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BRIEF ORIGINAL

DESCRIPTION OF ORAL INTAKE INITIATION WITH COFFEE IN PATIENTS UNDERGOING LOWER GASTROINTESTINAL SURGERY

DESCRIPCIÓN DEL INICIO DE LA VÍA ORAL CON CAFÉ EN PACIENTES OPERADOS DE TUBO DIGESTIVO BAJO

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ABSTRACT

Introduction: This study explored the effects of coffee in patients undergoing lower gastrointestinal surgery. **Methods:** In an observational study involving fourteen patients aged over 18, coffee was administered three times daily, and its impact was evaluated on variables such as time to first bowel movement, tolerance to solid foods, and hospital stay. **Results:** The mean age was 51,7 years, the average surgical time was 257,3 minutes, and the mean blood loss was 250 ml. Results showed a mean time of 4,5 hours for the first bowel movement, 18 hours for tolerance to solid foods, and 2,5 days of hospital stay. **Conclusions:** Only 8,3% of patients developed postoperative ileus. It is concluded that these patients experienced short times to the onset of bowel sounds, gas passage, and effective evacuation. Although encouraging, these results should be interpreted with caution and confirmed through larger controlled studies.

Keywords: Coffee; General surgery; Observational study; Gastrointestinal tract; Strategic evacuation. (Source: MESH-NLM)

RESUMEN

Introducción: Este estudio exploró los efectos del café en pacientes sometidos a cirugía de tubo digestivo bajo. **Métodos:** En un estudio observacional con catorce pacientes, mayores de 18 años, se administró café en tres tomas diarias, evaluando su impacto en variables como la primera evacuación, la tolerancia a sólidos y la estancia hospitalaria. **Resultados:** La edad media fue de 51,7 años; el tiempo quirúrgico promedio, 257,3 minutos, y el sangrado medio, 250 ml. Los resultados mostraron una media de 4,5 horas para la primera evacuación, 18 horas para la tolerancia a sólidos y 2,5 días de estancia hospitalaria. Solo un 8,3 % presentó íleo paralítico. **Conclusiones:** Se concluye que, en estos pacientes, hubo tiempos cortos para la aparición de ruidos intestinales, canalización de gases y evacuación efectiva. Aunque alentadores, los resultados deben interpretarse con cautela y confirmarse mediante estudios controlados más amplios.

Palabras clave: Café; Cirugía general; Estudio observacional; Tracto gastrointestinal; Evacuación estratégica. (Fuente: DeCS- BIREME)

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INTRODUCTION

Coffee is the most consumed psychoactive agent worldwide. It has a pH of 5.0 [1]. and is composed of biologically active elements such as caffeine, diterpenes, and chlorogenic acids [2]. In the gastrointestinal tract, coffee has beneficial effects with organoleptic and physiological properties[3]. It stimulates the production of intestinal sounds, gas, and produces an intraluminal effect in the digestive tract[4].

Surgery involves mechanical and biological stress on the body [5]. In the lower digestive tract, neurogenic mechanisms that occur during surgery inhibit sympathetic stimulation and increase adrenergic motor neuron activity [6]. Additionally, the inflammatory process promotes the release of nitric oxide and prostaglandins, which subsequently inhibit smooth muscle contractility [7-8]. Moreover, anesthetic agents used during surgery prolong gastric emptying time, increasing the risk of postoperative nausea and vomiting[9-10]. Altogether, these factors contribute to the development of paralytic ileus, extending the patient's recovery time [11-12].

Many studies show the effects of caffeinated coffee and its biological action in inducing pressure waves and prokinetic activity in the digestive tract [13]. The mechanism through which motor stimulation of intestinal transit occurs is neurohumoral, blocking adenosine A1 and A2 receptors[14]. Brown SR et al. have established that coffee induces propulsive motor activity for approximately 90 minutes, similar to stimulation after food intake, suggesting it as an agent of choice in initiating oral intake in gastrointestinal surgical patients [15-16]. The objective of this study is to present the clinical effects of initiating oral intake with coffee in patients undergoing lower gastrointestinal surgery.

