JKM
Sai Wawai

Jurnal Kesehatan Metro Sai Wawai
Vol. 18, No. 2, December 2025. DOI: https://doi.org/10.26630/jkmsw.v18i2.5030
Journal homepage https://ejurnal.poltekkes-tjk.ac.id/index.php/JKM
Email: jkm@poltekkes-tjk.ac.id

ISSN Online
2657-1390
ISSN Print
19779-469X

Colon in Loop Examination Technique in CA Recti Cases at Radiology Installation RSPAU Dr. Suhardi Hardjolukito Yogyakarta

Rizka R. Gafur*, Anisa Nur Istiqomah, Widya Mufida
Radiology Study Program Diploma Three Program, Faculty of Health Sciences, Aisyiyah University Yogyakarta, Indonesia

Corresponding author: Rizkagafur91022@gmail.com

ARTICLE INFO

Article history

Submitted: 02 June 2025

Revised: 01 July 2025

Accepted: 29 September 2025

Keywords:
Radiology examination technique;
Colon in loop;
Ca recti

ABSTRACT

The colon in loop (CIL) examination at the Radiology Department of RSPAU, Dr. Suhardi Hardjolukito, employs the following projections: single-contrast AP, lateral, RPO, and LPO, followed by double-contrast AP, RPO, LPO, and post-evacuation AP. The procedure utilizes water-soluble contrast media without the use of a balloon to secure the catheter. This study adopts a qualitative approach using a case study method. Subjects include one radiology specialist and three radiographers. The research was conducted from August 2024 to September 2025. Data were collected through direct observation, interviews, and documentation, followed by data processing, analysis, and drawing of conclusions. Findings from the Radiology Department of RSPAU, Dr. Suhardi Hardjolukito, indicate that the use of water-soluble contrast media is safer for patients at risk of perforation, as the body easily absorbs it and carries a low risk of complications. Additionally, the use of a catheter without a balloon proves effective, as it does not interfere with rectal visualization and reduces the risk of irritation or excessive pressure in the area. The CIL examination using water-soluble contrast media and a catheter without a balloon is a safe and effective method, especially for patients suspected of having a risk of perforation. The choice of contrast media should be tailored to the patient's clinical condition, and the use of fluoroscopy is recommended to enhance efficiency and accuracy in the examination procedure.

INTRODUCTION

Ca recti or colorectal cancer is a cancer known as large bowel cancer, and is one of the most common types of cancer that causes significant mortality. According to Desen (2013), the increasing cases of recti cancer are influenced by the environment and lifestyle, such as rarely consuming low-fat foods and often consuming animal protein and fat. In addition, there are many triggers for the appearance of rectal cancer, including consuming alcohol, smoking, and a passive lifestyle (Black. 2014). According to Sung et al (Sugeng et al., 2023), colorectal cancer is the third most common type of cancer in the world. In Indonesia, this cancer is also ranked third most common and is predicted to continue to increase. In Indonesia in 2020, colorectal cancer ranked fourth in the highest number of cases, namely 21,764 cases with a prevalence of around 8.6% among men and 6.7% among women (The Global Cancer Observatory, 2020a).

Given the large number of colon cancer cases, early detection of colon cancer is very important as it can improve recovery and extend the life expectancy of patients. Various methods have been developed for colon cancer diagnosis, including colonoscopy, CT scans, as well as other radiologic techniques. However, these techniques have limitations in terms of sensitivity and specificity, especially in detecting small lesions or polyps that may develop into cancer. One of the latest innovations in radiology is the Colon in Loop (CIL) examination technique. Colon in loop is

Jurnal Kesehatan Metro Sai Wawai, Vol 18(2) No 2, December 2025, 119-125. E-ISSN 2548-5695 P-SSN 2086-7751

a radiologic examination of the lower digestive system that uses contrast media to show the colon and its components (Lempignano & Kendrick, 2018). According to Wati et al (2021), the Colon in Loop examination is performed to identify abnormalities or diseases of the colon, which can help doctors in determining the diagnosis. Therefore, radiographers need to understand the proper Colon in Loop examination technique to support accurate diagnosis.

