

# Use Of Sentinel Lymph Node Biopsy and Pre-operative Imaging In High-Risk Patients Undergoing Prophylactic Risk-Reducing Mastectomies; A Retrospective Cohort Study

*Kabhisha Gunasekaran; Ran Li; Anitha Karunairajah; Yang Huang*  
Sir Charles Gairdner Hospital, Australia

## Introduction

Many high-risk patients prefer to avoid sentinel lymph node biopsy (SLNB) if unnecessary due to risks of complications such as lymphedema and axillary paraesthesia.<sup>1,2</sup> This study aims to investigate the likelihood of **occult malignancy in high-risk patients undergoing risk-reducing prophylactic mastectomy (RRPM)** to clarify the significance of performing **SLNB and imaging pre-operatively**.

## Materials and Methods

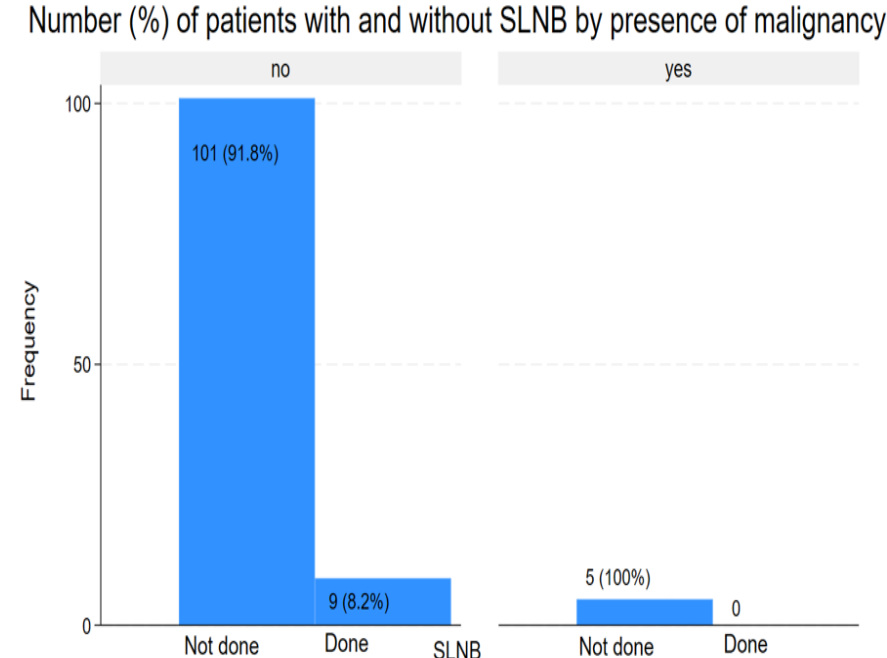
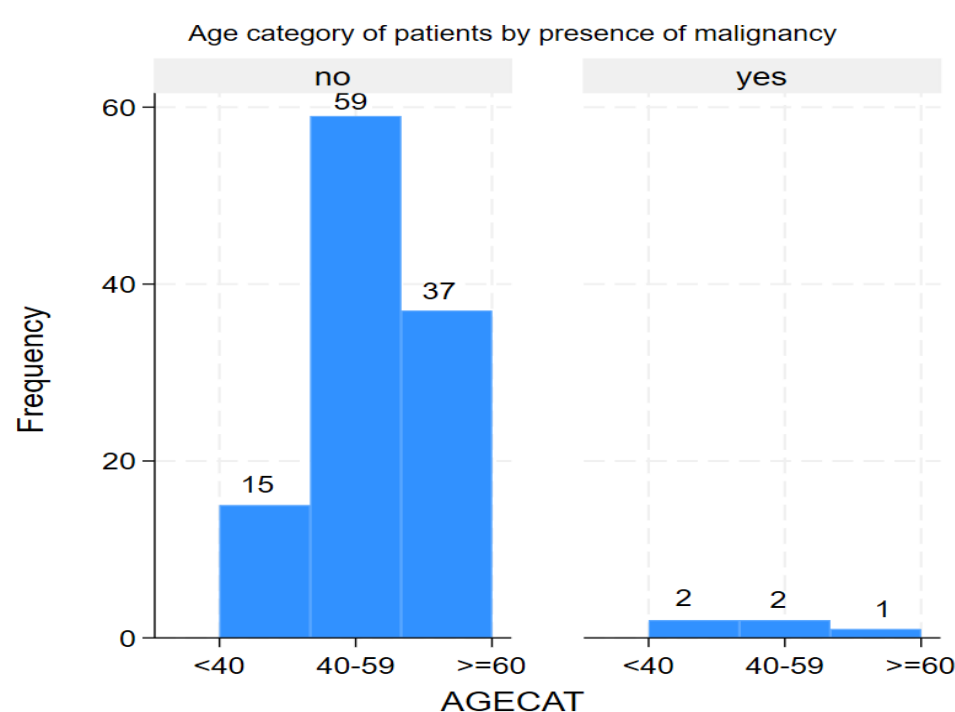
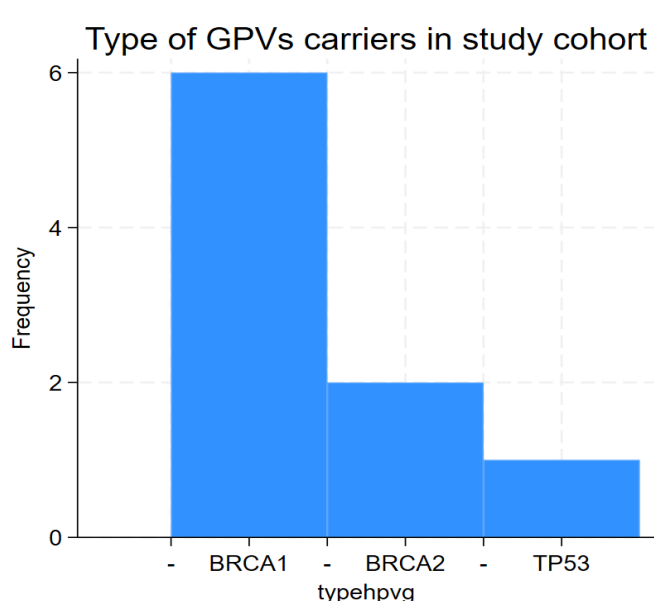
The study, approved by the research institutional review board, retrospectively analysed data from 118 patients who are high risk including those germline pathogenic variants (GPVs) carriers, and those with a personal or strong family history of breast cancer who underwent RRPM, either unilateral/contralateral (CPM) or bilateral (BPM) at Sir Charles Gairdner Hospital between 2015 and 2022. Patients undergoing therapeutic mastectomy solely were excluded. Detailed examination of the mastectomy specimen included outcomes focused on occult malignancies. Data on clinical characteristics and demographics, and radiologic factors were collected.

