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## Research Article

### Radiography of Clavicula Os with Suspected Avulsion Fracture in Advent Medan General Hospital

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#### ABSTRACT

The clavicle is an S-shaped bone that articulates laterally with the acromioma process of the scapula, medially with the manubrium of the clavicular notch to form the clavicular joint. An avulsion fracture is a disconnection of the clavicle bone caused by direct and indirect trauma in the position of the arm being cut off or pulled out (out-stretched hand) because the trauma continues from the wrist to the clavicle. Radiography is an appropriate method to show abnormalities in the os calvicula. The aim is to show the anatomy of the clavicle bone and its abnormalities. This examination uses the Antero-Posterior projection. The X-ray aircraft used is GE with a capacity of 500 mA. The tape used is 30 cm x 40 cm. Processing film used is Computed Radiography.

**Keywords:** *Avulsion Fracture, Computer Radiography (CR), Os Clavicle*

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#### Introduction

Os clavicula is a collarbone that resembles the letter S. The medial arch is larger towards the front, the lateral arch is smaller towards the back. The medial end is related to the sternum and is called the sternal extremity, there is a protrusion small called tuberosity costalist for attaches to the costal clavicular ligament (Gupta & Gupta, 2018; Sofia et al., 2020). The lateral part is related with acromion (extremity acrominal), there are tuberosity costalist and sulcus subclavicular (Pratistha et al., 2021; Scott et al., 2021).

The clavicle bone serves as a link to several muscles of the neck and shoulders, and thus acts as a support for the arm (Balfousias et al., 2018; Galán-Ollerros et al., 2020). Avulsion fracture is a break in the continuity of bone tissue which is generally caused by a forceful, broken bone continuity caused by pressure from outside which come more big from which could absorbed from bone (Munir & Beckmann, 2021). Avulsion is a state of trauma when miss it bone from the place by intact and produce wound complex (Bharadwaj et al., 2022). Fracture clavicle is the bone on generally happens often \_ broken to strength or collision by direct nor

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collision by no direct , often occur reason fracture on bone lower and shoulder arm (Kim et al., 2021).

If there is an avulsion fracture in the Clavicle , it is difficult for the patient to carry out activities (Babu et al., 2022; Heyworth & Fabricant, 2021). To show abnormalities in these organs, x-rays (radiography) are needed to determine the presence or absence of fractures and their effects on surrounding organs (Palmer et al., 2020; Ferreira et al., 2021). In radiographic examination with suspected clavicle fracture, several projections were made, namely antero-posterior supine, AP erect and postero-anterior erect (Hanna et al., 2021). The aircraft used is the General X-ray Unit, with mA used of 100 mA, recording images using Computer Radiography (CR) (Szaro, 2022; ARISKA, 2019). Based on the background of the radiographic examination of the clavicle with a suspected avulsion fracture, the formulation of the problem obtained is as follows: "How to get a radiographic picture with a suspected fracture of the clavicle good?"

Destination this research is for knowing how to check avulsion fracture in hospital Adventist General Medan. To find out the inspection and projection techniques used in the os examination clavicle. To get the image criteria that can match the case. To establish a proper diagnosis case.

## Methods

### Type study

In writing creation scientific this writer use study descriptive qualitative. Study descriptive qualitative is wrong one method group status research human, a object with destination make descriptive, with the fact that there is , without exaggeration (Ward et al., 2018).

### Time and Study

- Time Research : The time of the study was carried out on April 06 – May 2022
- The place Research : The place where the research is carried out is in the Installation Radiology Adventist General Hospital Medan.

## Collection Technique Data

At this research stage, so that valid and accountable data can be obtained, it can be obtained through:

- Interview  
As for in data collection , researcher To do Interview with radiographer , as well as identify alone as I as patient related \_ with disease that natural (Doyle et al., 2020).
- Consultation  
To obtain accurate data on the implementation of Os Clavicula radiography with suspected avulsion fractures at the Medan Adventist General Hospital. Consultation with radiographers, radiology specialists and internal medicine doctors.

## Observation Results

Direct observations made by researchers can be realized by taking notes in the form of information related to patients in the radiology room at the Medan Adventist General Hospital. And also observing how to observe the procedure for examining an Os Clavicula radiograph with a suspected avulsion fracture at the Medan Adventist Hospital. For this reason, researchers can make direct observations in order to obtain evidence related to the object of this research.

## Analysis Results

The data obtained in this study is qualitative, namely data related to the categorization of the characteristics or properties of variables, this data is in the form of sentences, statements, and descriptions (Hunter et al., 2019). This qualitative analysis starting with direct observation of the radiographic examination of the Os Clavicula suspected of having an avulsion fracture at the Medan Adventist General Hospital. From the results of observations, the authors found the problem behind taking the title of this Scientific Writing. To solve the problem that found, the authors conducted interviews to retrieve data relating to the subject matter.

The results of the data are then processed by collecting data first, the results are transcribed and copied in typed form. After collecting data, it is continued with data reduction to obtain more valid data information, and then researchers carry out open coding, namely data

is processed by analyzing the results of observations, consultations, and interviews. The aim is to facilitate the grouping of data information so that it is easier to draw conclusions.

