

Additional Radiographic Techniques for Demonstration of Pelvic Limb in Canine (Sudanese bread)

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Abstract

Sudanese bread is a very popular selection for use as working dogs. They are especially well known for their hunting work. The objectives of this study were to: demonstrate the pelvis and the pelvic limb with one exposure, assess the standard traditional radiographic technique of canine pelvic limb and then to develop a new radiographic technique for pelvic (hind) limb. Pelvic (hind) limb radiography was done with modification in order to obtain new techniques. Six dogs of Sudanese breed (Blue Nile) were investigated. A Poly mobile Siemens X-ray Machine was used. The study was conducted in Police Dogs Administration (Ministry of Interior, X-ray Department). Results: Two new projections were obtained, (1) Lateral projection to visualize both tibiae and feet. (2) A Dorso-Ventral projection to visualize single femur and tibia when the centre point in the side of interest at the level above the hip joint. (2) B: Dorso-Ventral projection to visualize the pelvis and both femurs and tibia when the Centre point at the level midway between the iliac crest and the lower border of the hip joint in the mid line. Conclusions: The Dorso – Ventral projection is the technique of choice when we need to demonstrate pelvis and pelvic limb in one film

Key Words: Pelvic limb, hind limb, canine, Ikhlas projection, Sudanese bread

INTRODUCTION

Ionizing radiation from various sources is used to diagnose a range of medical conditions - from bone fractures to malignant tumors and even changes in the physiological function of an organ. X-rays have been used to produce medical images ever since their discovery in 1895.^[1]

During diagnostic procedures there are two contributions to exposure to the general population from medical x-rays that must be considered. First, occupational exposure to radiation workers must be minimized by optimizing medical procedures.^[2]

Second, it is necessary to avoid medical exposures that are clinically unjustified, repeated and/or unoptimized.^[3] In particular, different population sub-groups are more sensitive to radiation than others and must be observed more closely. For example, pediatric patients are more sensitive than adults, since radio sensitivity is related to the growth rate of the tissue irradiated. In addition, due to their long remaining life expectancy, every neonate has a greater time period for a cancer to develop. Medical diagnostic technology has made rapid strides after the advent of computer. Many of the advances in human diagnostic medicines are translated into veterinary medicine in the developed countries. In brief, newer branches have emerged. The Sudanese local bread Dog is a breed of small-sized dog that originates from Sudan. Sudanese local bread Dog are a fairly new breed of dog. Sudanese local bread Dog are a very

popular selection for use as working dogs. To make a good X-ray image, the dog must lie in correct position. When it is possible, anaesthesia should be avoided: it induces an extreme muscular relaxation that could be responsible for a wrong interpretation of the image. For the same reason, this radiologic examination should not be performed in a bitch during heats.^[4]

MATERIALS AND METHODS

MATERIALS

A Poly mobile Siemens X-ray Machine was used. The study was conducted in Police Dogs Administration (Ministry of Interior, X-ray Department).

METHODS

New techniques

1. Lateral modified (Distal Tibia, tarsus, meta tarsus phalanges and distal caudal spine :) The dog is placed in lateral recumbent position in with both pelvic limbs placed on the cassette the stifles should be slightly flexed and maintain in true lateral posting. The field of the view should include the stifle joint tibia and tarsus joint foot.

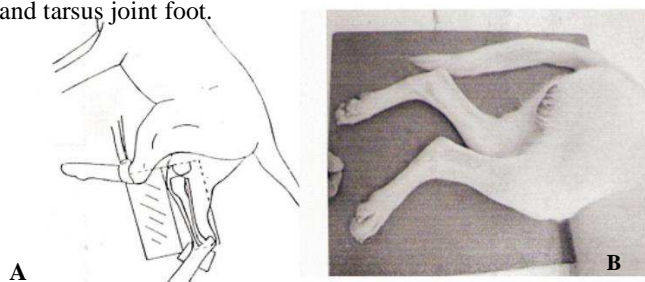


Figure 1: A shows standard lateral view of Tibia and Fibula.(7). B shows lateral modified projection of Tibia, Fibula, Tarsus, Metatarsus and Phalanges.

