



# The Most Common Differential Diagnosis



**Dalia Aly Mohamed Aly Abou Taleb\***

*Demonstrator, Faculty of Applied Medical Sciences, Misr University for Science and Technology, Egypt*

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**\*Corresponding author:** Dalia Aly Mohamed Aly Abou Taleb, Demonstrator, Faculty of Applied Medical Sciences, Misr University for Science and Technology, Egypt

## Scar tissue

Is fibrous and normally gives no visible color Doppler, asymmetry of the scar and the presence of visualization is suspicious for recurrence [1].

## Tumor recurrence

After mastectomy or at a short distance from the scar have similar color Doppler finding to primary tumor [2].

## Fibroadenomas

Are generally less vascular than malignant tumors, but with modern equipment it is possible to detect flow in the majority. Fast growing fibroadenomas in young patients can be very vascular. The vessels less tortuous and don't penetrate perpendicular on the surface. Many fibroadenomas have only one visible vascular pole. Spectral Doppler measurements show low resistance flow less than 0.6 in most cases, with similar flow in and around the mass [3].

## Large Papillomas

Are seen as solid, well vascularized masses with a low RI; even in lesion of 3-4 mm it is possible to detect the vascular pole with color Doppler [3].

## Axillary lymphadenopathies

Show strong color Doppler signals but unlike in primary tumors, measurements of RI are not conclusive in lymph nodes, and in most cases a low resistance pattern is found [4].

## Mastitis and inflammatory carcinoma

Are often characterized by a diffuse increased flow in the pathological areas [5].

## Other uses

### With MRI of the breast

Small hyper intense spots caused by vascular structures can sometimes be seen, making it difficult to differentiate from a small tumor. Careful ultrasound and Doppler investigation of the suspicious area, based on the MRI findings, can demonstrate these vascular elements and rule out malignancy.

### In case of ultrasound guided biopsy

Color Doppler can help in avoiding larger vascular structures, thereby reducing the risk of hematoma [5].

### The use of ultrasound contrast media

Echo enhancers will facilitate analysis of vascularization as Doppler signals are enhanced by up to 25 dp [6]. New techniques, such as time of passage of contrast through the tumor, or wash out measurements, are currently under clinical evaluation and show promising results. Contrast enhancement diagrams over time can be produced, similar to MRI measurements, but currently available scanners have not yet implemented these capabilities. Preliminary studies using this (perfusion index gave complete discrimination between benign and malignant lesions [7]. This index allows a more quantitative analysis of blood flow than is the case with rather subjective interpretation of the color signals. So, color Doppler ultrasound is a standard feature on modern equipment and offers an additional set of ultrasound diagnostic criteria which added to the imaging characteristics and dynamic features of the breast cancer and gives further improvement in the value of ultrasound in breast diseases [5].

It's very helpful in differentiation of breast cancer from the other lesions as the malignant lesions tend to have high resistance flow [8], in most breast carcinomas. And, in biopsy to choose the best site for introduction of the needle, to decrease the

hematoma. In the future Echo enhancers will facilitate analysis of vascularization as Doppler signals are strongly enhanced [9]. Combination with MRI findings of small hyper-intense spots, careful ultrasound and Doppler investigation of the suspicious area can demonstrate the vascular elements and rule out malignancy [5]. So, the use of Doppler will increase the time of examination little but can offer more diagnostic confidence in many situations [10-16].

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