The hadith that the author made reference to for writing the research proposal, "O Allah, Rabb of mankind, relieve distress and provide healing, You are the Most Healing. There is no healing except healing from You, "(HR Bukhari and Muslim). Radiological examination is also included in one of the initial stages of treatment in patients suffering from cases of rectal cancer. The Radiology Installation of RSPAU Hardjulukito, as one of the military health centers, has a great responsibility in the diagnosis and treatment of patients with colon cancer. Based on the author's observation during the PKL at RSPAU Hardjulukito, that in one month patients with colon cancer cases were 6-7 patients. With this increase in the number of patients treated for colorectal cancer, the application of the Colon in Loop technique is expected to make a significant contribution to the quality of radiology services. Colon in Loop (CIL) not only enables early detection of cancer, but can also help in staging the disease and monitoring response to therapy.

In the colon in loop examination at RSPAU Hardjulukito, the insertion of contrast media uses the double contrast method (Double Contrast) by using positive (water soluble) and negative (air) contrast media monitored through conventional aircraft. Before entering the contrast media, radiographers take plain abdominal photos to see the extent of the patient's preparation, after seeing that the patient's preparation is sufficient, radiographers enter water-soluble contrast media through the catheter and do not use a balloon as a catheter lock. According to the research of Andriyani et al (2019), the colon in loop examination uses barium sulfate contrast media with an irrigator that has been connected to a catheter, then according to Annisa et al (2024) the use of contrast media uses barium iodun contrast media, and the insertion of contrast media with a catheter that is inserted with air as a lock. Meanwhile, according to Hadjarati et al (2024) the contrast media used barium sulfate using a syringe and then inserted anally using a catheter. According to (Wijokongko, 2016), the method of introducing colon contrast media in the loop is done by two methods, namely the single contrast method (single contrast) using positive contrast media in the form of barium inserted into the colon through the anus. And the process of inserting contrast media is monitored with fluoroscopy.

Based on the above background, the authors are interested in raising and reviewing in a scientific paper entitled "Colon in loop examination technique in ca recti cases at Radiology Installation RSPAU Dr. Suhardi Hardjulikito Yogyakarta". The purpose of this study was to determine the colon in loop examination technique with Ca recti cases and to determine the use of water soluble contrast media and to find out why not use a balloon as a catheter lock when inserting contrast media.

METHOD

This research uses a qualitative method based on case studies to learn more about colon in loop examination techniques in rectal cancer cases at the Radiology Installation of RSPAU Hardjulukito. The subjects of this study were 1 radiologist and 3 radiographers. The research was conducted from August 2024 to September 2025. Information is gathered thru observation, conversation, and note-taking. When observing, use the observation guide. The questions that were previously answered are used in the interview, which is conducted with the help of experts in the relevant field. Following the documentation of the information gathering process, a basis for data analysis and presentation will be used to determine the results. The interview facts that are described are supported by the creation of a categorization table and a list of examples, which serve as sources of information. This information is then verified using established theory, dissected using illustrations and narration, then analyzed. The following is the research flow in Figure 1:

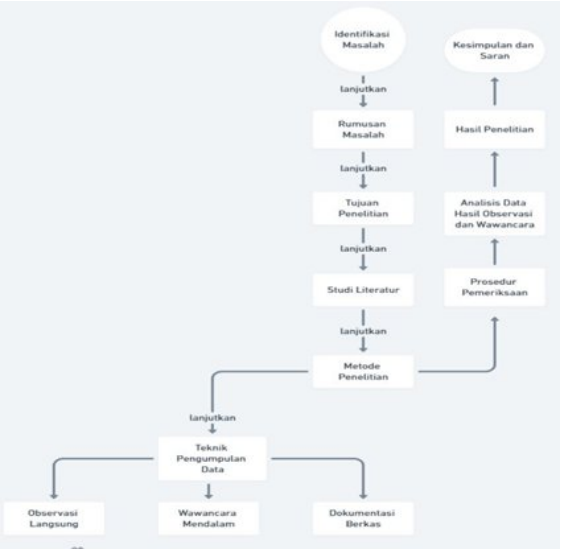

Figure 1: Research flow

RESULTS

This research was obtained by direct observation of one patient with a request for a colon in loop examination in the case of Ca Recti and conducting direct interviews with radiographers and radiology specialists working at RSPAU Dr. Suhardi Hardjolukito. According to a study by Andriyani et al. (2019), a colon examination was carried out utilizing a catheter-connected irrigator and barium sulfate contrast medium. Additionally, barium with air injected via a catheter was utilized as a sealant, according Annisa et al., 2024. In the case of rectal cancer at the Radiology Installation of RSPAU Dr. Suhardi Hardjolukito, a double contrast technique with water-soluble contrast medium was used, introduced through a catheter without creating a balloon. In this observation, the author obtained the following data:

Case Exposure

Based on the results of observations that the authors obtained regarding the implementation of the colon in the loop examination technique at the Radiology Installation of RSPAU dr. Suhardi Hardjolukito, the authors obtained a patient with the name Mrs. S, aged 55 years, with complaints of difficulty defecating and weight loss in recent months. The patient was escorted by a nurse and brought a radiology cover letter with clinical Ca recti to undergo a colon in loop radiology examination.

