Real-time ultrasound elastography in the diagnosis of newly identified thyroid nodules in adults: the ElaTION RCT

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Plain language summary

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Plain language summary

About half the population will have lumps in their thyroid if examined by an ultrasound scan but may not know they have one. About one in twenty people will feel a thyroid lump in their neck at some time in their life, with about one in twenty of those being malignant. Currently, the recommended way of getting a diagnosis of thyroid nodules is by using ultrasound to guide a needle to get cells from the lump, called ultrasound-guided fine-needle aspiration cytology. These cells are examined to determine the cause of the lump. If there are enough cells, Doctors can then make a diagnosis of whether the lump is benign or malignant. If not, patients will undergo another ultrasound-guided fine-needle aspiration cytology. One in five ultrasound-guided fine-needle aspiration cytologies are non-diagnostic with an overall false-positive rate of approximately 24%. This means one in five patients, with benign disease, may undergo unnecessary diagnostic operations. Thyroid surgery carries risks of complications, which could be avoided if we had better ways to diagnose which patients actually need an operation.

We conducted a randomised trial, ElaTION, to determine if a new technology called strain and shear wave elastography, commonly known as real-time elastography, would be better at helping the radiologist take a sufficient sample of cells and reduce the number of non-diagnostic results, reducing the number of fine-needle aspiration cytologies required to make a definitive diagnosis.

Nine hundred eighty-two patients were recruited between 2015 and 2018 and followed up until the end of the trial. Patients were randomised into two groups: 489 patients received the standard ultrasound-guided fine-needle aspiration cytology alone, and 493 patients received ultrasound-guided fine-needle aspiration cytology + shear wave elastography. Ultrasound shear/strain wave elastography did not reduce non-diagnostic cytology at first fine-needle aspiration cytology or improve the likelihood of determining whether the lump is benign or malignant.

The results of ElaTION do not support the use of shear wave elastography-fine-needle aspiration cytology in the diagnosis of thyroid nodules.

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This article

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