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Radiographic Examination Technique of OS Humerus in Cases of 1/3 Proximal OS Humerus Fracture in the Radiology Installation of the University of North Sumatera Hospital

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ABSTRACT

Background: The humerus is the longest bone of the upper limb, showing a shaft and two ends (Pearce, 2009). We can generally understand that this bone is located between the shoulder and elbow. A fracture is a break in the continuity of the bone and this condition can be caused by direct or indirect trauma, underlying disease or repeated pressure on the bone. A fracture is a break in the continuity of the bone and this condition can be caused by direct or indirect trauma, underlying disease or repeated pressure on the bone. Research Method: the type of research used is qualitative with a case study approach. The data collection methods used in this research were observation, documents and in-depth interviews. Data analysis was carried out through the data reduction stage, presenting data in the form of open coding, drawing and drawing conclusions. Research Results: Humerus Os radiographic examination technique in fracture cases at the Radiology Installation of North Sumatra University Hospital. On the X-Ray examination of the Humerus Os with a fracture case in the patient with the name Mr. X, visible fracture in the proximal 1/3 of the right humerus with postetolateral dislocation and contraction. Joint gap. Description: fracture of the proximal 1/3 of the right humerus with postelolateral dislocation and contraction. Conclusion: The technique for radiographic examination of the humerus in cases of the proximal 1/3 of the humerus in the Radiology Installation of the North Sumatra University Hospital is to use basic projections, namely Antero-Posterior (AP) and Lateral.
Keywords: *AP Projection, Fracture, Humerus.*

INTRODUCTION

Since the discovery of X-rays by Wilhelm Conrad Rontgen, a physicist at the University of Wurzburg, Germany in 1895, the development of X-rays combined with the most sophisticated technology has produced equipment that is able to provide more accurate diagnoses for further treatment. Along with the progress of the current era. new cases have emerged that require careful service and this has also been supported by the use of modern equipment. Radiology services as an integrated part of comprehensive health services are part of the Mandate of the 1945 Constitution where health is a fundamental right of every citizen and the Mandate of Law Number 23 of 1992 concerning Health Based on this and the increasing need for health services, radiology should also provide quality services (Permenkes

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1014, 2008). These services are in the form of actions to establish a diagnosis using ionizing radiation such as X-rays. X-rays are electromagnetic wave emissions that are similar to radio waves, heat, light and ultraviolet rays but with very short wavelengths (Rahman, 2005). For example, examination of 1/3 Proximal Os Humerus fracture Os Humerus which has a very important role in everyday life, namely as a means of movement. Os Humerus is the longest bone of the upper limb, showing a shaft and two ends (Pearce, 2009). This bone can be known in general as being located between the shoulder and elbow. Fracture is a break in the continuity of the bone and this condition can be caused by direct or indirect trauma, underlying disease or repeated pressure on the bone (Wiley, 2013). To establish a correct diagnosis of V3 Proximal Os humerus fracture, good radiographic quality and images are needed. Radiographic quality can be considered good if the radiograph can provide clear information. A good radiographic image is an image that provides satisfaction to consumers, namely patients, referring doctors, and radiologists as readers of the radiograph results. Because this information, in addition to establishing a diagnosis, can also be used to determine the efforts that can be made to the next patient. Therefore, the author is interested in writing a scientific paper entitled "Radiography Examination Technique of the Humerus Bone in Cases of 1/3 Proximal Humerus Bone Fractures at the Radiology Installation of the University of North Sumatra Hospital.

METHODS

The population taken is according to patients who underwent examination of the proximal 1/3 of the Humerus at the Radiology Installation of the University of North Sumatra Hospital. The sample taken was one patient with a case of a proximal 1/3 humerus fracture at the Radiology Installation of the University of North Sumatra Hospital using transthoracic lateral supine. The subjects of this Scientific Paper Research are patients with cases of proximal 1/3 humerus fractures using anteroposterior and transthoracic lateral supine projections. The analysis begins by processing data obtained through observation or direct observation of the course of the Humerus examination in cases of proximal 1/3 humerus fractures with the patient's anteroposterior and transthoracic lateral supine positions at the Radiology Installation of the University of North Sumatra Hospital, Medan. In addition to the data obtained through observation, the author also processed data obtained through in-depth interviews with radiographers. Data obtained from observation, interviews were collected, then data reduction was carried out. After data reduction, open coding is carried out, namely data collection from observations and interviews with respondents. Open coding is carried out to increase the validity of the collected data. Making this coding will make it easier to make quotations that aim to describe the results of the study, so that one conclusion can be drawn.

RESULTS AND DISCUSSION

Based on the results of in-depth interviews with various parties related to the problems that the author took and read from several literatures, the author observed that there were several differences discussed, including

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Examination Technique of Os Humerus in cases of Fracture 1/3 Proximal Os humerus at the Radiology Installation of the University of North Sumatra Hospital

