colostomy leaving the tumour in). (*Chart 6*)

From the chart above you can see that the value of intra-operative costs were almost equal for all patients and from personal experience they largely depend on local lesional aspects and, as such, are difficult to control and manipulate. Accuracy and proper surgical technique represent the starting point for a smooth postoperative evolution and is a simple way to reduce overall costs of this intervention.

Table 1. *Detailed data of pre, intra and postoperative costs per patient in study group*

No.	Preop. hosp. costs	Medical preop. costs	Op. costs	Postop. hosp. costs	Postop. medical costs
1	480	33.4	661.97	1120	994.96
2	960	42	852.96	640	118.28
3	160	13	905.72	3520	1760.28
4	0	36.12	721.745	1600	907.717
5	1120	42	655.642	1920	931.41
6	1120	636.955	1024.49	1120	907.876
7	1120	357.08	1014.993	1120	824.614
8	1440	745.16	967.52	1760	938.565

Discussion

The study of the medical expenses structure according to surgical procedure chosen does not reveal a noticeable difference between the two, although funds consumed in patients with Hartmann's operation were somewhat higher.

5 of the patients enrolled in the study had secondary anaemia which required preoperative, intra-operative or post-operative compensation measures of blood transfusions. These costs were not included in the economic evaluation due to the difficulty to obtain accurate information on prices of blood products used.

Also, there have been neglected "administrative expenses" of the medical treatment - staff costs, development costs, depreciation expense endowments for medical equipment and so on, so the value of medical expenses in this study were basic. The values advanced by this study are medical stricto senso and do not have any intrinsic economic value.

As a personal observation, I would estimate that these "administrative costs" at least double the costs advanced in this study.

There are well-known international efforts made to produce and sustain a change in medical practise in the direction of reducing hospitalisation costs and increasing the share of healthcare, with the concomitant development of pre-hospital medical centres, home-care health assistance, recuperative and palliative medicine services (1,4,5).

Conclusions

The average cost of such surgery is 4396.807 RON, representing 1068.742 euro (where 1 Euro = 4,1140RON, at the rate of 13.04. 2011) and can be held to a minimum by reducing the number of days of hospitalization in the following ways:

- preoperative assessment and preparation of the patient on an outpatient regimen;
- accuracy of the surgical procedure so that postoperative hospitalization is reduced to a minimum and hence reduces the need for postoperative antibiotics, the second major cause of increased postoperative costs.

Authors contribution

For this study the contribution of Horia Pantu, Dragos Serban and Costel Savlovschi is equal as first author. All the others are co-authors.

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