

Patient Radiation Shielding Methods in Interventional Radiology: A Literature Review

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Abstract

Background: The increasing complexity and numbers of interventional fluoroscopy procedures have led to increasing patient radiation doses. Consequently, radiation protection of the patients undergoing X-ray procedures is essential. During any medical procedure that uses radiation, the as low as reasonably achievable principle should always be followed.

Objectives: To investigate available shielding methods in an effort to further awareness and understanding of existing preventive measures related to patient exposure in interventional radiology.

Methods: Searches were conducted to locate literature discussing the effectiveness of commercially available shields. Literature containing information regarding eye and thyroid shielding was identified. The selected studies were examined using the following topics as guidelines: the effectiveness of the shield (percentage of dose reduction), the shield's effect on image quality, arguments for or against its use (including practicality) and overall recommendation for its use in clinical practice.

Results: Only a limited number of studies have been performed on the use of shields for the eyes and thyroid, but the evidence shows an overall benefit to their use. This study demonstrates how thyroid shields can be used to reduce dose to the thyroid by almost half. The use of thyroid and eyes shields is not routine but has been studied in patients during interventional procedures. The effect of shielding on image quality was not remarkable in a majority of studies. Although it is noted that more studies need to be conducted regarding the impact on image quality, the currently published literature stresses the importance of shielding in reducing dose.

Conclusions: Available shields for the thyroid and eyes should be implemented in clinical practice. Further research is needed to demonstrate the prevalence of shielding in the clinical setting.

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