

**CARCINOMA DIFFERENZIATO DELLA TIROIDE:
DALLA DIAGNOSI AL FOLLOW-UP**

Bologna, 21 Marzo 2009

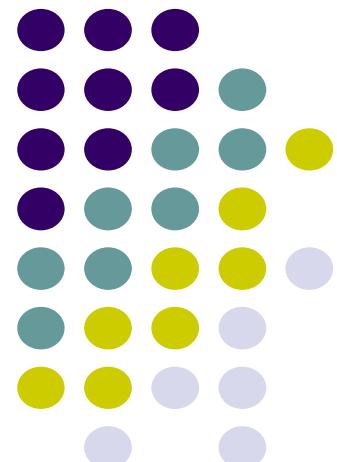
**Ruolo diagnostico della ecografia
Certeze di oggi e nuove prospettive**



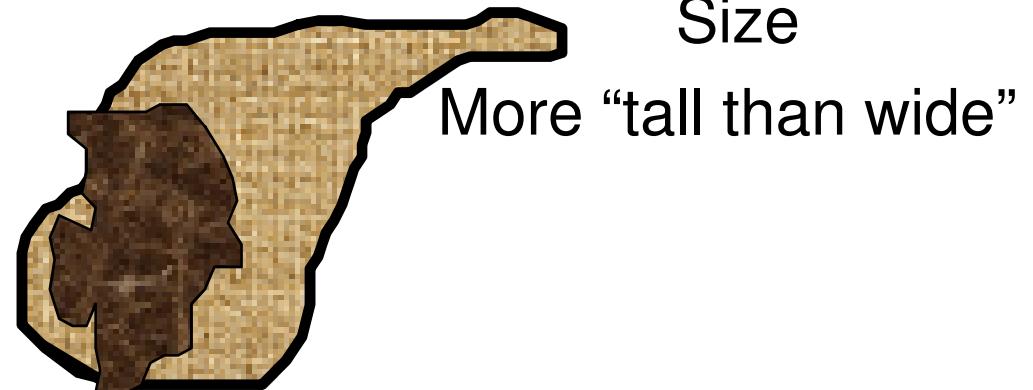
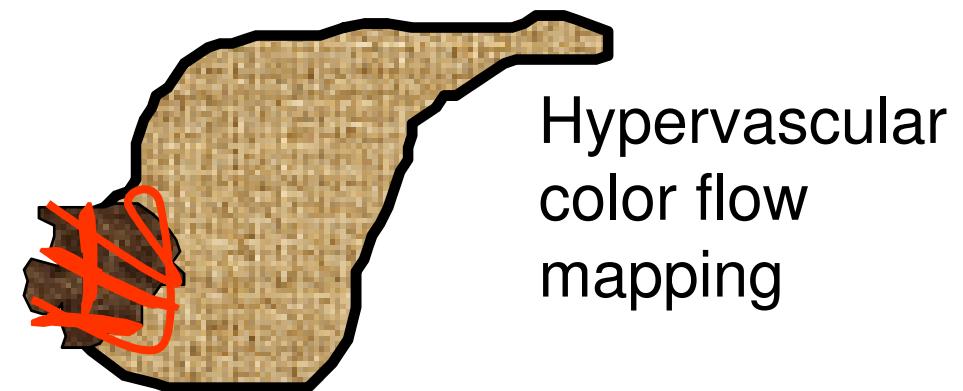
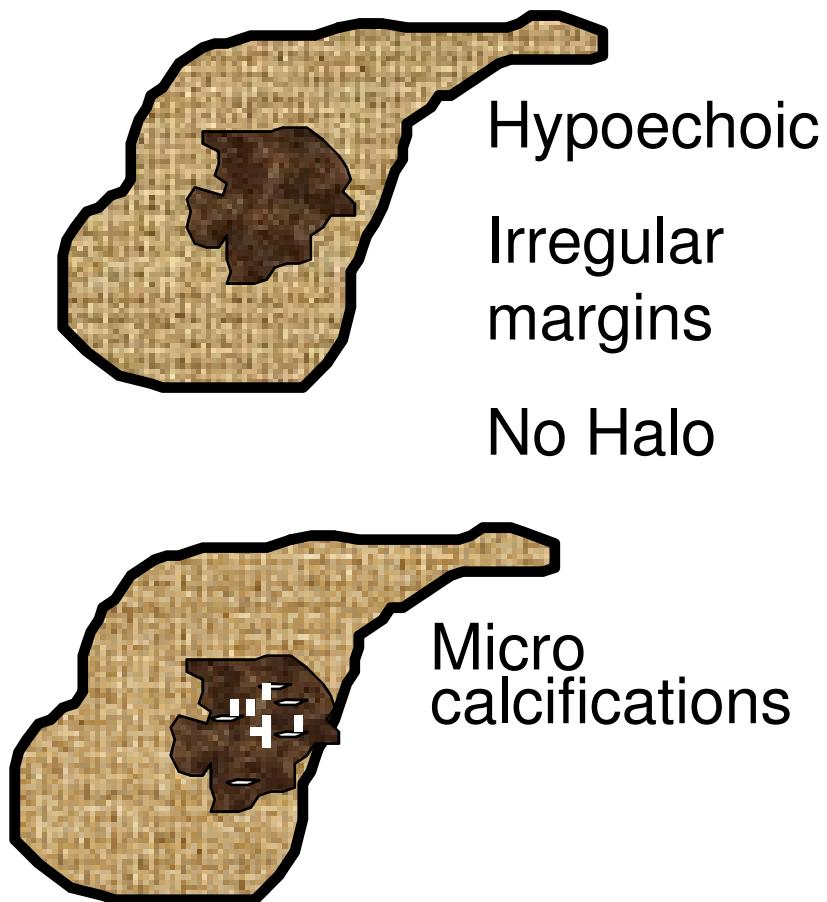
Roberto Valcavi

