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Abdomen Radiography with Atresia Ani Specifications at Bhayangkara Hospital Medan

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ABSTRACT

Abdominal plain radiology examination Anal atresia aims to obtain a radiographic picture of congenital abnormalities in the anus which cause the anus to form imperfectly. The projections carried out in this radiological examination are Antero-Posterior Supine (AP), and Lateral Knee Chest (L) projections. This research uses descriptive research. Atresia ani radiology examination research time This was carried out in May-J 2021 at Bhayangkara Hospital, Medan. The X-ray aircraft used in this examination is a conventional Toshiba-DK Medical System brand aircraft with a capacity of 20 0 Kv and a maximum mA of 300 mA. Radiographic image processing uses CR (Computed Radiography). The cassette used during this examination was a CR cassette measuring 35 cm x 35 cm. The results of the research obtained from an abdominal examination with the suspicion of Atresia ani with the results of the interpretation from the radiologist being correct Atresia ani with the distance of the most distal intestinal air to the anal dimple (marker) being ± 2.6 cm.

Keywords:

Abdomen, Atresia ani, Antero-Posterior, Lateral Prone Cross Table

1. INTRODUCTION

Abdomen consists of the abdominal and pelvic cavities and is often divided into 3 regions, namely: right hypochondrium, epigastrium, left hypochondrium, right lumbar, umbilicus, left lumbar, right iliac, hypogastric, and left iliac [1].

The abdomen contains the organs of the digestive system (stomach and intestines), the hepatobiliary system (liver, gallbladder, and pancreas) [2], the urinary system (kidneys and ureters), and the circulatory system (lymph). The pelvic cavity contains the bladder, parts of the intestines, and reproductive organs [3].

The rectum (Latin: regere, which means "straighten out, regulate") is a room that starts at the end of the large intestine (after the sigmoid colon) and ends at the anus [4]. This organ functions for temporary storage of feces. The length of the rectum is around 12 cm and there is a muscle (m.Levator ani) which functions to lift the anus (Rusbandi Sarpini, 2017).

Imperforate anus is a congenital abnormality where there is no outward opening to the anus. There may be a fistula between the colon and the perineum or urethra in boys or between the colon and vagina in girls [5]. This condition can be demonstrated radiographically with a cross-table lateral rectal projection with the patient lying on his stomach or by performing a fistulogram [6]. This is corrected surgically immediately after birth and may require a temporary colostomy [7].

Its incidence is reported in the literature at 1: 5000 births which appears as the most common disease which is part of the VACTERL (Vertebra, Anal, Cardial, Esophageal, Renal, Limb) syndrome. The anus appears flat or slightly concave in or sometimes anus-shaped but not directly connected to the rectum [8].

To confirm a temporary diagnosis from a doctor, a radiographic examination of the patient is carried out by carrying out a plain radiography of the abdomen in an antero-posterior supine projection , and Lateral Knee Chest with the help of X-rays to show a good radiographic image and can help confirm the diagnosis [9].

In this writing, things that support the writing will be explained, including abdominal radiography with suspected Atresia ani using the Antero-Posterior Supine projection. And Lateral Knee Chest [10].

The type of x-ray aircraft used is the General X-ray Unit Toshiba-DK Medical System with a relatively large capacity. The cassette used in this projection is a cassette measuring 35 cm x 35 cm and this examination also uses a grid, and the film used is Computed radiography (CR) film. The radiographic film processing process uses Computed Radiography (CR) [11].

2. METHODS

Types of research

The type of research carried out in the preparation of this Scientific Writing is descriptive research. The descriptive research design is a simple research design in the form of a Sampling Survey and is a non-experimental research design. Therefore, this design does not require a control group [12].

Time and Place of Research

This research was carried out in May-June 20 21 and took place in the Radiology Installation room at Bhayangkara Hospital, Medan [13].

Data collection technique

To obtain maximum data, here the author uses several methods to collect data, including :

1. Observation

Namely by obtaining data by directly observing and following abdominal examinations in cases of atresia ani

2. Documentation

By studying the results of abdominal radiographs found during clinical practice, whether normal or abnormal, especially atresia ani.

3. Interviews and Consultations

Namely by conducting interviews with the patient's parents about the disease they were suffering from, the author also consulted with radiographers and supervisors related to the examination and writing of this scientific paper.

Analysis of Results

The results obtained in this research are qualitative data, namely data related to the categorization of characteristics or properties of variables [14]. This data is in the form of sentences, statements and images. This qualitative analysis began with direct observation of the course of the abdominal examination for suspected Atresia ani at the Radiology Installation at Bhayangkara Hospital, Medan. From the results of the observations, the author found the problem behind choosing the title of this scientific paper [15]. To solve the problems found, the author conducted interviews to collect data relating to the background of the problem from radiologists and radiographers related to the subject of the problem [16].

3. RESULTS AND DISCUSSION

Results

Patient identity

Name : By Mrs. m
Age : 2 days
Type Male genital
Diagnosis : *Atresia ani*
Examination : Plain *Abdomen*
Examination Projection : AP Supine and *Lateral Knee Chest*
Examination Date : May 8, 2021

Inspection Procedure

a. The patient came with a letter of introduction for *abdominal radiography*.
b. Patients register at the radiology counter.
c. After completing registration, the patient gives a letter of introduction to the radiology officer.
d. Then the officer called the patient into the examination room.
e. Next, the patient is positioned on the examination table according to the predetermined projection.

Patient Preparation

Abdominal radiology examinations with suspected *Atresia ani* do not require special preparation, only that during the examination good cooperation is expected between the patient's family and the radiographer in positioning the patient in each examination projection [17].

