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.

An anthropomorphic torso phantom (simulating the female surgeon) was used.

C-arm fluoroscopy was used to measure radiation on the UOQ of each breast.

<table>
<thead>
<tr>
<th>Surgeon positions</th>
<th>C-arm positions</th>
<th>Protection configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Facing the table</td>
<td>• Anteroposterior</td>
<td>• No lead</td>
</tr>
<tr>
<td>• 90° to the table</td>
<td>• Cross-table lateral</td>
<td>• Lead vest</td>
</tr>
</tbody>
</table>

- Decreased significantly using sleeves
- Anteroposterior projection

- Decreased significantly using axillary supplements
- No significant decrease using wing attachments

**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

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