Direttore SC di Endocrinologia e Centro Malattie della Tiroide
Arcispedale Santa Maria Nuova, Reggio Emilia

www.asmn.re.it



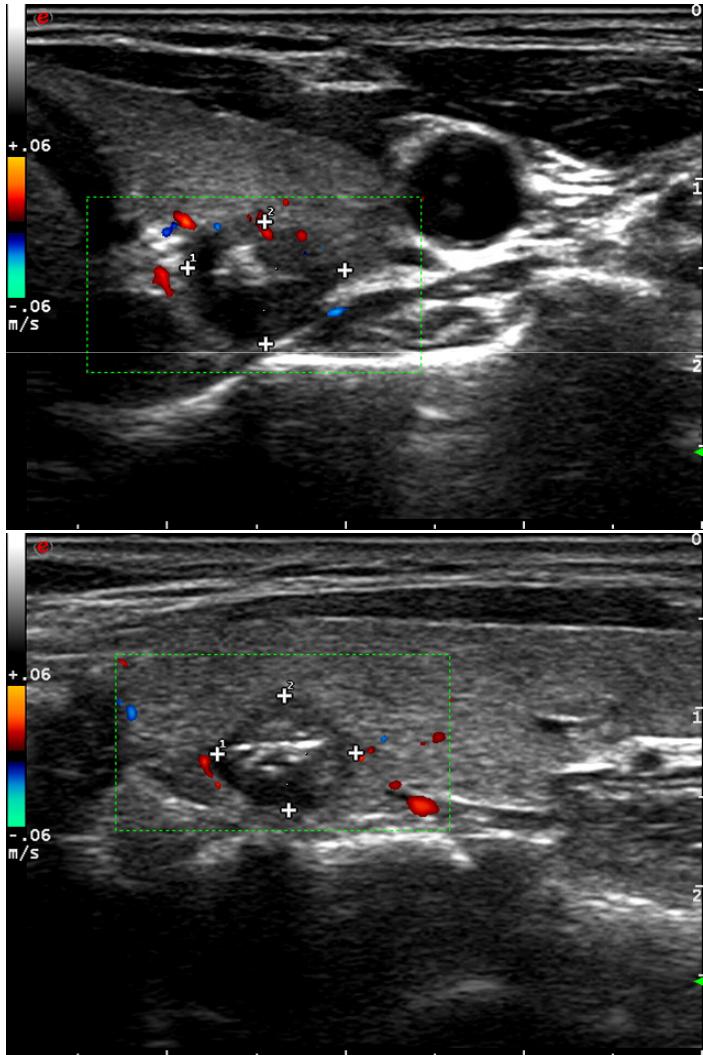
Suspicious US Features of Thyroid nodules