Colon in loop examination in Ca recti cases at Radiology Installation RSPAU, Dr. Suhardi Hardjolukito. Patient preparation:

On October 04, 2024, the patient registered at the Radiology Installation registration counter at Dr. Suhardi Hardjolukito Hospital. To conduct a Colon In Loop examination. The radiographer, the patient the preparations that must be made before the Colon In Loop examination are carried out. The preparations that must be made by the patient before carrying out the examination are as follows:

1. Two days before the examination, the patient ate soft and easily digestible food such as porridge + soy sauce.
2. From October 05, 2024, evening to October 06, 2024, morning to evening, the patient took Dulcolax after breakfast 2 tablets and dinner 2 tablets.
3. The patient started fasting on October 06 at 22:00 WIB until the examination was completed. During fasting, the patient is allowed to drink water, reduce talking, and not smoke until the examination is carried out.
4. October 07, 2024, at 05.00 WIB, inserted Dulcolax sups through the anus.

Jurnal Kesehatan Metro Sai Wawai, Vol 18(2) No 2, December 2025, 119-125. E-ISSN 2548-5695 P-SSN 2086-7751

5. On October 07, 2024, the patient came and reported to the radiology department at least 30 minutes before the examination.

DISCUSSION

Subjective assessment revealed that the patient reported experiencing a burning sensation throughout the body, accompanied by general discomfort, headache, and fatigue. These symptoms are commonly associated with the acute febrile phase of Dengue Hemorrhagic Fever (DHF). Objectively, the patient's body temperature reached 38.9°C, with visibly reddened skin, warm acral extremities, and additional signs indicative of an elevated body temperature. These findings align with the physiological response to viral infection, in which thermoregulation is disrupted due to the systemic inflammatory process initiated by the dengue virus.

In a comparative study conducted by (Aini et al., 2022). Differences were observed between two patients diagnosed with DHF. Patient 1 exhibited clinical signs consistent with DHF Grade II, while Patient 2 showed more advanced symptoms suggestive of DHF Grade III. Physical examination of Patient 1 revealed the presence of petechial red spots on both hands, which are characteristic of capillary fragility and early hemorrhagic manifestations. In contrast, such signs were not evident in Patient 2. However, in Patient 2, examination of the extremities showed diffuse reddish discoloration around the hands, moist oral mucosa, and a pulse rate of 100 beats per minute. The appearance of red spots or petechiae is one of the hallmark clinical features of bleeding due to increased vascular permeability and platelet dysfunction, which are common pathophysiological consequences of dengue virus infection. These observations underscore the variability of clinical presentations in DHF patients and emphasize the importance of thorough subjective and objective assessments in determining the severity of illness and guiding appropriate nursing interventions.

According to Prasetia, 2024, Dengue Hemorrhagic Fever (DHF) Grade II is characterized by the clinical features of Grade I, accompanied by spontaneous bleeding, either on the skin or from other sites. In contrast, Grade III is marked by signs of circulatory failure, including a rapid and weak pulse, decreased blood pressure (≤20 mmHg), or hypotension, accompanied by cyanosis around the mouth, cold and clammy skin, and signs of restlessness or anxiety in the child.

Based on the results of the clinical assessment conducted, the most relevant and prioritized nursing diagnosis was hyperthermia related to the infection process, secondary to dengue virus infection. This diagnosis is consistent with findings from a previous study by Manalu & Nursasmita (2023), which also identified hyperthermia as a primary nursing concern in DHF patients. Similarly, Maman Hermawan et al., (2025) emphasized that hyperthermia related to dengue virus infection was the main nursing diagnosis formulated for Client 1, based on comprehensive assessment and analysis of patient data.

