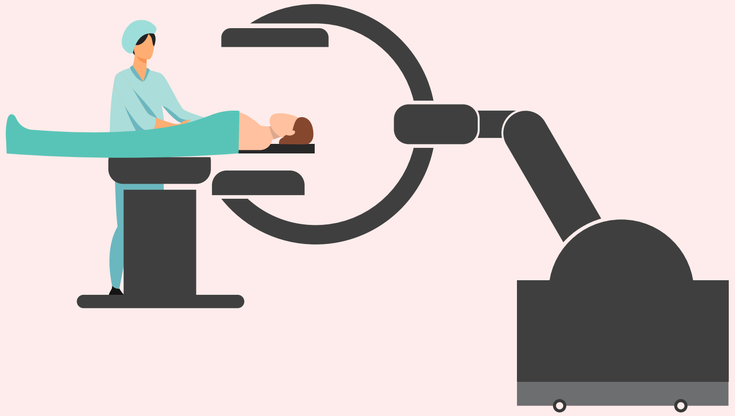
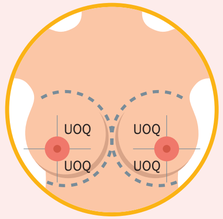
Protecting the Breasts from Intraoperative Radiation in Orthopaedic Surgeons

Orthopaedic surgeons wear lead aprons and vests to protect themselves from intraoperative exposure during surgeries



However, during surgeries, these vests inadequately shield the upper outer quadrant (UOQ)...



...which is the most common breast cancer site and extends into the axilla

Study simulated a surgical setting to evaluate efficacy of lead vest supplements in reducing breast radiation exposure

Anthropomorphic torso phantom (simulating the female surgeon)

C-arm fluoroscopy

Radiation measured on UOQ of each breast

Surgeon positions	C-arm positions	Protection configurations
• Facing the table • 90° to the table	• Anteroposterior • Cross-table lateral	• No lead • Lead vest • Vest + wings • Vest + sleeves • Vest + axillary supplements

Mean scatter radiation to UOQ (mrem/hr) for all testing

97.4
For regular lead vest

0.8
Decreased significantly using sleeves

1.3
Decreased significantly using axillary supplements

59.4
No significant decrease using wing attachments

Cross-table lateral **92.7** ← → **20.5** Anteroposterior projection

Lead sleeves and axillary supplements protect the breast UOQ from scatter radiation irrespective of operative scenario

Methods for Reducing Intraoperative Breast Radiation Exposure of Orthopaedic Surgeons

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