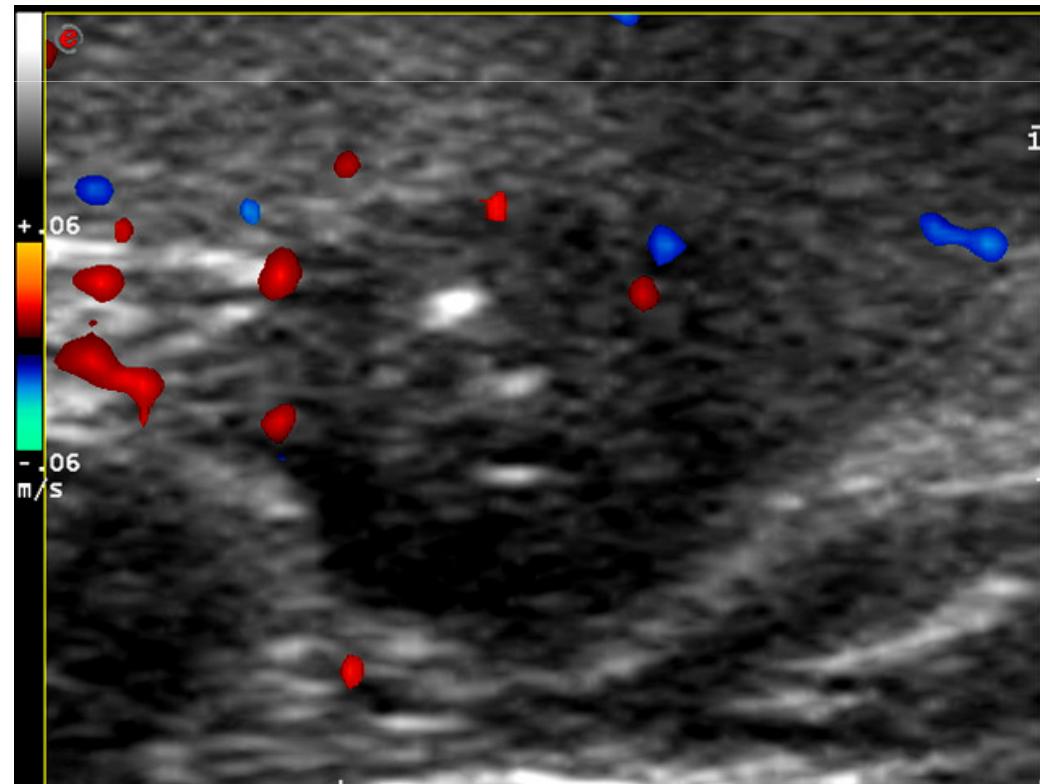
Design by A. Frasoldati, 1999

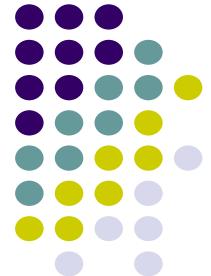


Micro Papillary Carcinoma

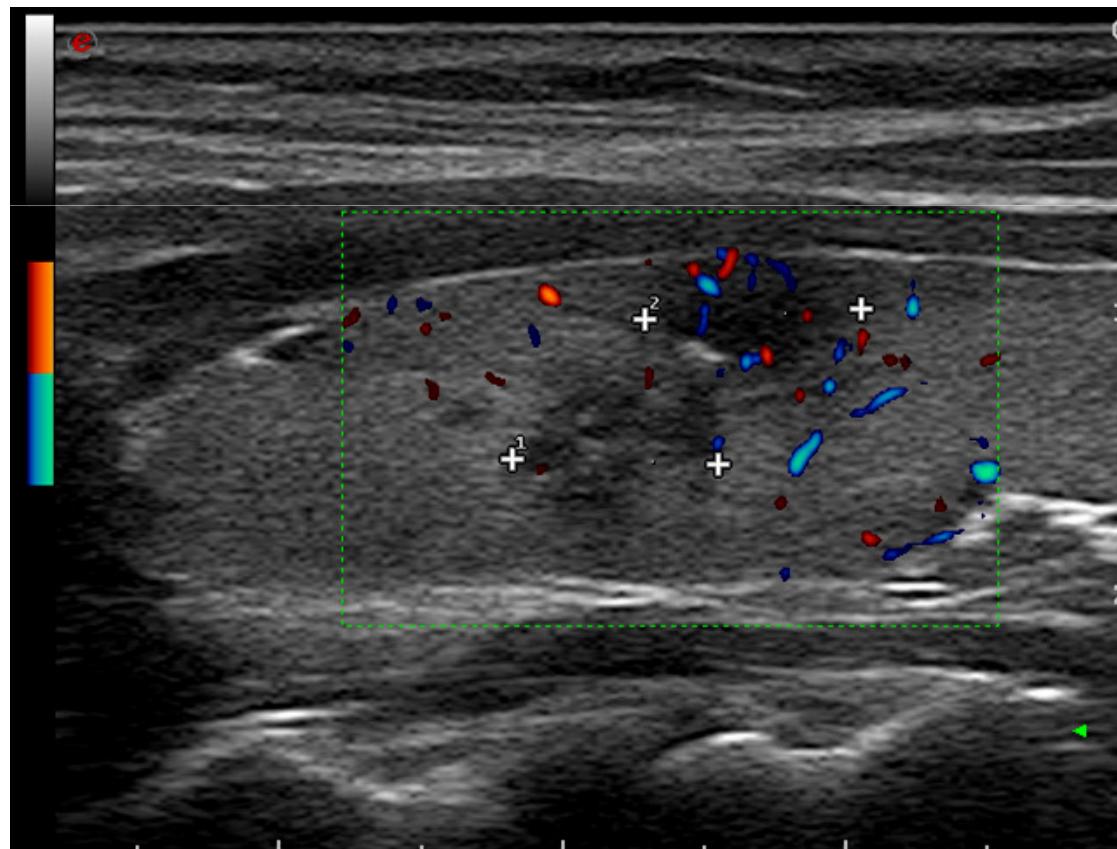


1. Marked Hypoechoogeneity
2. Irregular Margins
3. Microcalcifications
4. No halo
5. Round shaped (as tall as wide)
6. *Scanty vascularity*

