

# Comparison of Anatomic Images in Examination of the Ap Axial Cranium Towne's Method With 30° and 37° Caudal Light Directions to View the Foramen Magnum

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## ABSTRACT

The phenomenon in the field, the researchers found that there was an examination of the cranium using the Towne method using only one beam direction, in theory there were variations in the direction of the beam 30° caudal and 37°. The aim of this study to see better anatomical information and which results from the Towne's method of cranium ap-axial radiographs that are able to show the optimal foramen magnum. This type of research uses an experimental study through a quantitative approach, the population in this study only uses one object, namely Phantom, sing several data collection methods such as studies, experiments and filling out questionnaires. The results of the study found that in the study of the examination of Towne's Method of Ap Axial Cranium overview with a beam direction of 30° caudal with a beam direction of 37° caudal shows if the value is significant ( $p$  value  $> 0.05$ ), if ( $p$  value  $< 0.05$ ) it means that there is a difference between the Towne Method Cranium with variations in the direction of the beam 30° caudal and 37° caudal. And on the image of the Cranium Ap Axial Towne's Method which consists of 1 (one) object, it was found that the examination of the image of the Cranium Ap Axial of the Towne Method is better to use the 37° caudal ray direction, because the resulting image is better able to provide more optimal anatomical information to obtain a diagnosis. Towne's method of precise and accurate examination of the ap-axial cranium.

**Keywords:** Cranium Ap Axial Towne's Method, variations in the direction of therays, foramen magnum.

## 1. INTRODUCTION

The development of increasingly sophisticated technology in the world of health gave rise to sophisticated equipment in the field of medicine. One of them was the discovery of X-rays by Wilhem Conrad Roentgen in 1895. The discovery of X-rays is a new development in the medical world that can examine parts of the human body that were previously difficult to do with conventional methods of examination.

Diagnostic radiology services are the use of external radiation beams (X-ray planes and other sources) that are used to produce an image for the purpose of establishing a diagnosis. The resulting radiograph is very helpful for doctors to take appropriate action on the patients they treat, this is because the resulting radiographs usually confirm the patient's disease or condition without having to do surgery first. A radiograph must meet several

aspects to be assessed, namely density, contrast, sharpness and detail. All of these aspects must be of good value so that the radiograph can be performed to have a good image quality [4].

The skull is formed by bones that are interconnected with each other by means of sutures. The skull bone consists of three layers, namely the external tabula, diploe and internal tabula. In adults, the thickness of the skull varies from three millimeters to 1.5 centimeters, with the thinnest portion in the pterion region and the thickest in the external protuberant region. The skull is divided into two parts, namely the neurocranium (bones that cover the brain) and the viscerocranium (bones that make up the face). The neurocranium consists of flat bones that are connected to one another [8]

**2. RESEARCH METHOD**

The type of research used in this research is quantitative research with experimental study or direct observation. Experimental study is a research method used to find the effect of treatment on others under controlled conditions. In experimental research there is a treatment (Sugiyono.2016) that aim to find out which angle is clearer to see the foramen magnum with Towne's method with light directions of 30° and 37°.

**3. RESEARCH RESULTS**

**Result data Observation Checklist**

After researching by Towne's method of cranium radiographs with a beam direction of 30° caudal and 37° caudal to see the optimal foramen magnum, followed by taking a questionnaire sheet by 5 (five) respondents consisting of 3 Radiology Specialists and 2 Senior Radiographers. The value obtained from the research results is a collection of questionnaire data from a respondent.

**Table 1.** Questionnaire Results on Towne's Method Cranium with a beam direction of 30° caudal

No	Question	RESPONDENTS						
		1	2	3	4	5	□□	□
1	What is the image of the foramen magnum produced?	2	2	2	3	2	11	2.2
2	Is there a superposition between the foramen magnum with other networks?	2	2	3	2	3	12	2.4
3	Are the dorsum of the sellae and the posterior clinoid process visible in the foramen magnum?	2	3	1	3	1	10	2

