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Surgical treatment of fragmented focal breast tumours in response to neoadjuvant chemotherapy

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Introduction: Breast cancer is considered to be one of the most common chronic conditions worldwide. Fragmentation is the process by which a single circumscribed mass or an infiltrating area breaks down into multiple small tumour foci after treatment with Neoadjuvant chemotherapy (NAC). The main benefit gained from administering NAC to breast cancer patients is to reduce the tumour size. This permits Wide Local Excision (WLE) surgery in patients who otherwise would need a mastectomy.

Aim: This study aimed primarily to determine whether the fragmentation of tumours on MRI can influence the surgical decision. Its secondary aim was to analyse the features of fragmented tumours versus non-fragmented tumours after treatment with NAC on both MRI and post-surgical pathology (pathology was used as a gold standard).

Methods: The data was retrospectively analysed using prospectively collected data using the Patient Pathway Manager (PPM) software. Breast cancer patients who had been diagnosed between 2005 - 2010 and treated with NAC were reviewed (166 patient records) at the Leeds General Infirmary. Only those that were fragmented on MRI were considered (n=10).

Results: Ten patients had fragmented breast tumours, all of which underwent the initial planned surgery (3 WLE; 7 Mastectomy)

In addition, a spearman rank correlation of 0.8 was found between the size of the fragmented tumours measured on pathology versus MRI, whereas non-fragmented tumours showed a weaker correlation.

Moreover, the MRI scans have shown that the median baseline and final size of fragmented tumours were 45 mm and 27 mm, respectively, whereas median baseline and final size of non-fragmented tumours were 35 mm and 14.5 mm, respectively.

Conclusion: The results of this review have shown that fragmentation of focal breast tumour did not affect the initial planned surgery. In addition, there was a strong correlation between the size of the fragmented tumour measured on pathology versus MRI.

In general, the tumour type did not affect whether the tumour became fragmented or not after NAC was given to the patients (the majority were IDC. Furthermore, fragmented tumours tend to have a larger median overall size on both baseline and final MRI than non-fragmented tumours, which might potentially affect the initial surgical procedure plan.

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