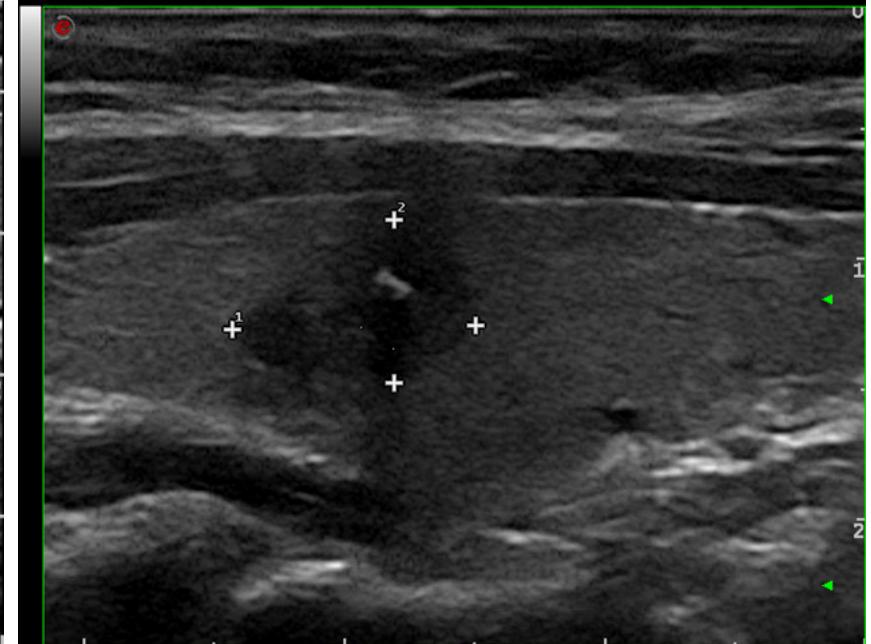


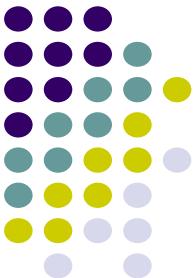


Papillary carcinoma. Multifocal, microcalcification

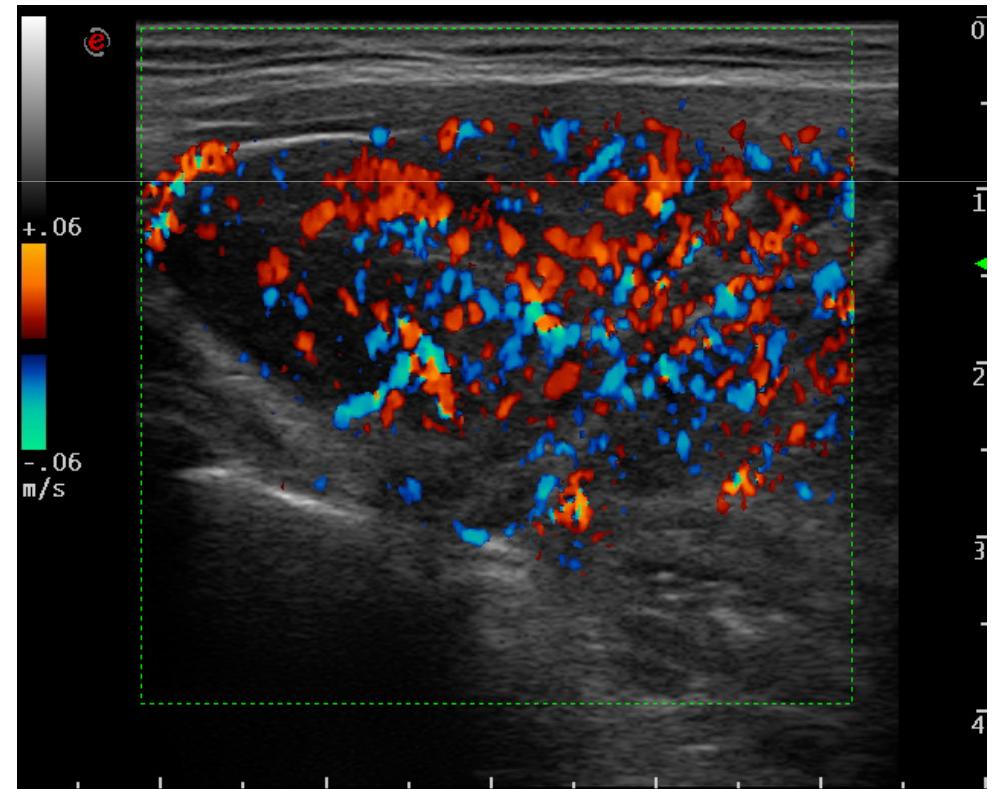
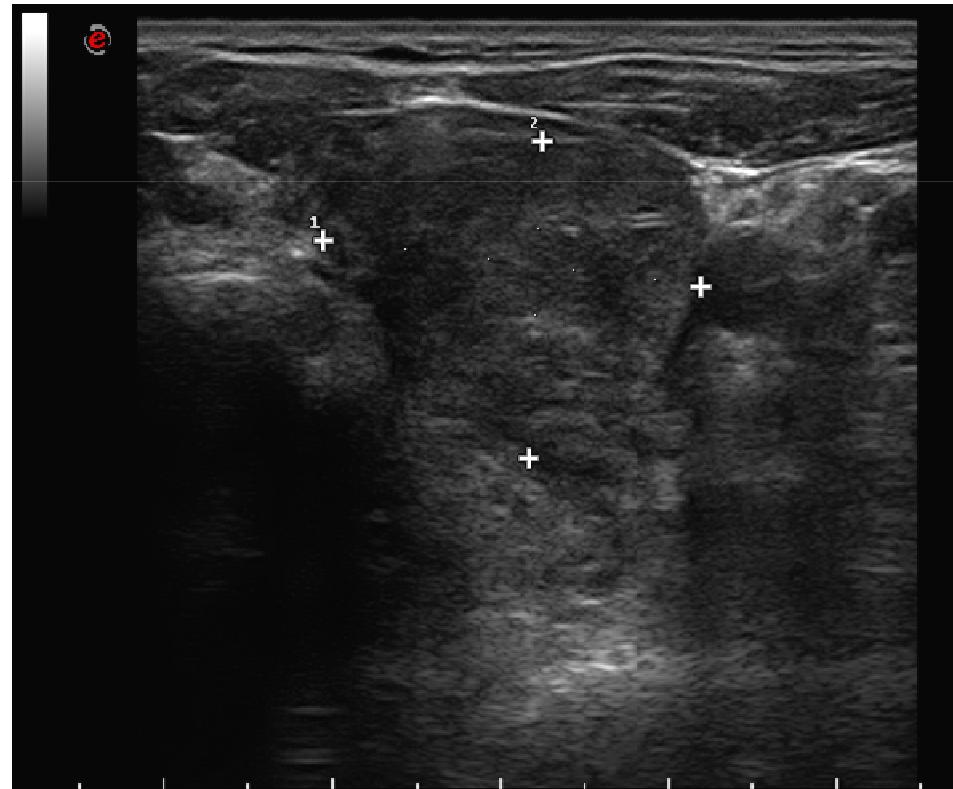