Moreover, Bonara & Fajar, (2025) supported this by identifying two main nursing problems in DHF patients: hyperthermia associated with the infectious process and imbalanced nutrition: less than body requirements, related to inadequate intake secondary to symptoms such as nausea and decreased appetite. These nursing diagnoses highlight the multifaceted impact of DHF on the patient's physiological status and underscore the need for integrated nursing interventions that address both temperature regulation and nutritional support.

To address the problem of hyperthermia in patients with Dengue Hemorrhagic Fever (DHF), one of the non-pharmacological nursing interventions implemented is the application of warm water foot soaking therapy. This method, categorized under hydrotherapy, is recognized for its therapeutic effects, including promoting muscle relaxation, relieving pain, dilating blood vessels, improving peripheral circulation, relaxing connective tissues, inducing a calming effect, and increasing the sensation of warmth in the body (Aprian et al., 2024). In this case, the foot soaking intervention was carried out over a period of two consecutive days, with each session lasting approximately 15 minutes.

The implementation of this intervention demonstrates the active role of nurses in delivering holistic and comprehensive nursing care. It not only focuses on addressing the patient's physiological needs but also incorporates aspects of education and psychosocial support.

Jurnal Kesehatan Metro Sai Wawai, Vol 18(2) No 2, December 2025, 119-125. E-ISSN 2548-5695 P-SSN 2086-7751

According to Maman Hermawan et al., (2025), warm water foot soaking therapy is considered a simple, practical, cost-effective, and safe approach, particularly for pediatric patients. This is because the therapy assists in vasodilation in the lower extremities, thereby improving blood circulation and facilitating the release of heat from the body through perspiration, which contributes to a reduction in body temperature.

Furthermore, this finding is supported by Wulandari & Nuriman, (2022), who reported that there was a statistically significant improvement in thermoregulation among children following the administration of warm water foot soaking therapy. Therefore, the application of this intervention is proven to be effective in enhancing thermoregulation, making it a valuable complementary approach in managing hyperthermia in DHF patients. After intervention soak feet in warm water done in a way consistent for 3x24 hours, evaluation show existence decline temperature body in a way gradually from 38.9°C to 37.2°C. The patient also expressed that his body start feel comfortable and not as hot as previously. Vital signs were within normal limits, and not found existence symptom advanced like seizure or dehydration. This is in line with study according to (Fitriyah & Murniati, 2023) that There is significant difference statistically between decline temperature pretest and posttest body in children who experience fever, because moment therapy soak feet in warm water done, vessels blood in the legs tends to widen and increase flow blood, so that hot issued through sweat and supply oxygen to the brain also gets bigger smooth. Implementation This is also supported by research conducted by Nopianti et al., (2023) which states that therapy soak feet in warm water is one of action hydrotherapy and useful for the suffering child fever Because will increase circulation blood peripheral, reducing symptom shivering and giving comfort in children. Control center temperature in the hypothalamus own ability cooling. When the temperature body rises above normal temperature, then center regulator temperature try release hot with increase flow blood to skin and with sweating. sweating can help lost hot through evaporation on the skin.

CONCLUSION

During the assessment phase, patients with Dengue Hemorrhagic Fever (DHF) presented with typical clinical symptoms, including high fever, fatigue, headache, and a body temperature reaching 38.9°C. These findings indicate a disturbance in thermoregulation associated with the infection process caused by the dengue virus. The nursing diagnosis identified was hyperthermia related to the infectious process, as evidenced by elevated body temperature and discomfort.

The primary intervention implemented was warm foot soaking as a non-pharmacological approach aimed at reducing body temperature through mechanisms of peripheral vasodilation and heat evaporation from the lower extremities. The procedure was administered for 15–20 minutes using water heated to 37–40°C, initiated when the patient's body temperature exceeded 38°C. Throughout the intervention, the patient's temperature was monitored periodically, and care was adjusted as needed. Additionally, both the patient and their family received education on self-care and the importance of managing their own temperature independently.

After three days of intervention, the patient's body temperature decreased to 37.2°C, with improved comfort and no further complications. These results suggest that warm foot soaking is an effective supportive therapy in the management of hyperthermia in patients with DHF.

AUTHOR'S DECLARATION

Authors' contributions and responsibilities

RG and AI: Writing Original Draft, Conceptualization, Data Collection, Formal Analysis.
WM: Supporting Draft, Review, and Editing.

Funding

Personal expenses

Availability of data and materials
All data and supporting materials for this study are available and can be requested directly from the corresponding author.

