

MICROCALCIFICATION: WHAT IS THE OPTIMAL MAMMOGRAPHIC ASSESSMENT?

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BACKGROUND: Microcalcification is a common finding. A standard workup may include a lateral projection of the whole breast and lateral and CC paddle magnification views. Some centres no longer use magnification views, relying on digital zoom. The use of digital breast tomosynthesis (DBT) varies.

METHOD: Our centre evaluates microcalcification with co-registered 2D digital mammography (2DDM) and DBT in the lateral projection with lateral and CC paddle magnification compression views.

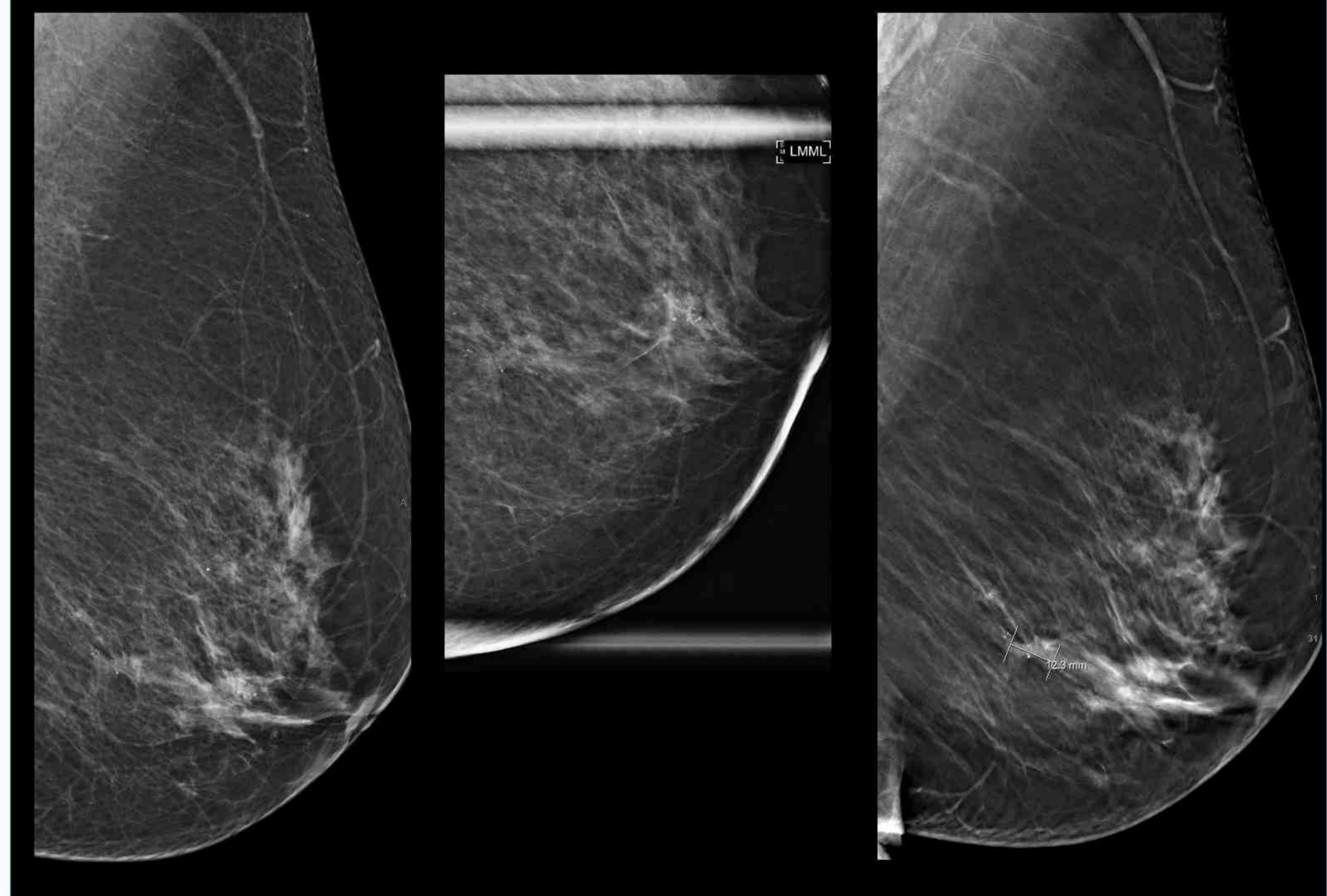
Retrospective review of 103 consecutive cases of histologically confirmed malignant microcalcification using 9G x-ray guided vacuum (VAB). Mammographic views were read sequentially and scored M3-M5. Additional soft tissue on DBT was recorded. A continuous zoom of up to x8 was used to review the 2DDM.