[video](#)



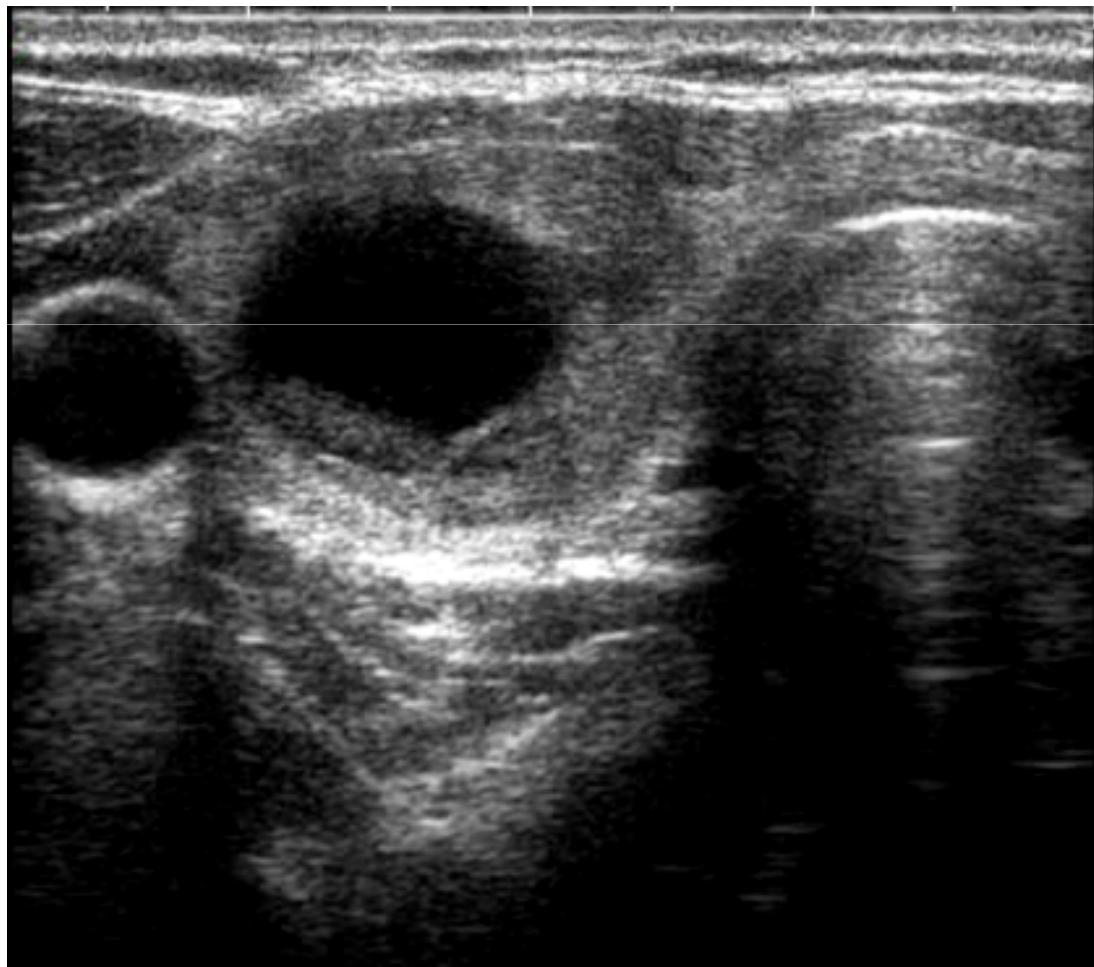


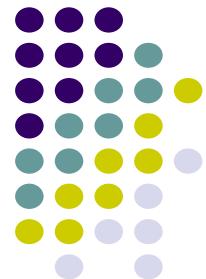
