

# ICG-GUIDED EVALUATION OF FLAP PERFUSION IN SKIN- AND NIPPLE-SPARING MASTECTOMY



## AIMS

To establish the utility of Indocyanine Green (ICG) angiography as a real-time, objective method to assess mastectomy flap perfusion, facilitating enhanced surgical decision making and ensuring the safe completion of nipple sparing mastectomy with immediate silicone implant-based reconstruction.

## RESULTS

- ICG angiography identified perfusion deficits in 8 patients, leading to immediate intraoperative revision; postoperative flap necrosis occurred in 2 patients with low fluorescence, compared with none in those with normal ICG patterns ( $p < 0.05$ ).
- Silicone implant loss occurred in 2.5% of cases, and using ICG increased the operative time by only 9 minutes on average.
- Surgeons reported greater confidence in intraoperative decision-making in 86.5% of procedures.

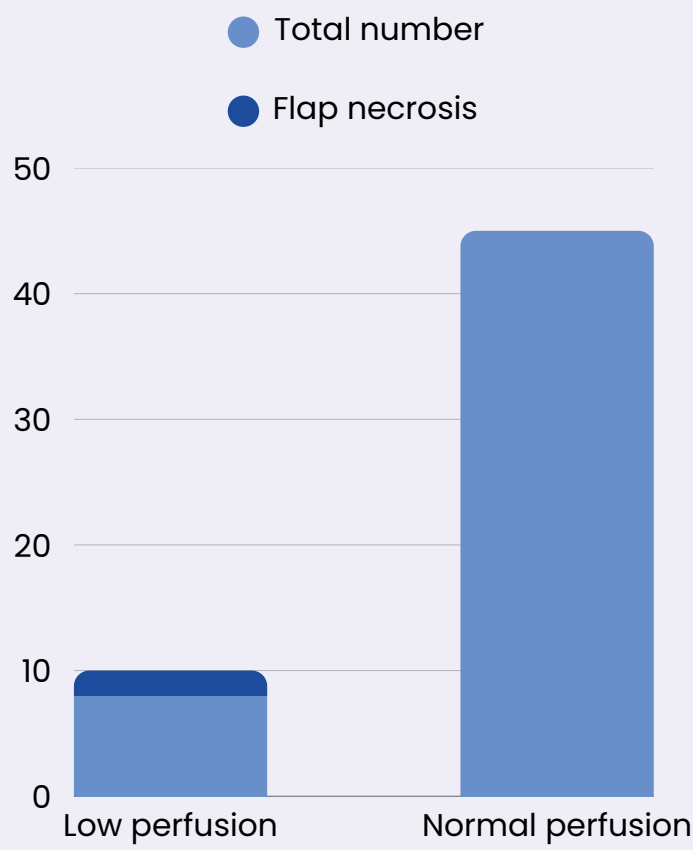
## METHODS

- A prospective study was conducted involving 53 female patients who underwent skin or nipple-sparing mastectomy with immediate implant-based reconstruction between January 2023 and July 2025.
- Following flap elevation, 2.5 mg of ICG dye was administered intravenously, and perfusion was assessed using near-infrared fluorescence imaging. Areas of low perfusion were intraoperatively managed by excision or delayed closure.
- Postoperative outcomes, particularly ischemic complications, were monitored for 30 days.

Figure 1: A 43-year-old female with multicentric breast cancer underwent nipple-sparing mastectomy. Indocyanine green was administered after flap elevation, demonstrating normal perfusion. The procedure proceeded using the three-pedicle flap technique while preserving the nipple.



Figure 2:  
Bar chart showing the incidence of flap necrosis in the low-perfusion group.



## CONCLUSIONS

ICG angiography offers a rapid, reliable, and objective assessment of flap perfusion in skin- and nipple-sparing mastectomy. Incorporating ICG into intraoperative evaluation significantly reduces ischemic complications and enhances reconstructive safety, with minimal additional operative time

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