## Conclusion

Occult malignancy was found in 3.85% of RRPM in our institution in line with current standards. The study concludes that **SLNB in the setting of RRPM may be safely omitted in patients with normal pre-operative breast MRI imaging**.

## Discussion

Study show 0.8% incidence of occult invasive malignancies during RRPM in high-risk patients.<sup>1</sup> Factors associated with increased risk included history of past or current breast cancer. A study showed **MRI sensitivity for occult malignancy identification was 78%**, and therefore **SLNB omission is safe during RRPM if there is evidence of negative preoperative MRI due to high assurance that chance of occult invasive carcinoma happening is unlikely**.<sup>3</sup> Our study showed zero incidence of occult malignancy among patients with preoperative MRI done within 6 months, those with SLNB performed, and in GPVs carriers. Thus, **SLNB might be unnecessary and may be safely omitted in patients with low-risk MRI findings**. Studies have suggested that SLNB should be offered to high-penetrance GPVs carriers with risk factors, especially if the detection of node-positive disease would influence decision on further local or systemic therapy.<sup>1</sup> Our study faced limitations such as its retrospective design, low malignancy incidence and absence of preoperative MRI for all patients.



## MRI BIRADS finding among patients undergoing mastectomies (number, %)

mrIBIRADS	Freq.	Percent
0	2	16.67
1	4	33.33
2	3	25.00
4	3	25.00
Total	12	100.00

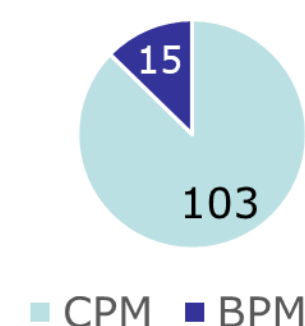
## Number (%) of occult malignancy among patients undergoing mastectomies

Malignancy	Number (%)
No	111 (96%)
Yes	5 (4%)

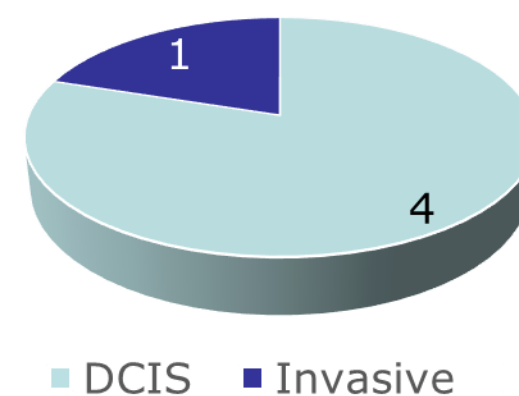
## Results

118 (114 women, 4 men) patients underwent RRPM. There were 9 GPVs carriers identified. **All GPVs carriers did not have an incidence of occult malignancy**. Only 12 patients had preoperative magnetic resonance imaging (MRI) within six months and none had occult cancer. The median age was 54 years (IQR 19, 45-64 years). Of the total, 15 (12.7%) and 103 (87.3%) underwent BPM and CPM, respectively. **Occult malignancies were found in 5 (3.85%) mastectomies. Occult invasive malignancy was found in 1(0.77%) of mastectomies**. The likelihood of occult malignancy was higher (3.85%) in patients with a history of breast cancer; 1(20%) and 4(80%) patients had current and past history, respectively. Our study shows that if **preoperative MRI shows BIRADS 1 or 2 findings**, the incidence of **occult malignancy was zero. All five patients with occult malignancy did not have a pre-operative MRI. SLNB was performed in 9 (6.9%) mastectomies and all had a negative biopsy with no malignancy in RRPM specimen**.

## Type of mastectomies performed



## Type of malignancy in RRPM specimen



## References

- 1) Wong SM, Ferroum A, Apostolova C, et al. Incidence of occult breast cancer in carriers of *BRCA1/2* or other high-penetrance pathogenic variants undergoing prophylactic mastectomy: when is sentinel lymph node biopsy indicated?. *Ann Surg Oncol*. 2022; 29:6660-6668. doi:10.1245/s10434-022-11916-3
- 2) Kauff ND, Brogi E, Scheuer L, et al. Epithelial lesions in prophylactic mastectomy specimens from women with *BRCA* mutations. *Cancer*. 2003; 97:1601-1608. doi:10.1002/cncr.11225
- 3) McLaughlin SA, Stempel M, Morris EA, et al. Can magnetic resonance imaging be used to select patients for sentinel lymph node biopsy in prophylactic mastectomy?. *Cancer*. 2008; 112(6):1214-21. doi:10.1002/cncr.23298.