Papillary carcinoma 4 cm



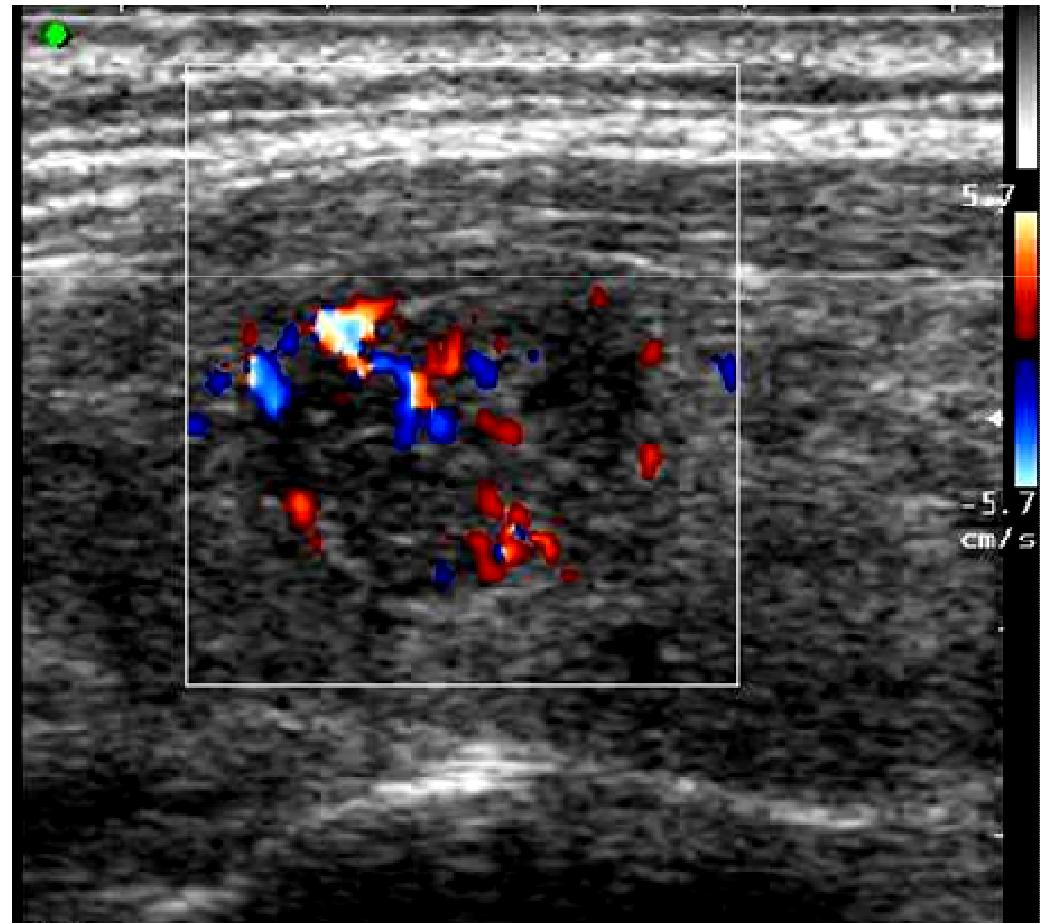
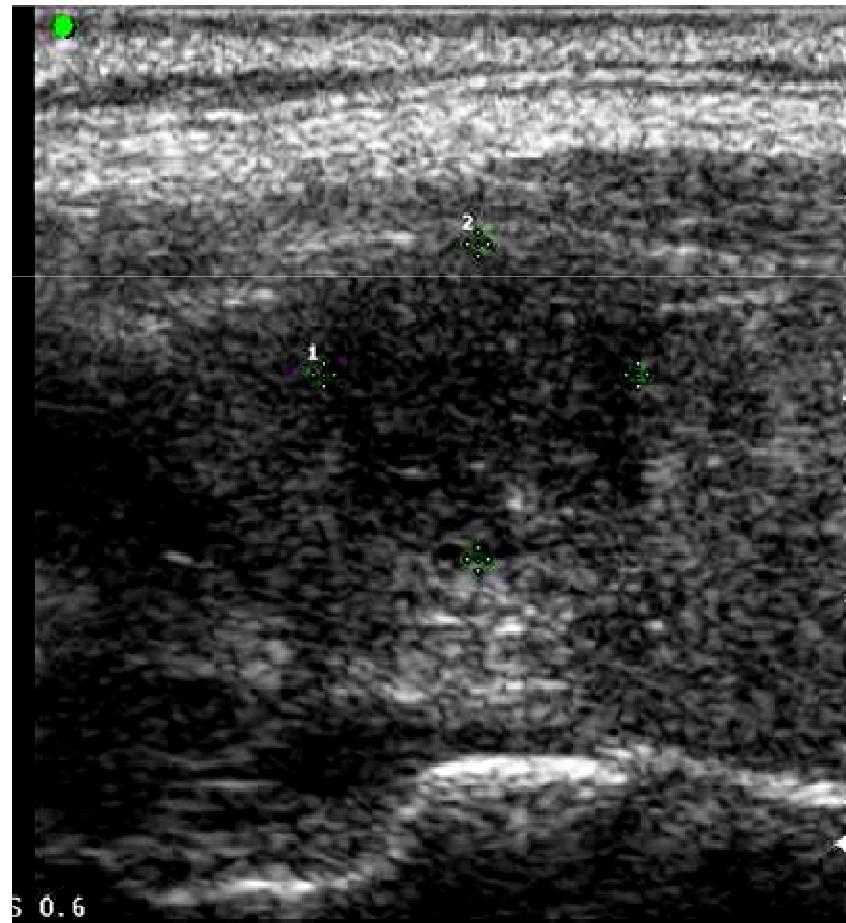