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2.Dorso-Ventral projection of the pelvis(Ikhlas projection): (Tibia Tarsus, Metatarsus and Phalanges) The dog lies in the sternal recumbent position see Fig. (2 A) center point to the area of interest.

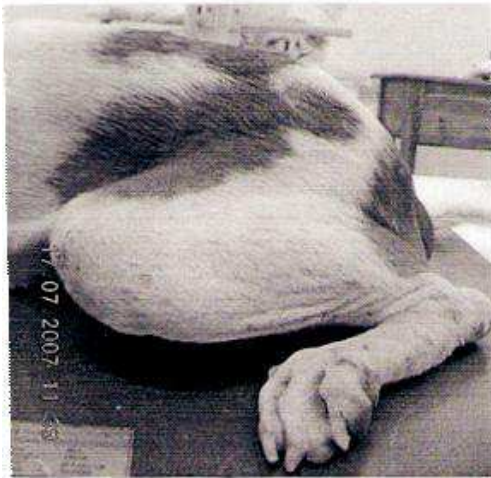


Figure (2):A shows Dorso-Ventral projection of to demonstrate both femur and both Tibia, (Ikhlas projection) 3.Dorso-Ventral projection of the pelvis (Ikhlas projection): (pelvis, both femurs and bothTibia) (DV):

The sedated dog was placed in sternal recumbency with the fore limb flexed at the elbows and the hind limbs flexed at the hips and knees, avoid rotation of the pelvis. The caudal spine was extended caudally to maintain the body in position. Centre point at the level midway between the iliac crest and the lower border of the hip joint in the mid line.

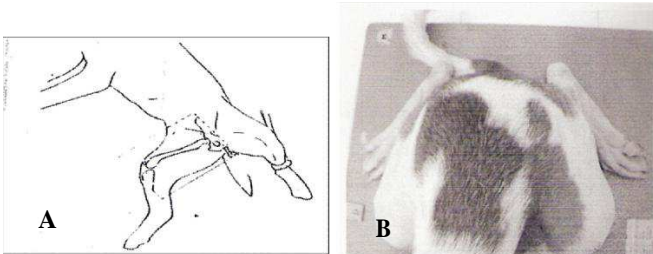


Figure (3)A: shows Standard Lateral view of Femur.Lavin 1999(7) B: shows Dorso-Ventral projection

RESULTS

1/Lateral modified: (Distal Tibia, tarsus, meta tarsus phalanges and distal caudal spine :)



Figure (4). A shows standard lateral view of Tibia and Fibula.(Lavin 1999). B shows lateral modified projection of Tibia, Fibula, Tarsus, Metatarsus and Phalanges.

2.Dorso-Ventral projection of the pelvis(Ikhlas projection): (Tibia Tarsus, Metatarsus and Phalanges)



Figure (5):A shows Dorso-Ventral projection of to demonstrate both femur and both Tibia, (Ikhlas projection) 3/Dorso-Ventral projection of the pelvis (Ikhlas projection): (pelvis, both femurs and bothTibia)



Figure (6)A: shows Standard Lateral view of Femur.(Lavin 1999) B: shows Dorso-Ventral projection of both Femurs and bothTibia

DISCUSSION

Hind limb modifications

The present study showed that by one exposure we can demonstrates the pelvis and the pelvic limb with slight modification in exposure factors (fig3) Modification for the standard lateral (described by Lavin 1999, Douglas 1971)(fig1A) for the tibia and fibula, tarsus, metatarsus and phalanges was done by using one film for all mentioned structures.

Modifications were done to the initial position of the Dorso –Ventral projection of the pelvis DV(Ikhlas projection).^[8] by using large film size (14×14, 17×14 inch) different center point and exposure factors. By this modified projection 30 anatomical structures can be revealed on one film. This technique is differ from the techniques describe by Lavin 1999, Douglas 1971 and Thrall (2007).

CONCLUSION

This study deals comparing between the pelvic (hind) limb radiographic projections to find out new projections added to the traditional ones used for pelvis, pelvic limb with reduction of the radiation dose. The Dorso – Ventral projection is the technique of choice when we need to demonstrate pelvis and pelvic limb in one film

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