Preparation of Inspection Tools

The X-ray aircraft used when carrying out *abdominal examinations* in cases of *Atresia ani* at the Bhayangkara Hospital in Medan is the General X Ray Unit X-ray aircraft with the following data:

g en aircraft brand :	Toshiba-DK Medical System
Aircraft Type R on tg en :	BL-50
No. Series	:C010116K 257
Frequency	:50/60Hz
Input voltage	: 24 VAC 7A
Phase	: Single Phase
Number of Tubes	: 1 piece
Aircraft R ong en Services	: Radiography
kV Maximum	: 20 0 kV
mA Maximum	: 300 mA.

Figure 1. General X Ray Units

Figure 2. Control Table

Examination Techniques

Once all the equipment is available, the radiographer makes the patient arrangements as comfortable as possible to obtain optimal images. In this examination the projections used are:

a. Supine Antero Posterior Projection

Patient Position : The patient is positioned in a supine sleeping position, the patient's arms are straight beside the body and both legs are straightened [18]. The mid sagittal plane of the body is located on the midline of the film.

Object position : The object is arranged so that the upper (diaphragm) and lower (symphysis pubis) *abdominal* areas are included in the film. Place a marker in the anus area.

Light direction :	Vertical
Beam center	: Middle of the cassette
Focus distance to film	: 90 cm
Exposure Factor	: 50 Kv, 150 mA, 6 mAs, 0.04 s.
Cassettes and films	: 35 x 35 cm, using grid.

Evaluation Criteria : The overall picture of *the abdomen is visible* , the area marked with the marker is not cut, the upper and lower parts of the *abdominal cavity* are not cut. There is no rotation at both SIAS.

Figure 3. AP Supine Projection Radiography

b. *Lateral Knee Chest* Projection

Patient Position : The patient is positioned prone with the head lower than the buttocks. Both thighs are bent as far as possible towards the stomach so that the air image on the radiograph is not covered by the thigh image. One side of the patient's body on the left or right side is attached to the cassette. The mid sagittal plane of the body is parallel to the midline of the film.

Object position : The object is arranged so that the distal *abdominal area* is included in the film. Place a marker in the anus area [19].

Ray direction : Horizontal.

Ray center : in the middle of the cassette

Focus distance to film : 90 cm

Exposure factor : 53 Kv, 150 mA, 6 mAs, 0.04 s .

Cassettes and films : 35 cm x 35 cm, using grid .

Evaluation Criteria : The overall picture of *the abdomen is visible* , the area marked with the marker is not cut off, the two femurs are in superposition, the highest image and the marker must be measurable.

Figure 4. . *Knee Chest Lateral* Projection Radiography

Expertise Results
Listed in the attachment
Discussion

In discussing *the Abdomen* with suspected *Atresia ani* at Bhayangkara Hospital, Medan, the author stated the benefits of the two projections, namely *the Antero-Posterior Supine and Lateral Knee Chest projections* as follows [20]:

Formulation of the problem

The author formulates the problem as follows: "What efforts should be made to obtain a quality radiographic image *of the abdomen* suspected of *atresia ani so that it can show a diagnosis accurately and clearly?"* [21].

abdominal radiological examination was carried out with the suspicion of *atresia ani* following the KCClark theory stated in the book *Positioning in Radiography 13 Ed.* Namely by doing AP Supine and *Lateral Knee Chest projections* [22]. These two projections aim to see the final boundary of the air in the rectum towards the anus by fulfilling the following radiographic criteria:

a. Antero-superior Supine: The abdomen includes the diaphragm, lateral abdominal wall, and ischial tuberosity. The pelvis and spine must be straight, without rotation [23]. The marked area is visible and not cut
b. Lateral Knee Chest: The overall picture of *the abdomen* is visible, the lower border of the air-filled intestine is shown in relation to the pubo-coccygeal area, the part marked with the marker is not cut, the two femurs are in superposition [24].

Cause of Problem

The causes of problems that arise during this inspection are:

a. The size of the cassette used at Bhayangkara Hospital in Medan is too large for the patient's body, namely 35 cm x 35 cm.
b. The illumination field in the Antero-posterior Supine projection is too wide, causing the AP Supine image to resemble a Babygram radiograph.
c. During the examination, the patient was less cooperative because his stomach was already enlarged.
d. The marker used to mark the outermost part of the patient's anal canal is too large.

Efforts made to overcome the problem

a. For the size of the cassette, it is best to use only 24 cm x 30 cm, because this size can cover the entirety of the patient's abdomen [25].
b. It is recommended that the collimation settings be in accordance with size of the patient's abdomen. This is done so that the patient is not exposed to excessive radiation and the AP Supine abdominal radiography criteria stated in the KCClark theory can be obtained and are appropriate on the film [26].
c. When a patient is not cooperative in carrying out a radiographic examination, cooperation between the patient's family and the radiographer is really needed [27]. So the radiographer provides directions and explanations regarding what examination will be carried out, the procedures for carrying out the examination, the various patient positions that will be carried out, and the purpose of carrying out the examination to the patient's parents so that they understand and help carry out the examination well [28].
d. The marker used in this examination should be adjusted to the size of the patient's anus to make it easier for the doctor to assess the radiography results [29].

4. CONCLUSION

At the end of the description of this case report, the author can conclude as follows:

a. Abdominal radiography with suspected atresia ani carried out at Bhayangkara Hospital with Antero-Posterior Supine and Lateral Knee Chest projections with condition less baby cooperative Because circumstances her enlarged stomach.
b. Abdominal radiography with suspected atresia ani at Bhayangkara Hospital was carried out using a 35 cm x 35 cm cassette.
c. The marker used in the abdominal radiography examination with suspected atresia ani at the Bhayangkara Hospital in Medan looked clear and too large.
d. The size of the radiation field is too wide so that AP Supine radiography is like Babbygram radiography.

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