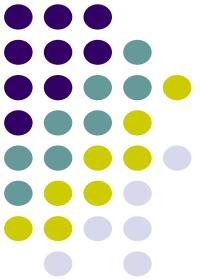
Cystic Papillary Carcinoma



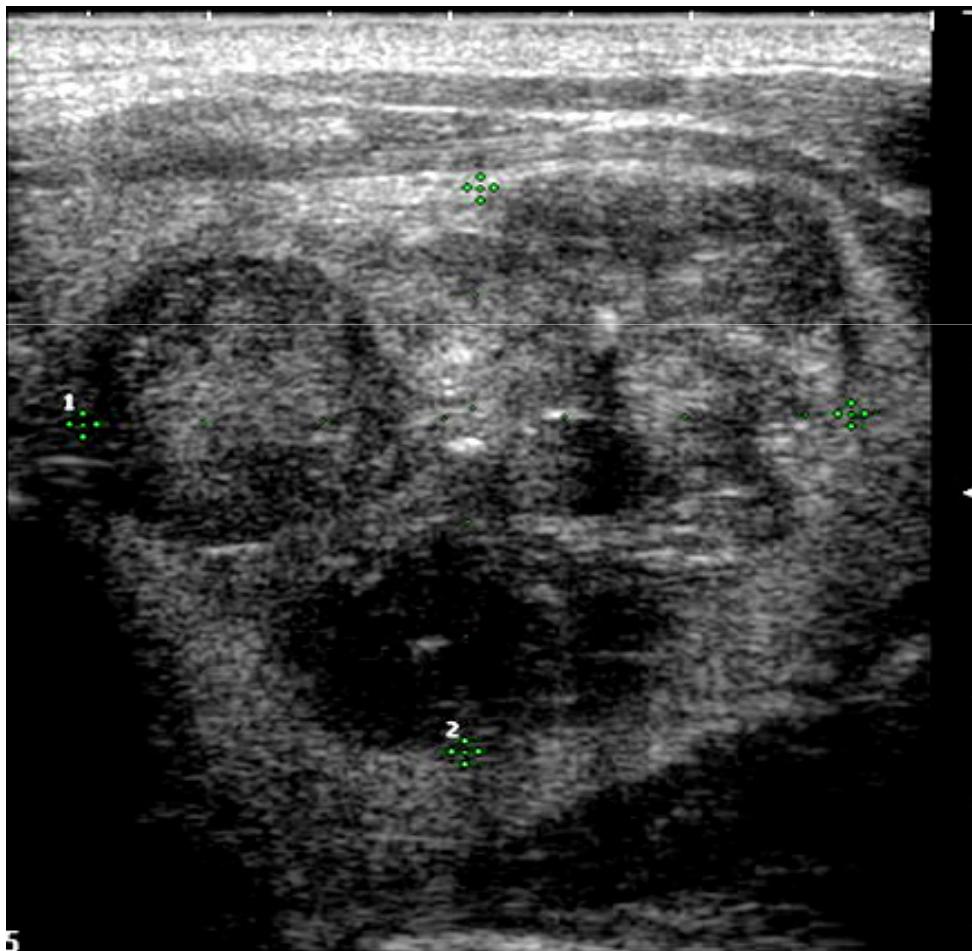


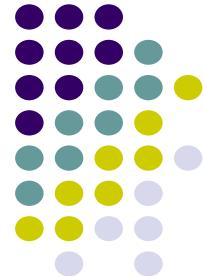
Medullary carcinoma





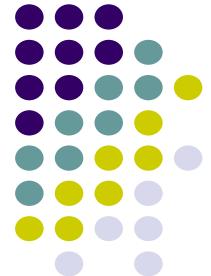
Follicular Carcinoma





US features and thyroid malignancy

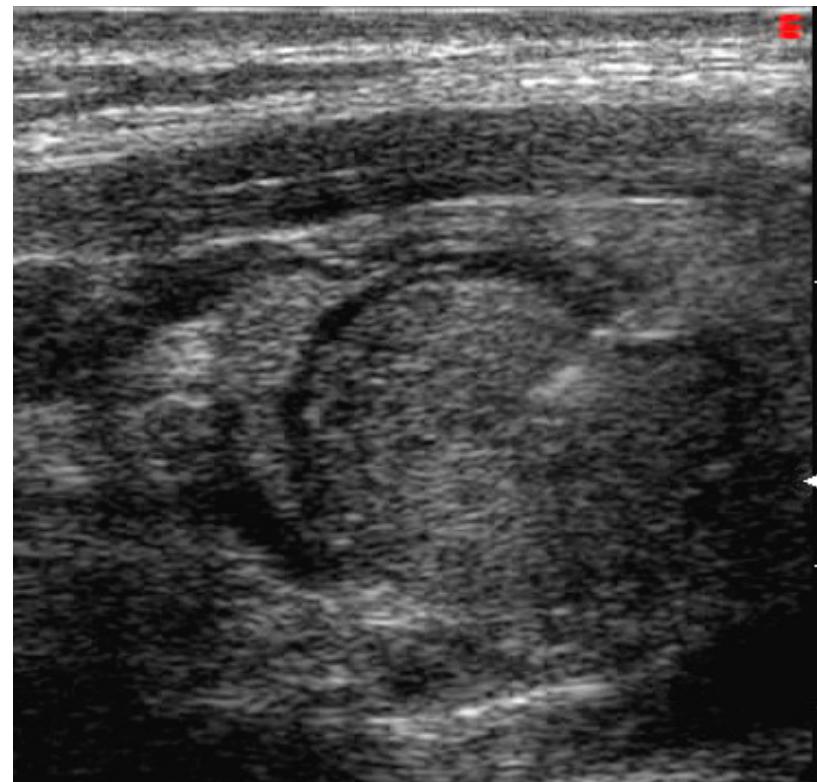
	Malignant	Benign
Margins	Poorly defined	Well defined
Shape	Irregular	Regular
Microcalcifications	Yes	No
Echogenicity	Hypo	Iso/Hyper
Structure	Solid	Mixed/cystic
Color flow mapping	Intranodular	Peripheral
More tall than wide	Yes	No
Pathologic l.nodes	Yes	No



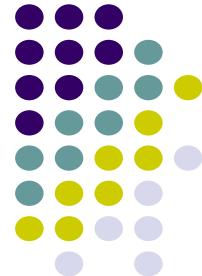
Thyroid tumors: ultimate diagnosis

