

How Representative are Tissues Donated to Specialist Breast Cancer Biobanks? A Retrospective Analysis of the Breast Cancer Now Tissue Bank

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Background: Specialist tissue banks are a valuable resource for researchers, facilitating access to both tissue and longitudinal clinical follow up data. The Breast Cancer Now Tissue Bank (BCNTB) provides access to both fresh frozen and formalin fixed samples donated by breast cancer patients. An issue facing biobanks is how truly representative these samples actually are; according to the NCIN the average size of excised breast tumours has significantly decreased in the last 20 years. It has been hypothesised that sampling methods, and the need to retain sufficient tissue for diagnostic purposes, may result in a bias towards larger tumours being banked. This study aimed to compare the sizes of tumours banked by BCNTB with published national data, to see if samples were truly representative of breast cancers nationwide.

Methods: A retrospective analysis was performed on 2415 patients who consented to donation to the Leeds and Barts BCNTB from 2010-2018. Data was retrieved from electronic patient records on invasive tumour size. Patients who had undergone neoadjuvant therapy were excluded. Invasive tumour sizes for screened and symptomatic cases were then compared with national NCIN data from 2006 and 2011 in predefined categories of <15mm, 16-20mm, 21-35mm, 36-50mm, and >50mm.

Results: The data collected from Leeds and Barts were comparable in both screened and symptomatic cases. As expected, the screened cohort had a greater number of cases <15mm, and symptomatic patients had an increased proportion of tumours >20mm. Overall, 58.3% of screen detected breast cancers were <15mm, compared with 52.8% nationally. For symptomatic breast cancers, 36.1% were <15mm, compared with 22% nationally.

Conclusion: We found no evidence of bias towards the banking of larger tumours using the pre-established size groups. However, the most recent national data was from 2011, hence our data may need to be compared with more recent figures. With smaller tumours being detected through screening (e.g.

<10mm), future work should examine strategies to usefully bank these cases.