Competing interests
The authors declare no competing interests.

ACKNOWLEDGEMENT

The author would like to thank RSPAU Dr. Suhardi Hardjolukito of Yogyakarta for facilitating the researcher's conduct of the research. The researcher would also like to express his gratitude to the Radiology Study Program, Diploma Three Program, Faculty of Health Sciences, Aisyiyah University Yogyakarta, Indonesia, for supporting the researcher in writing and conducting the research.

REFERENCES

American Cancer Society. 2014. Cancer Facts and Figures 2014. Atlanta: American Cancer Society.

Annisa, A., & Angella, S. (2024). The Management of Colon In Loop Radiography Technique with a Chronic Constipation Case. Innovative: Journal of Social Science Research, 4(4), 7391-7405. https://doi.org/10.31004/innovative.v4i4.11894

Andryani, K. F & Sumedi. (2018). Colon In Loop Radiography Examination Technique in Colitis Cases at Radiology Installation of RSUD Panembahan Bantul. RadX: Scientific Journal of Radiology 3(1). https://journalwh.uwhs.ac.id/index.php/jdx/article/view/27

Black, J.M., & Hawks, J.H. (2014). Medical-Surgical Nursing: Clinical Management for Expected Outcomes. Jakarta: Salemba Medika.

Desen, W. (2013) 'Colorectal Cancer', in Handbook of Clinical Oncology. 2nd edn. Jakarta: FKUI Publishing House, pp. 1-657.

Fandi, A. (2018). Nursing Care for Client Mrs.Y with Postoperative Laparotomy and Colostomy for Indications of Ca Colon in the Bendah Hospitalization Room, 2nd Floor, Ambun Suri, RSUD. Dr. Achmad Mochtar Bukitinggi in 2018. Scientific Paper. College of Health Sciences, Perintis Padang.

Febriani, M. D., Mayasari, I., Budiwati, T. (2018). Colon In Loop Examination Technique in Melena Cases at the Radiology Installation of RSUD Pandan Arang Boyolali.RadX: Journal of Radiology. https://journalwh.uwhs.ac.id/index.php/jdx/article/view/24

GLOBOCAN (2020a). The Global Cancer Observatory: UICC. https://www.uicc.org/news/globocan-2020-global-cancer-data

Johns Hopkins Medicine Colon Cancer Center. (2015). Colorectal Cancer Overview. Available from the Ministry of Health of the Republic of Indonesia, National Cancer Control Committee (KPKN). Colorectal Cancer Management Guidelines. KPKN, 2015; p. 4.

Lampignano, J. P., & Kendrick, L. E. (2018). Bontrager's Textbook of Radiographic Positioning and Related Anatomy, Ninth Edition. Missouri: Elsevier, Inc.

Mursyid, S., Mukminin, M. A., Putri, H. A. (2023). Radiographic Examination of Colon In Loop in Infants Using Positive Contrast with Clinical Hirschprung Disease. JRI: Journal of Indonesian Radiographers. 6(1). https://doi.org/10.55451/jri.v6i1.175

Priyono. (2016). Quantitative Research Methods. Surabaya.

Puspitasari, M. R., & Waluyo, A., (2021). Application of Katharine Kolcaba's Theory to Post-Laparotomy Colon Cancer Cases with Music. Medika Usada Journal. 4(1).

Putri, D. N. (2022). Management of Colon In Loop Examination in Clinical Chronic Constipation at Radiology Installation Awal Bros Panam. Thesis. Faculty of Health Sciences Awal Bros

University 2022. http://repository.univawalbros.ac.id/id/eprint/55

Sugeng, M. W., Agusaputra, H., Inawati, I., Sunaryati, T. (2023). Counseling on the Influence of Body Mass Index (BMI), Blood Sugar Levels, and High Fiber Diet Behavior to Prevent Colorectal Cancer. Colorectal Cancer. Journal Abdidas. 4(6). 457-580. https://doi.org/10.31004/abdidas.v4i6.848

Wati, R., Safitri, R., Sulistyono. (2021). Pediatric Colon In Loop Examination Technique in Chronic Obstruction Cases at the Radiology Installation of RSUD Kraton Pekalongan. Tambusai Health Journal. 2(3). https://doi.org/10.31004/jkt.v2i3.2080

Wijokongko, Sigit. (2016). Radiologist Protocol. Medika Core: Magelang.