

# Radiation dose received to thyroid glands of patients undergoing mammography; A comparison of Cranio Caudal (CC) and Medio Lateral Oblique (MLO) views

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Mammogram plays a major role in diagnosing breast cancers in the medical imaging sector, even though it can cause a radiation hazard on thyroid gland. The main objective of this study was to determine the association of Entrance Surface Dose (ESD) for thyroid between the Cranio Caudal (CC) and Medio Lateral Oblique (MLO) projections.

A total of 75 female patients with the mean age of  $53.1 \pm 8.9$  years were participated for the study. Breast was placed under compression in both the CC and the MLO views. ESD of the skin overlying thyroid was measured by an electronic pocket dosimeter at the level of the palpable thyroid cartilage. ESD for each projection, thickness of the compressed breast and the angle of the MLO view were recorded.

The compression of breast thickness and the angle of MLO projections were evaluated with ESD of CC and MLO views. ESD values of CC and MLO projections were obtained for both right and left sides and the average values of these projections were calculated for each patient. All the patients were subjected to mammogram ESD of CC range from 2.4 to 8.3  $\mu\text{Sv/hr}$  and ESD of MLO range from 2.1 to 9.5  $\mu\text{Sv/hr}$ . ESD values in MLO projections were significantly higher than CC projections ( $p < 0.001$ ). In addition, ESD values of CC and MLO projections are significantly increased with compression of breast thickness (CC:  $p = 0.032$ , MLO:  $p = 0.002$ ). However, no significant associations were found between ESD and the angle of the MLO views (Right MLO:  $p = 0.472$ , Left MLO:  $p = 0.798$ ).

CC view might be effective for patients to be exposed to low amount of radiation to thyroid glands compared with MLO view. In addition, radiation dose to the thyroid gland can be minimized, using proper compression of breast thickness

**Keywords:** Mammography, Radiation dose, Medio Lateral Oblique, Cranio Caudal, Thyroid