INTRODUCTION:

- Axillary staging is an important component of the surgical procedure performed in patients with breast cancer.
- Sentinel lymph node (SLN) mapping is regarded as standard of care in staging of the axilla in breast cancer patients with clinically negative axillary lymph nodes.1,2
- Dual dye technique with radio-colloid and blue dye is the gold standard for identification of SLNB.3
- Limitations with dual dye has limited its penetration to the gold standard for identification of SLNB.
- A combination of blue dye and ICG is useful dual approach when material needs to be handled.
- Visualization, lower cost, and wider availability, since no radioactive material needs to be handled.
- As a near-infrared dye, it has the advantages of real-time visualization, lower cost, and wider availability, since no radioactive material needs to be handled.
- ICG is safe & as effective as the dual dye for SLNB.

RESULTS:

- Increasing Number of breast cancer in young patients (~40 years).
- Increasing awareness regarding breast cancer screening allowing detection of early breast cancer.
- Roughly around less than 20-25 centres have facility for nuclear medicine department in entire India.

MATERIALS & METHODS:

- Investigator Initiated Trial
- Study Design: Prospective Observational Study
- Duration: August 2017 – August 2018
- No Of Patients: 60
- IRB Approved
- SLNB procedure was done using technetium-99m radio collloid (R), methylene blue dye (MB), and ICG.
- All SLNs that were removed during surgery were labeled as hot, blue or and fluorescent and sent for pathological examination.
- The detection rate of SLNs and positive SLNs, and the number of SLNs of ICG, MB + R, ICG + MB, ICG + R were compared.
- Modified Delphi consensus developed quality indicators for SLNB questionnaire was also used to assess the quality of SLNB.
- Injection safety of ICG and MB was evaluated.
- SLNB questionnaire was also used to assess the quality of SLNB.
- Modified Delphi Consensus Statement: Sentinel lymph node biopsy quality indicator results.

<table>
<thead>
<tr>
<th>Quality indicator</th>
<th>Proposed target rates</th>
<th>No. % of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathologic evaluation protocol</td>
<td>&gt; 90%</td>
<td>60 (100%)</td>
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<tr>
<td>Pathologic reporting by AJCC guidelines</td>
<td>&gt; 90%</td>
<td>60 (100%)</td>
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<tr>
<td>Protocol for injection of radiocolloid</td>
<td>&gt; 90%</td>
<td>60 (100%)</td>
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<tr>
<td>Proportion identification of SLN</td>
<td>&gt; 90%</td>
<td>60 (100%)</td>
</tr>
<tr>
<td>SLNB performance in eligible patients</td>
<td>&gt; 80%</td>
<td>14/16 (87.50%)</td>
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<tr>
<td>SLNB concurrence with histopathology/maintenance</td>
<td>&gt; 80%</td>
<td>32/32 (100%)</td>
</tr>
<tr>
<td>Completion ALND for positive SLNB</td>
<td>&gt; 75%</td>
<td>12/16 (75%)</td>
</tr>
<tr>
<td>SLNB performance in ineligible patients</td>
<td>&gt; 5%</td>
<td>0/0</td>
</tr>
<tr>
<td>Axillary node positivity rate</td>
<td>&gt; 5%</td>
<td>60/60 (100%)</td>
</tr>
<tr>
<td>Number of nodes removed</td>
<td>&gt; 70%</td>
<td>60/60 (100%)</td>
</tr>
<tr>
<td>Axillary clearance rate at 5 years</td>
<td>&lt; 3%</td>
<td>Need follow up</td>
</tr>
</tbody>
</table>

IDENTIFICATION RATES

- Sensitivity 100% (CI 95.62% to 100.00%)
- Specificity 100% (CI 95.62% to 100.00%)
- Positive Predictive Value 100%
- Negative Predictive Value 100%
- Accuracy 100%

COMPLICATIONS

- None of the patients had any local or systemic reaction with ICG
- 3 patients with blue dye had tattooing & staining of skin

ADVANTAGES OF ICG

- Lymphatic channel visualized
- Site of Skin incision
- Easy to prepare
- Easy to handle
- Easy to use
- No skin necrosis, tattooing, ulceration
- No Nuclear medicine
- No technician
- Solution prepared by doctors
- Intraoperative injection
- Not Radioactive
- Alone 95-98%
- No special licensing or storage procedure

CONCLUSION:

- ICG is safe & as effective as the dual dye for SLNB.
- In addition, as a near-infrared dye, it has the advantages of real-time visualization, lower cost, and wider availability, since no radioactive material needs to be handled.
- A combination of blue dye and ICG is useful dual approach when radionuclide is unavailable.
- The higher SLN retrieval number for ICG compared with conventional methods in literature breast cancer setting indicate ICG may be an optimal tracer for SLNB after NAC.
- It can be a boon for developing countries & second tier centers of developed country where there is limited access to nuclear medicine department facility & the cost involved in its establishment.