

GRIDS: THEIR USE AND LIMITATIONS.

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Sept 2000

Definition: A device used to prevent as much scatter radiation as possible from reaching an X-ray film during an exposure and consists of a series of narrow lead strips.

Scatter radiation is one of the largest single factors contributing to poor diagnostic quality. The patient is the most important cause of scatter. Its effect is to produce a general photographic fog on the film that reduces contrast.

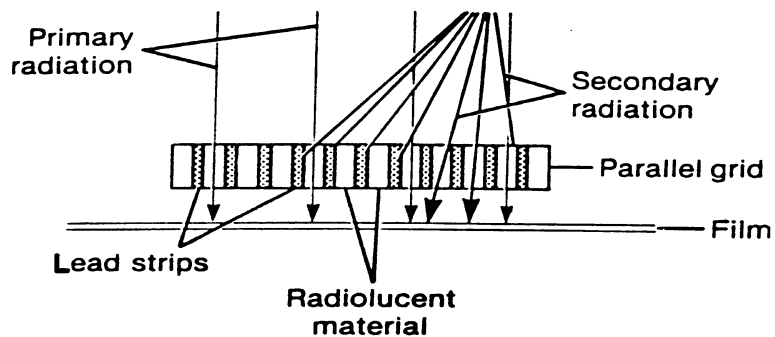
Keeping in mind diaphragms aperture, cones and collimators the greater part of scatter radiation is eliminated by the use of a grid.

Types of grids

- i) Parallel
- ii) Focussed

COMPOSITION OF GRIDS

Grids consist of lead strips separated by strips of translucent material.



FEATURES OF GRIDS

1. Grid ratio - This is the ratio of the height of the lead strips to the space between them.
2. Number of strips - This indicates the number of lead strips per centimetre.
3. Selectivity (quality) - is a measure of the efficiency of a grid.
4. Focus - A grid is said to be focussed or to have a radius if the lead strips are so arranged that their projections converge at a point which should coincide

with focal spot of the tube. If the lead strips are parallel, the grid is said to be non-focused.

Factors 1 to 3 are interrelated and therefore they cannot be altered at will.

AFFECT OF GRID RATIO ON SCATTER RADIATION

The angle at which the scatter impinges on the film becomes smaller when the grid ratio is increased. Thus, scattered radiation can only reach the film from a smaller volume of the object to be radiographed. From above figure it can be concluded that an increase of the grid ratio results in more efficient elimination of scatter.

APPLICATIONS OF GRIDS

Most of the grids are focused. If the focal spot of the tube is arranged centrally over the grid at a distance coinciding with the grid radius and an exposure is then made, the lead strips are recorded on the film as thin lines whose thickness is the same as that of the strips.

LIMITATIONS OF GRIDS

Each grid exercises a directional effect on which the absorption of scattered radiation is based. As most of the scatter deviates from the direction of the primary beam it is absorbed by the flanks of the lead strips so that it has no effect on the film.

In principle, the use of a grid calls for higher exposure data (higher mAs values and higher kilovolts) than in radiography without a grid. - a disadvantage□\