## Results and Discussion

### Results

The case taken by the author is a clavicle radiograph with a suspected avulsion fracture at the Medan Adventist General Hospital Installation. Patient data obtained as follows:

#### Identification Patient

Name : Mr. H  
Date born/ Age : 42 thn  
Type Examination : Radiography Os Distal clavicle  
Type Gender : Male  
Diagnosis : PostKLLPain Shoulder  
Date Examination : 06 April 2022

#### Inspection Procedure

Patient and family patient come to last ER room checked by doctor about disease and complaint from patient.

Doctor the then give letter Request inspection radiography Os Clavicle part in radiology

Patient and family patient enter to room radiology with bring letter Request inspection radiography Os Clavicle then give it to officer radiology.

Officer radiology read introduction photo the then give briefing to patient and family patient for follow something procedure inspection.

#### Preparation Patient

On radiographic examination of the os clavicle with suspected fracture avulsion does not require special preparation, but it is informed to the family patients to undress and replace them with patient clothes that have been provided in a special room to change clothes, so as not to interfere with the examination (Goes & Pathria, 2019). After that, inform the family to hold the patient so that the patient does not move.

#### Preparation Tools Inspection

##### Aircraft x-ray

Before it's done action radiography, aircraft x-ray more formerly turned on and conducted warming up in accordance with procedure on aircraft X-ray so that all component aircraft x-ray could work by maximum. Aircraft X - rays used on inspection radiography os clavicle with guess fracture alvulsion is aircraft that have capacity tall, have bucky.

In inspection os clavicle use aircraft x-ray i.e. general X-ray unit at Home Sick General Adventist Medan with data as following :



Figure 1. Medonica X-ray plane at Medan Adventist General Hospital

Brand Airplane: MEDONICA  
Aircraft Type : BLD-02A (Collimator)  
Date : 2018.11  
Input Power : AC24V, 7A

Weight : 6 kg  
Max Voltage : 125 kV  
Service aircraft : radiography



Figure 2. Control Table at Medan Adventist General Hospital Technique Inspection Supine Anterior-Posterior Projection

Destination Inspection : To show the anatomy and abnormalities of the os clavicle from the AP position erect

Position Patient : The patient is in an erect position and the cassette is vertical at the end of the shoulder joint to be photographed. And shooting does not use grid

Position Object : Position the shoulder and clavicle in the middle of the cassette, then

the arms and hands are placed beside the body in a position relax.

FFD : 90 cm  
Central \_ Point (CP) : Mid Os Clavicle  
Central Ray (CR) : Horizontal if the patient erect  
Cassette : 24 x 30 cm  
Factor Exposure : 72 kV , 16 mAs



Figure 3. Antero-posterior projection of the os clavicle

Image criteria:

Look fracture of the tip of the clavicle right  
The other bones around the right shoulder joint are visible normal.

Results Expertise

The results of the expertise obtained at the Medan Adventist General Hospital to a patient named:

Date : 06-04-2022

Name : Henry Joy Manurung

Age : 42 Years / LK

Examination : os clavicle radiography

Which was read by dr.Yudha Sp,OT with a description of the results of the examination: It appears that the fracture of the distal clavicle avulsion, humeral head and scapula are normal.

Conclusion: Fracture of the distal clavicle avulsion.

### Discussion

Avulsion fracture is a break in the continuity of bone tissue which is generally caused by external pressure that is greater than what can be absorbed from the bone (Rosyidi, 2017).

The discussion carried out on the radiographic study of Os Clavicula.

#### Formulas Problem

In case this writer formulate problem namely "Effort " what to do for get description radiography Os Clavicle with guess Fracture avulsion?"

#### Reason Problem

As for reason problem faced \_ writer is on implementation radiography Os clavicle with guess fracture avulsion for get the optimal picture is condition patients who feel pain on area her shoulder so that patient no cooperative.

#### Efforts made \_for get results optimal

##### Aspect Radiographer

For get picture Os clavicle with guess fracture avulsion so Cooperation Among radiographer with patient or family patient very required so that inspection could conducted with fluent in Thing this radiographer must operate

the procedure that will done. Arrangement direction ray and right cassette \_ and could give results good picture \_ on film.

##### Aspect Patient

Because the patient experience fracture avulsion on Os clavicle. Avulsion is a state of trauma when miss it bone from the place by intact and produce wound complex, so patient need comfortable position \_ maybe. So use tool like stand bucky that is standing back to cassette for support and expedite the way inspection so that could avoid happening repetition photo.

##### Aspect radiography

Should use large field irradiation to a minimum possible with limit that will be exposed in order to get optimal picture, so that results description more sharp and could reduce radiations

### Conclusion

After the author conducted and observed a radiographic examination of the Os Clavicula with suspicion of an Avulsion Fracture at the Radiology Installation of the Hospital Adventist Medan and based on the results of the discussion of the problems that have been outlined by the author, so could taken a number of conclusion, in Thing this namely: Examination of the picture of the os clavicle with guess Fracture Avulsion used Supin e AP projection with use small focus. On the picture of the os clavicle with guess Fracture Avulsion recording picture conducted with Computed Radiography (CR) for efficient and to improve photo quality. os clavicle radiography with guess Fracture Avulsion need sharpness and optimal detail, so that abnormalities on Os Clavicle capable shown with clear.

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