Conventional X-Ray Examination of Os Humerus in cases of Fracture 1/3 Proximal Os Humerus at the Radiology Installation of the University of North Sumatra Hospital, there was no special preparation for the patient, only instructions regarding the patient's penis and examination techniques were clearly stated. Radiopaque objects and patient clothes were replaced with special patient clothes. There was no special preparation for the patient, but instructions regarding examination techniques were clearly stated so that during the examination the patient felt comfortable and could cooperate in the examination process. In addition, every time the patient wanted to undergo an examination, the patient was actually required to change clothes with special patient clothes so that radiopaque objects did not interfere with the image results. However, considering the patient's condition with pain and being an accident victim, we can only take the initiative to ensure that there are no radiopaque objects in the patient that will interfere with the radiographic results later. Basic projection is a standard basic projection that must at least be done for every radiographic examination. In the humerus, the basic projection is AP and Lateral. The examination technique begins with the patient remaining supine and does not need to be moved to the examination table (seeing the patient's condition), then for the AP projection, the patient's arm is placed on a horizontal cassette in a supine position and make sure that both joints are not cut and enter the cassette area with the vertical ray perpendicular to the cassette and the cp in the middle of the humerus to be examined. For the AP projection, the exposure factor used is 56 LV and 9 m.As. Lateral projection, with the patient's position supine on the stretcher with the humerus endorotated maximally so that it is true lateral and adheres perfectly to the cassette. Set the humerus to be in the middle of the cassette and both joints are not cut. Center point (CP) in the middle of the humerus with the vertical ray perpendicular to the cassette. The exposure factor used is 56 kV and 9 mAs.

Alternative projections that must be done if the basic position is not possible

Basic projection is a standard basic projection that must be done for every radiographic examination. However, in patients who are uncooperative and feel excessive pain when moved too much, an alternative projection is used as a substitute for the lateral projection. The alternative projection is Transthoracic Lateral Preparations needed for this projection include the use of fixation devices/stereofoam and ensuring that there are no radiopaque objects that interfere with the radiographic image. In providing fixation under the patient's back and arms, care must be taken not to aggravate the condition and increase pain in the patient. For transthoracic lateral projections, the patient's position remains supine on the bed with the fixation device placed under the patient's back and arms, the hand that is not being examined is raised above the head, and the vertical cassette is close to the object being examined. Make sure neither joint is cut. The direction of the horizontal beam is perpendicular to the cassette, and the cp is in the middle of the humerus bone being examined. According to Sjahriar Rasad,

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radiological examination depends on the patient's condition. In patients with severe trauma (unconscious, multiple fractures, extreme pain, etc.), the examination must be carried out carefully and all photographs must be taken with the patient lying on their back with as little manipulation as possible. The most important photograph is a lateral photograph with the patient lying down and a horizontal beam. This patient position is arranged to obtain good image results and for patient comfort. And the purpose of providing fixation devices/styrofoam during the examination is so that the patient remains comfortable during the examination and the desired object is clearly visible and above. The exposure factor used in this projection is higher because the thickness of the object to be penetrated is also different. The exposure factor for transthoracic lateral projection is 70 kV. and 18 mAs. After the exposure is complete. check the radiographic results whether they meet the criteria for a humerus os photo image, such as both joints are visible, the position of the object is in the middle, and the selection of the right exposure factor to show abnormalities in the object. If everything is okay, instruct the attending nurse that the examination is complete and print out the radiographic exposure photo for the radiologist to read.

Advantages and Disadvantages of Basic Projection and Alternative Transthoracic Lateral Projection

The advantage of AP baric projection is to see the front view while Lateral sees the side view. In fractures, basic AP projection can show the state of fracture shifting laterally or medially, while basic lateral projection can show the state of shifting anteriorly or posteriorly. Basic projection also does not require many fixation tools, in terms of distal and proximal aspects can be seen and easy to do. So that it can help radiologists in determining the diagnosis clearly and precisely. However, the disadvantages of this basic projection depend on the patient's condition, because in lateral projection the object is moved too much to position it true lateral, so if the patient is unable because of the pain felt and the possibility of a greater risk of serious injury, an alternative projection or replacement projection must be performed with a method whose function or purpose resembles lateral projection, namely Transthoracic lateral Radiography has the principle of Rules of two, namely two views (directions). two sides, two joints, two times, The advantages of this Transthoracic projection are that it does not change the patient's position much so that the patient does not feel pain, and does not need to worry too much about additional fractures or dislocations due to a lot of shifting, because we do not know what type of fracture the patient is experiencing, so if we do not rotate the object or move it much, it is unlikely that we will worsen the patient's condition and make the patient comfortable. It's just that we lift the object and the patient's back so that Styrofoam is inserted as a fixation. That way. the patient will feel more comfortable and we do not change the condition of the object much. The disadvantage of lateral transthoracic projection is that the image results are not optimal, because the object is superposed with the thorax and lungs which contain air, resulting in blurring of the photographed object. However, this technique is sufficient to show the position of fragments and fractures. Exposure factor settings need serious attention to obtain optimum image contrast and density.

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CONCLUSION

The radiographic examination technique of Os humerus in the case of 1/3 proximal os humerus in the Radiology Installation of the University of North Sumatra Hospital is using basic projections, namely Antero-Posterior (AP) and Lateral. Alternative transthoracic lateral projections are performed if the basic position cannot be used because the patient's condition does not allow it. This position does not rotate or change the condition of the patient and object too much. In addition to avoiding conditions that worsen the object, it can also make the patient feel a little better and not in pain. To place the object in the middle and lifted up, a soft fixation/styrofoam device is needed which is placed under the patient's back and arms. The advantages of basic projections are that they have the principle of Rules of two, namely two views (directions), two sides, two joints, two times (pre and post orif), the advantages of basic AP projections can show fracture shifts laterally or medially while lateral can see anterior or posterior fracture shifts. While the disadvantages of basic projections are that sometimes patients are not cooperative for this basic projection due to the patient's general condition, so alternative projections are performed. The advantages of transthoracic projection are that it does not change the patient's position much so that the patient does not feel pain, on the other hand we do not need to worry about additional fractures or dislocations. The disadvantages of this transthoracic technique are technically poor, because of the superposition with many organs such as the heart, lungs and ribs but it provides sufficient information about the position of the fragments.

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