METHODS

An exploratory, descriptive, observational study was conducted on patients scheduled for elective lower gastrointestinal surgery. The study included patients over 18 years of age, of both sexes, with benign pathologies, who had provided signed informed consent prior to the procedure and received coffee consumption as part of their treatment. Patients who experienced complications during the intraoperative period were excluded. Variables considered for descriptive analysis included history and characteristics of the surgical procedure, surgical time, intraoperative bleeding, and type of procedure performed. The coffee preparation involved a dilution of 890 ml of deionized water heated to 85°C with 28.35 grams of coffee. Post-surgical patients consumed the beverage three times a day, receiving 100–150 ml per serving at scheduled times of 7:00 AM, 12:00 PM, and 5:00 PM. The final product was served to the patients at a temperature of 45.0°C for consumption. Similarly, in the study by Hasler-Gehrer S et al.[14], three sequential doses were given, as also presented in the meta-analysis by Cornwall HL et al.[5]. Each patient was informed that each prepared beverage intake would be 50 mL, with clinical effects of initiating oral intake with coffee subsequently assessed.

Patients were evaluated daily during their postoperative period until hospital discharge. Categorical variables used to determine the effects of coffee implementation in early enteral nutrition included the first bowel movement, gas passage, time of solid tolerance, hospital stay, first bowel movement, and postoperative complications (postoperative ileus). The analysis focused on describing the quantitative variables using means and standard deviations (SD) for continuous variables, as well as frequencies and percentages for the categorical variables. The study was approved by the Ethics Committee of the participating unit: Hospital de Especialidades de Puebla, Centro Médico Nacional Gral. de Div. Manuel Avila Camacho. Personal data was handled with strict confidentiality and exclusively for scientific purposes.

RESULTS

A sample of 14 patients was included: 9 women (64.3%) and 5 men (35.7%). The mean age was 51.7 years (SD ± 7.5); the average surgical intervention time was 257.3 minutes (SD ± 32.6) with an average blood loss of 250 milliliters (SD ± 45.6).

The average solid tolerance time was 24 hours (SD ± 2.4) in women and 12 hours (SD ± 1.8) in men, with a mean of 18 hours across all patients undergoing lower gastrointestinal surgery. The average hospital stay was 2.5 days (SD ± 0.9). The time interval between surgery and the first bowel movement was 4.5 hours after coffee infusion (SD ± 0.75), with a mean difference between men and women of 60 minutes (SD ± 23.5) versus 240 minutes (SD ± 75.6) respectively. The incidence of postoperative paralytic ileus following gastrointestinal surgery was present in 8.3% of the sample. Patients reported no adverse effects following coffee infusion. The clinical effects of coffee infusion in relation to time of occurrence are shown in Figure 1.

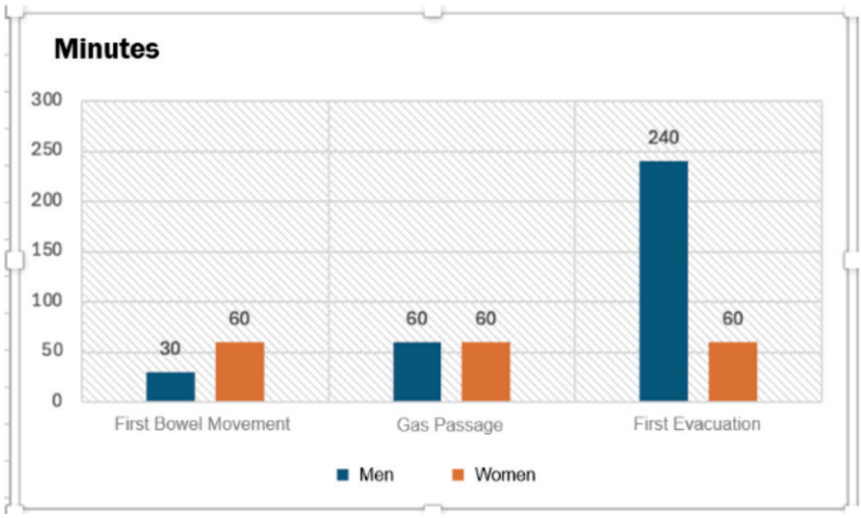

Figure 1. Progression of clinical events over time: first bowel movement, gas passage, and first evacuation in patients undergoing lower gastrointestinal surgery.

