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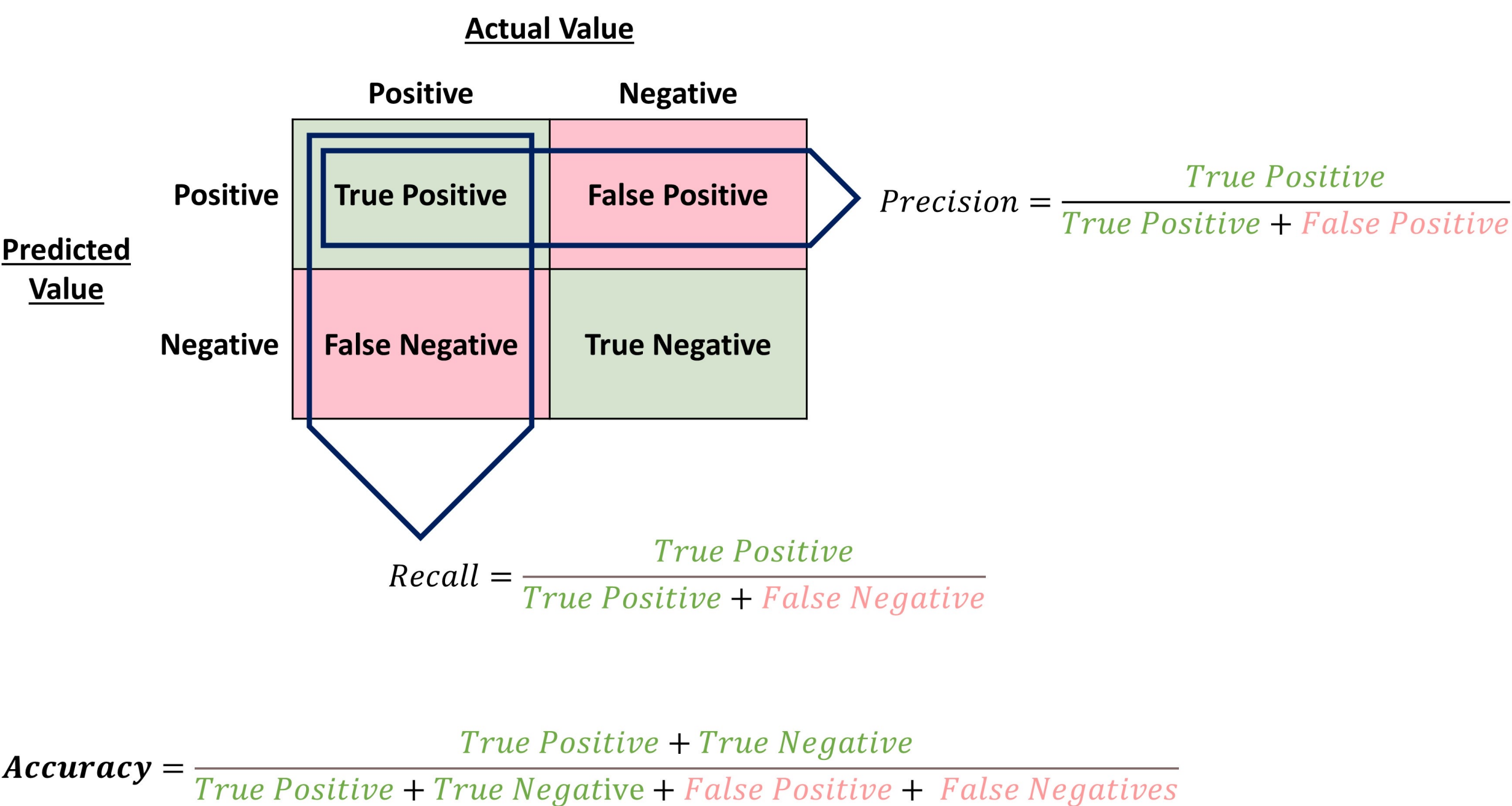
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Background

- Variations of upper extremity lymphatic anatomy may explain an individual’s predisposition for developing breast cancer-related lymphedema (BCRL) after axillary lymph node dissection (ALND)
- There are limited modalities to treat BCRL, and treatment relies on early detection and intervention
- We evaluated the utility of variations in superficial lymphatic anatomy for predicting BCRL development by utilizing machine learning algorithms

Methods

- Breast cancer patients underwent pre-operative indocyanine green (ICG) lymphography to map the superficial lymphatic anatomy of their upper extremity on the affected side
- Thirty-one (31) anatomic features were included in the model to define superficial lymphatic anatomy
- Random Forest machine learning algorithm was utilized for missing data imputation and to construct a predictive model for BCRL development based on demographics and superficial lymphatic anatomy
- The dataset was divided: 80% for training and 20% for validation



Results

- Among 124 included patients, 31 (25%) developed BCRL

Table 1. Validation of BCRL prediction model

	Precision	Recall	F1-Score	Support
No Lymphedema	0.82	0.95	0.88	19
Lymphedema	0.67	0.33	0.44	6
Accuracy			0.8	25
Weighted Average	0.78	0.8	0.77	25

Discussion and Conclusion

- Baseline superficial lymphatic anatomy of the upper extremity demonstrates some utility in predicting the development of BCRL
- Future development of machine learning models will improve improve prediction of postoperative outcomes in plastic and reconstructive surgery