**Amount**

Method Cranium with a beam direction of 37° caudal

**Table 2.** Questionnaire Results on Towne's

No	Question	Respondent						
		1	2	3	4	5	□□	□
1	How is the picture foramen the resulting magnum??	3	3	4	4	4	18	3.6
2	Is there a superposition between foramen magnum with other tissues?	2	2	4	4	4	16	3.2
3	What is dorsum sellae dan process Posterior clinoid seen in the foramen magnum?	3	4	1	4	1	13	2.6
<b>Amount</b>								3.1

**Table 3.** SPSS processing results statistical test results on Panthom objects.

	N	Minimum	Maximum	mean	Std. Deviation
30° Caudal	3	2.0	2.4	2,200	,2000
37° Caudal	2	3.2	3.6	3,400	,2828
Valid N (listwise)	2				

Based on the descriptive table above, it states that the sample in this study is 1. The minimum value for the 30° caudal light direction is 2.0 and the maximum value is 2.4 while the 37° caudal light direction is the minimum value 3.2

and the maximum value is 3, 6. The mean (average) at 30° caudal ray is 2,200 while at 37° caudal ray is 3,400. Std Deviation (standard deviation) at 30° caudal ray direction is 0.2000 while at 37° caudal ray direction is 0.2828.

**Table 4.** Statistical test results using the Wilcoxon test for Phantom objects

Test Statistics	
30°-37°	
Z	-1.604a
asympt. Sig. (2-tailed)	0.109

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

Based on the results of the statistical test above, the Asymp value can be seen. Sig or significant value obtained from SPSS calculation of 30° caudal beam direction with 37° caudal beam direction is 0.109 (p value > 0.05), this indicates that there is no significant difference between Cranium AP Axial Towne method and the direction of the beam. 30° caudal 37° caudal, then Ho is accepted and Ha is rejected, meaning that there is no significant difference between the results of the Towne method of Cranium AP Axial radiographs with the beam direction of 30° caudal 37° caudal.

**4. DISCUSSION**

Based on the results of research that have been carried out by comparing the Towne's AP Axial Cranium radiograph with a beam direction of 30° caudal 37° caudal and based on the results of questionnaires that have been obtained from 5 respondents, namely 3 (three) Radiology Specialists and 2 (two) Radiographers with obtaining varying results. In the examination of the AP Axial Cranium Towne's method which compares the results with 3 questions on 1 questionnaire, the first question is how the resulting foramen magnum looks, the second question is whether there is a superposition between the foramen magnum and other tissues, the third question is the dorsum sellae and the posterior clinoid process visible in the foramen magnum.

The results of the questionnaire on the Cranium AP Axial Towne's method for the object of research phantom with a beam direction of 30° caudal gets an average value of 2.2 while the direction of light 37° caudal get an average value of 3.1. So from the results of the questionnaire on the phantom object, the best light direction on the AP Axial Cranium examination Towne's method is the 37° caudal beam direction because the questionnaire that has been filled out shows that the 37° caudal beam direction has a high value.

The results obtained from the SPSS processing carried out show that the radiographic image of the AP Axial Cranium Towne's method with a beam direction of 30° caudal and a beam direction of 37° caudal and based on the results of a questionnaire that has been obtained from 5 respondents, namely 3 Radiology Specialists and 2 Radiographers who use the object of research phantom get varying results.

The results of SPSS processing on the AP Axial Cranium Towne's method for a phantom object with a beam direction of 30° caudal, the minimum value is 2.0 and the maximum value is 2.4 while the beam direction is 37° caudal, the minimum value is 3.20 and the maximum value is 3.6. The mean (average) in the 30° caudal light direction is 2,200 while at the 37° caudal light direction it is 3,400. The Std Deviation (standard deviation) at 30° caudal ray is 0.2000 while at 37° caudal ray direction is 0.2828. The results of the data above can state that Asymp. Sig or significant value obtained from SPSS calculation of 30° caudal beam direction and 37° caudal beam direction is 0.109 (p value > 0.05), this indicates that there is no significant difference between the AP Axial cranium Towne's method and the direction of the beam. 30° and 37° caudal on Phantom object, then Ho is accepted and Ha rejected means that there is no significant difference between the results of the Towne's AP Axial cranium radiograph with the beam direction of 30° and 37° caudal

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