DISCUSSION

Multiple studies have proposed coffee as the prokinetic of choice for gastrointestinal tract surgical procedures. The benefit of coffee corresponds to the induction of propulsive motor activity in the digestive tract. Previously, coffee consumption was thought to produce adverse effects and complications during the postoperative period; however, recent studies have demonstrated its usefulness in early progression of oral intake and its safety for routine implementation [17-19]. Nevertheless, the results of this study, being observational and exploratory, only allow for the identification of preliminary trends that should be confirmed in controlled studies.

A systematic review of 601 patients by Eamudomkarn et al. in patients undergoing elective lower gastrointestinal tract surgery, who received coffee infusion three times a day post-surgery, showed a reduction in time to first bowel movement to nine hours, gas passage time to seven hours, first bowel movement to four hours, and solid tolerance in 0.74 days[20]. In our study, the mean time after coffee infusion for the first bowel movement was 4 (SD ± 3) hours, gas passage 1 (SD ± 1.5) hour, first bowel movement 1 (SD ± 2.3) hour, and solid tolerance between 18 (SD ± 12) hours.

While the results observed in this study are encouraging, they must be interpreted with caution due to the exploratory nature of the design. Previous studies, such as that of Dulskas et al.[18], have shown that coffee can be a safe complement in postoperative management but emphasize the need to standardize its administration to minimize variability in outcomes. Furthermore, the heterogeneity in methodologies among previous studies complicates direct compari-

sons with our findings. Another relevant aspect is the potential influence of uncontrolled factors, such as the specific type of anesthesia or variations in surgical techniques, on gastrointestinal recovery. These elements highlight the importance of conducting further research with better variable control to provide a clearer context for the effects of coffee in different surgical settings. This study has several limitations, including a small sample size and the absence of a control group, which prevents direct comparisons. Additionally, pre-existing conditions of the patients, which could be relevant for a more detailed analysis of the results, were not considered. It is concluded that, in this descriptive study, patients undergoing lower gastrointestinal surgery who received coffee infusion as part of postoperative management showed short times to the onset of bowel sounds, gas passage, and effective bowel evacuation.

These results, although preliminary, provide relevant information that should be supplemented with larger, controlled studies in the future.

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REFERENCES

1. Prada R, Mayrene D. Café, cafeína vs salud: revisión de los efectos del consumo de café en la salud. Univ Salud [Internet]. 2010 [citado 2024 Jul 17];12(1):156-67. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0124710720100000100017.

2.Vista de evaluación del inicio de dieta con café arábico versus dieta tradicional, en pacientes luego de cirugía electiva y de emergencia [Internet]. Revistacirugia.org. [citado 2024 Jul 17]. doi: 10.30944/20117582.2524

3.Yang TW, Wang CC, Sung WW, Ting WC, Lin CC, Tsai MC. The effect of coffee/caffeine on postoperative ileus following elective colorectal surgery: a meta-analysis of randomized controlled trials. Int J Colorectal Dis. 2022 Mar;37(3):623-30. doi: 10.1007/s00384-021-04086-3. PMID: 34993568; PMCID: PMC8885519.

4.Van Dam RM, Hu FB, Willett WC. Coffee, Caffeine, and Health. Campion EW, editor. N Engl J Med [Internet]. 2020 Jul 23;383(4):369-78. doi: 10.1056/NEJMra1816604

5.Cornwall HL, Edwards BA, Curran JF, Boyce S. Coffee to go? The effect of coffee on resolution of ileus following abdominal surgery: A systematic review and meta-analysis of randomized controlled trials. Clin Nutr. 2020 May;39(5):1385-94. doi: 10.1016/j.clnu.2019.06.003. PMID: 31253438.

6. Kanza Gül D, Şolt Kırca A. Effects of acupressure, gum chewing and coffee consumption on the gastrointestinal system after cesarean section under spinal anesthesia. J Obstet Gynaecol. 2021 May;41(4):573-80. doi: 10.1080/01443615.2020.1787363. PMID: 32799723.