CONCLUSION: We recommend and re-inforce magnification views for the optimal assessment of microcalcification. Lateral DBT also improves reader confidence in predicting malignancy compared with 2DDM and may aid biopsy targeting. The 2D lateral mammogram had no benefit in this study; we propose synthetic 2D imaging with DBT could replace this.

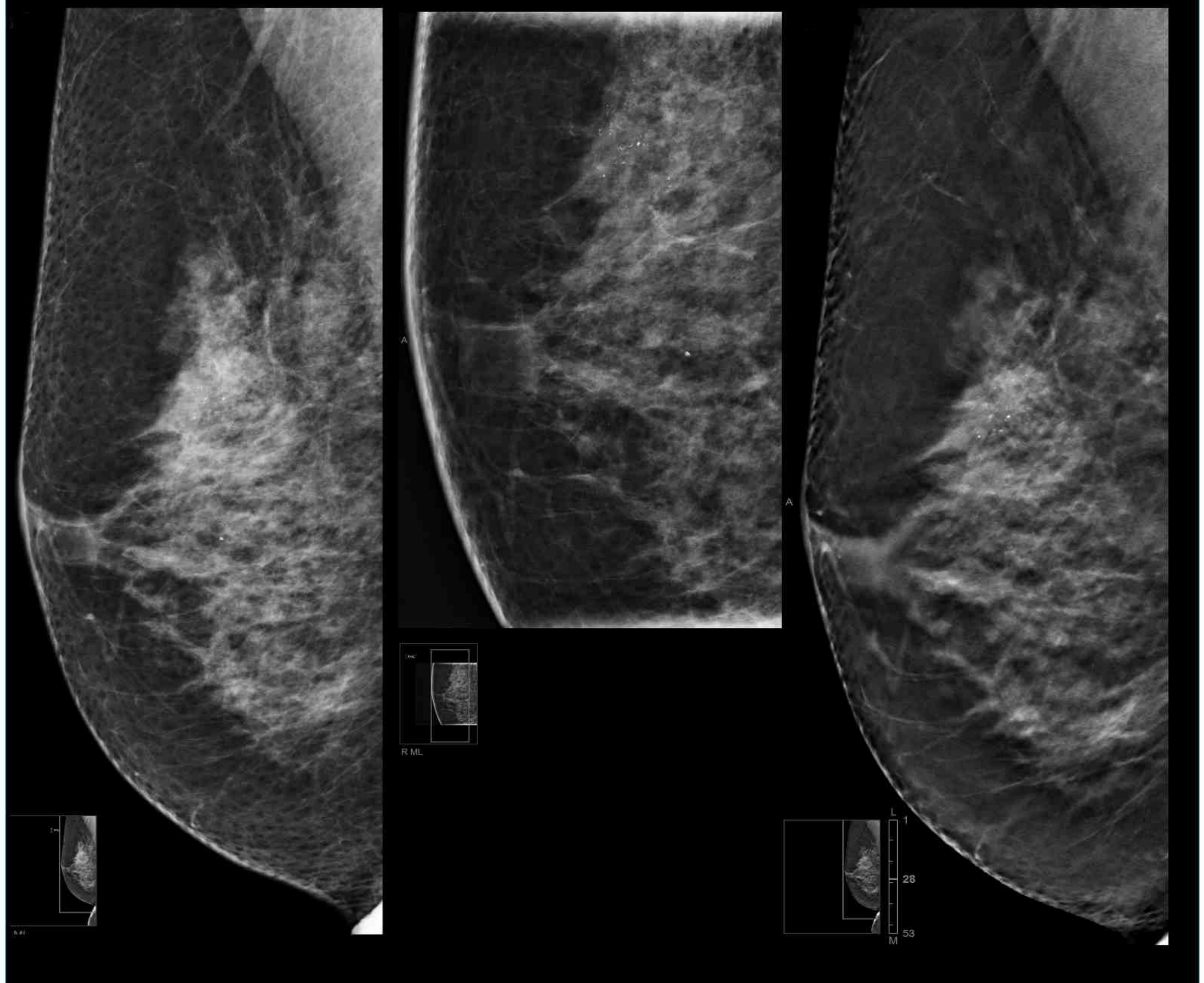
RESULTS:

- Lateral DBT and magnification views independently increased mammographic suspicion in comparison to 2DDM with statistical significance.
- 20.6% of cases were scored M4/5 on 2DDM. This compared with 54.9% on DBT (p-value 0.0002), 49.5% with magnification views (p-value 0.0002) and 16.8% with lateral 2D (p-value 0.472).
- 37.5% of DBT cases demonstrated soft tissue that was not visible on the 2D mammograms increasing the suspicion level in those cases. 13 cases in the study showed an upgrade from VAB at final surgical pathology. 77% (10/13) of the upgrades had a soft tissue abnormality on DBT.

