

Computed Tomography Laser Mammography is a method of examining the female mammary gland, which works by shining a non-absorbent laser light through the breast, where it is eventually absorbed (Dear Dr Helbich - If the light is non-absorbent, how does it become absorbed - i.e. is it absorbed only by a tumour area?) and processed. You need a computer to collect the data and for tomography of the multi-slice images, hence the forenames computed tomography. The difference between this and conventional mammography examinations is that there is no ionising radiation, so patients are not exposed to that. Another advantage is that the breast is not compressed during the examination and the patient feels no pain. While lying on her front, the breast is lowered into an opening in the table, and an examination can be carried out very quickly - and repeated as often as required. This is a brilliant method for young patients, those at particularly high risk and for patients with breast implants.'

Could CTLM become the sole method of examination?

'We are still in the trial phase, but the objective is to find an alternative to conventional mammography and ultrasound. Initially, CTLM is a method that has to be used in combination with other imaging diagnostic procedures. We are learning a lot about the interdependencies between CTLM and mammography and CTLM and ultrasound. The next step will be to use CTLM completely alone, but we are not quite there yet.'

Are there comparative studies for this and other methods?

'Some are being carried out by a number of institutes and hospitals in several countries. In the USA the first results, from a large-scale study with trial groups ranging between 50 and 1,000 patients, are currently being presented at various congresses. FDA licensing is expected there soon.'

CTLM is a completely new procedure for all of us; it can determine morphological changes, such as changes in the blood supply to tumours. Diagnosticians know that it is not always easy to differentiate between benign and malignant tumours. CTLM seems to be developing into a method that essentially makes the tumour light up, helped by a fluorescent media that is similar to contrast media but used in much smaller quantities. Therefore, tumours that might otherwise be overlooked can be diagnosed using this method. So, I believe that the future of CTLM will be its use in combination with these types of fluorescent media.

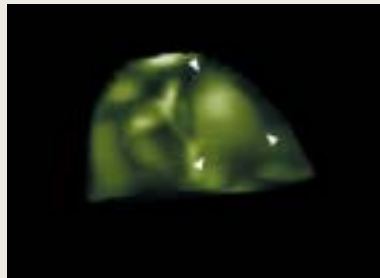
Initially, will these images be difficult to read?

'We'll learn about it just as, way back, we learned about ultrasound scanning. Those images were nothing like as good then as they are now. When the handbook for CTLM is completed and the initial training period is over, we should be able to familiarise ourselves with this new method very quickly, particularly from the experience of using it in about 2-300 trial cases. This is an innovation - and if we don't press ahead with it, somebody else will. There's always a political decision as well.'

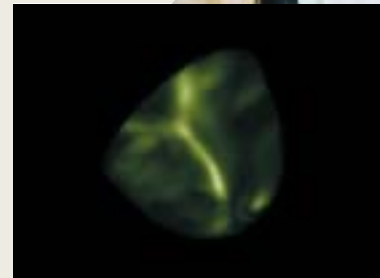


Computed Tomography Laser Mammography CTLM

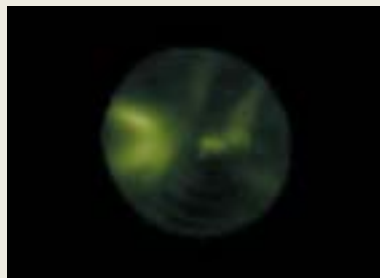
Dr Thomas Helbich, head of the Women's Imaging Department, University Clinic for Radiodiagnostics, AKH Vienna, describes the development and potential advantages of CTLM



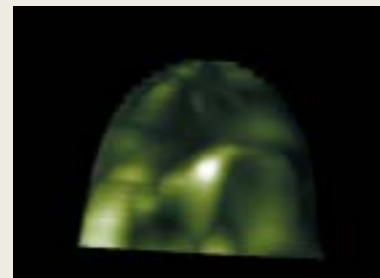
43-year-old with histologically verified invasive ductal breast cancer. The correlative in the CTLM is the shape of suspect absorption across a 30mm area



CTLM of a 46-year-old, without pathological findings and no evidence of suspect absorption. The image shows a blood vessel with branches close to the chest wall



38-year-old patient with breast implants: The implant is completely transparent for the CTLM laser; only in the medial (left in this case) part of the breast can two blood vessels be seen



70-year-old patient with the following histological diagnosis: Invasive ductal breast cancer of medium differentiation of around 2cm; the correlative in the CTLM is a lesion with suspect absorption of about 3cm

Once CTLM is established, won't women demand this diagnostic method?

'I don't believe it's every woman's right to choose whichever examination method they think is best. However, I imagine patients will exert a certain degree of pressure for this method. I'm saying this with a lot of caution, but our first results certainly indicate that it is at least as good as combined mammography and ultrasound.'

As a rather middle-aged radiologist I'm seeing the beginning of a new era in my field. CTLM is one of the first methods that can be used in a rather ground-breaking way - by leading us towards molecular imaging. At some future stage, I'm sure we'll be able to "light up" single human cells, along with the smallest cellular changes.'

This will be a very exciting subject for the next few years.
'Yes, and I think we will live to see it.'



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