7.Dulskas A, Klimovskij M, Vitkauskiene M, Samalavicius NE. Effect of coffee on the length of postoperative ileus after elective laparoscopic left-sided colectomy. Dis Colon Rectum [Internet]. 2015 Nov;58(11):1064-9. doi: 10.1097/DCR.0000000000000449

8.International Coffee Organization [Internet]. Icocoffee.org. [citado 2024 Jul 17]. Disponible en: https://icocoffee.org

9. Wolthuis AM, Bislenghi G, Fieuws S, de Buck van Overstraeten A, Boeckxstaens G, D'Hoore A. Incidence of prolonged postoperative ileus after colorectal surgery: a systematic review and meta-analysis. Colorectal Dis [Internet]. 2016;18(1):[aprox. 5 pantallas]. doi: 10.1111/codi.13210

10. Sinz S, Warschkow R, Tarantino I, Steffen T. Gum chewing and coffee consumption but not caffeine intake improve bowel function after gastrointestinal surgery: a systematic review and network meta-analysis. J Gastrointest Surg. 2023 Aug;27(8):1730-45. doi: 10.1007/s11605-023-05702-z PMID: 37277676; PMCID: PMC10412511.

11.Müller A, Rahbari NN, Schneider F, Warschkow R, Simon T, Von F, et al. Randomized clinical trial on the effect of coffee on postoperative ileus following elective colectomy. Br J Surg. 2018;99(12):1530-8. doi: 10.1002/bjs.8885.

12.Dulskas A, Klimovskij M, Vitkauskiene M, Samalavicius NE. Effect of coffee on the length of postoperative ileus after elective laparoscopic left-sided colectomy: randomized, prospective single-center study. Dis Colon Rectum. 2019;58(11):1064-9. doi: 10.1097/DCR.0000000000000449.

13.Ramírez Rodríguez JM, Martín Sánchez JI. Tras cirugía colorrectal electiva, la ingesta de café puede acelerar la recuperación intestinal. Arch Coloproctol. 2020;3(2):59-63. doi: 10.26754/ojs_arcol/archcolo.202024570.

14.Hasler-Gehrer S, et al. Does coffee intake reduce postoperative ileus after laparoscopic elective colorectal surgery? A prospective, randomized controlled study: The coffee study. Int J Colorectal Dis. 2020;35(8):1459-66. doi: 10.1097DCR.0000000000001405. PMID: 30998528.

15.Yang TW, Wang CC, Sung WW, Ting WC, Lin CC, Tsai MC. The effect of coffee/caffeine on postoperative ileus following elective colorectal surgery: a meta-analysis of randomized controlled trials. Int J Colorectal Dis. 2022 Mar;37(3):623-30. doi: 10.1007/s00384-021-04086-3. PMID: 34993568; PMCID: PMC8885519.

16.Hasler-Gehrer S, Linecker M, Keerl A, Slieker J, Descloux A, Rosenberg R, et al. Does coffee intake reduce postoperative ileus after laparoscopic elective colorectal surgery? A prospective, randomized controlled study: The coffee study. Dis Colon Rectum. 2019;62(8):997-1004. doi: 10.1097/DCR.0000000000001405.

17.Nasseri Y, Kasheri E, Oka K, Zhu R, Smiley A, Cohen J, et al. Does coffee affect bowel recovery following minimally invasive colorectal operations? A three-armed randomized controlled trial. Int J Colorectal Dis [Internet]. 2023;38(1). doi: 10.1007/s00384-023-04494-7.

18.Gungorduk K, Paskal EK, Demirayak G, Köseoğlu SB, Akbaba E, Ozdemir IA. Coffee consumption for recovery of intestinal function after laparoscopic gynecological surgery: a randomized controlled trial. Int J Surg [Internet]. 2020;82:130-5. doi: 10.1016/j.ijsu.2020.08.016.

19.Kane TD, Tubog TD, Schmidt JR. The use of coffee to decrease the incidence of postoperative ileus: a systematic review and meta-analysis. J Perianesth Nurs [Internet]. 2020;35(2):171-7.e1. doi: 10.1016/j.jopan.2019.07.004.

20.Eamudomkarn N, Kietpeerakool C, Kaewrudee S, Jampathong N, Ngamjarus C, Lumbiganon P. Effect of postoperative coffee consumption on gastrointestinal function after abdominal surgery: a systematic review and meta-analysis of randomized controlled trials. Sci Rep. 2018;8(1):1-9. doi: 10.1038/s41598-018-35752-2