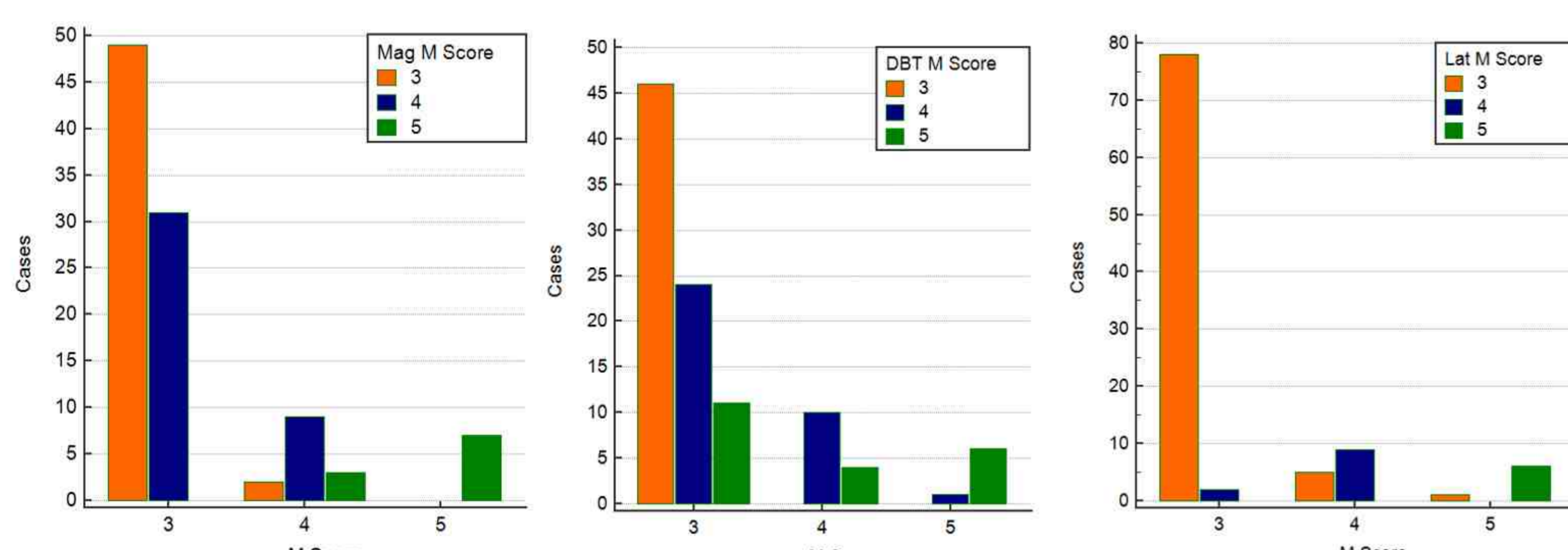
CASE EXAMPLE: 12mm IDC gd 2 plus 68mm HG DCIS



CASE EXAMPLE: 3mm IDC gd 2 plus 33mm HG DCIS



The bar charts below demonstrate the distribution of the M scores for magnification views, DBT and Lateral 2D against 2DDM.



| Magnification | 2DDM | | | DBT | 2DDM | | |
|---------------|------------|------------|----------|------------|------------|----------|---|
| | 3 | 4 | 5 | | 3 | 4 | 5 |
| 3 | 49 | 2 | 0 | 46 | 0 | 0 | |
| 4 | 31 | 9 | 0 | 24 | 10 | 1 | |
| 5 | 0 | 3 | 7 | 11 | 4 | 6 | |
| | 80 (79.2%) | 14 (13.9%) | 7 (6.9%) | 81 (79.4%) | 14 (13.7%) | 7 (6.9%) | |

| Lateral | 2DDM | | | DBT | 2DDM | | |
|---------|------------|------------|----------|------------|------------|----------|---|
| | 3 | 4 | 5 | | 3 | 4 | 5 |
| 3 | 78 | 5 | 1 | 46 | 0 | 0 | |
| 4 | 2 | 9 | 0 | 24 | 10 | 1 | |
| 5 | 0 | 0 | 6 | 11 | 4 | 6 | |
| | 80 (79.2%) | 14 (13.9%) | 7 (6.9%) | 81 (79.4%) | 14 (13.7%) | 7 (6.9%) | |

The 2DDM and the Mag showed an agreement significantly above that expected by chance alone. According to established benchmarks, DBT had a fair agreement with 2DDM (Kappa=0.385; P=0.0001) while Mag had a moderate agreement with DBT (Kappa=0.411; P=0.0001). This suggests that the agreement with the Mag is significantly better for 2D (Kappa=0.594; P=0.0001).

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