Ultrasound guided FNA cytology

In selected cases: ultrasound guided CNB histology



Impact of US guidance on FNAB diagnostic performance

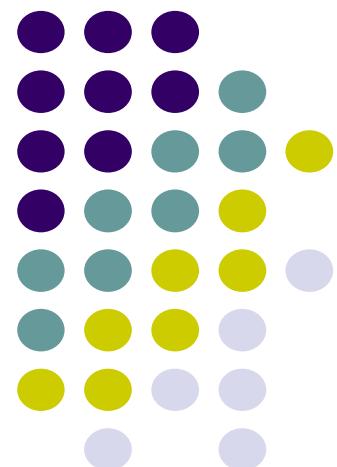


	US-guided	Not US-guided
Sensitivity	96%	88%
Specificity	91%	90%
Accuracy	94%	94%
Positive Predictive Value	96%	95%
Negative Predictive Value	91%	75%

Takashima et al J Clin Ultrasound 22:535,1994

Thyroid ultrasound. New perspectives

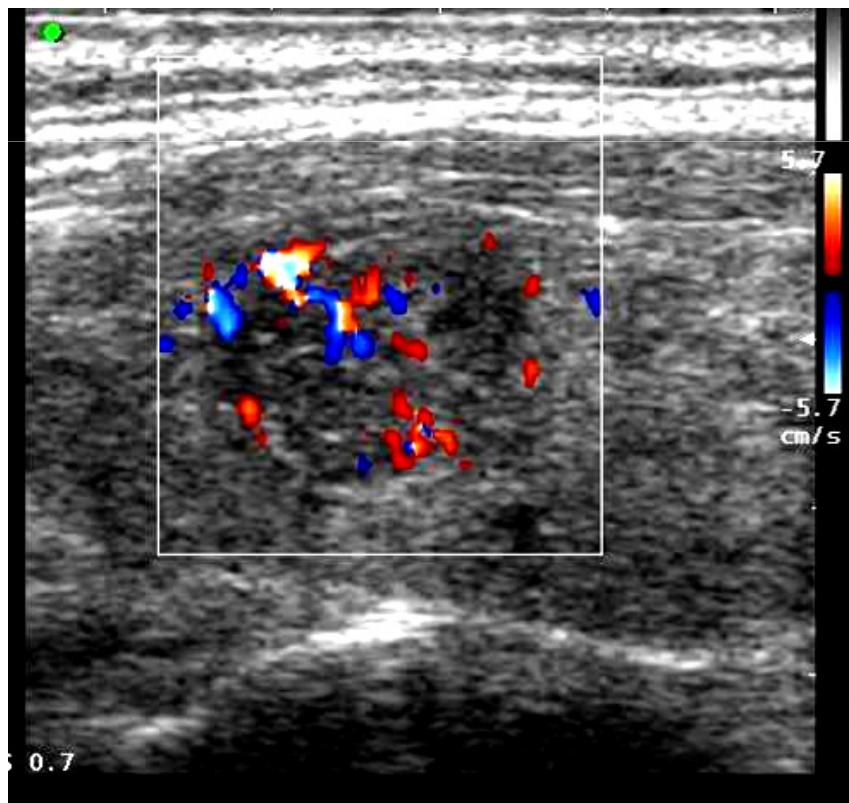
- Sensitive color flow mapping
- Tissue harmonic
- Extended vision
- Compound technology
- Ultrasound tomography
- Elastography
- Contrast media enhancement
- 3D/4 D imaging



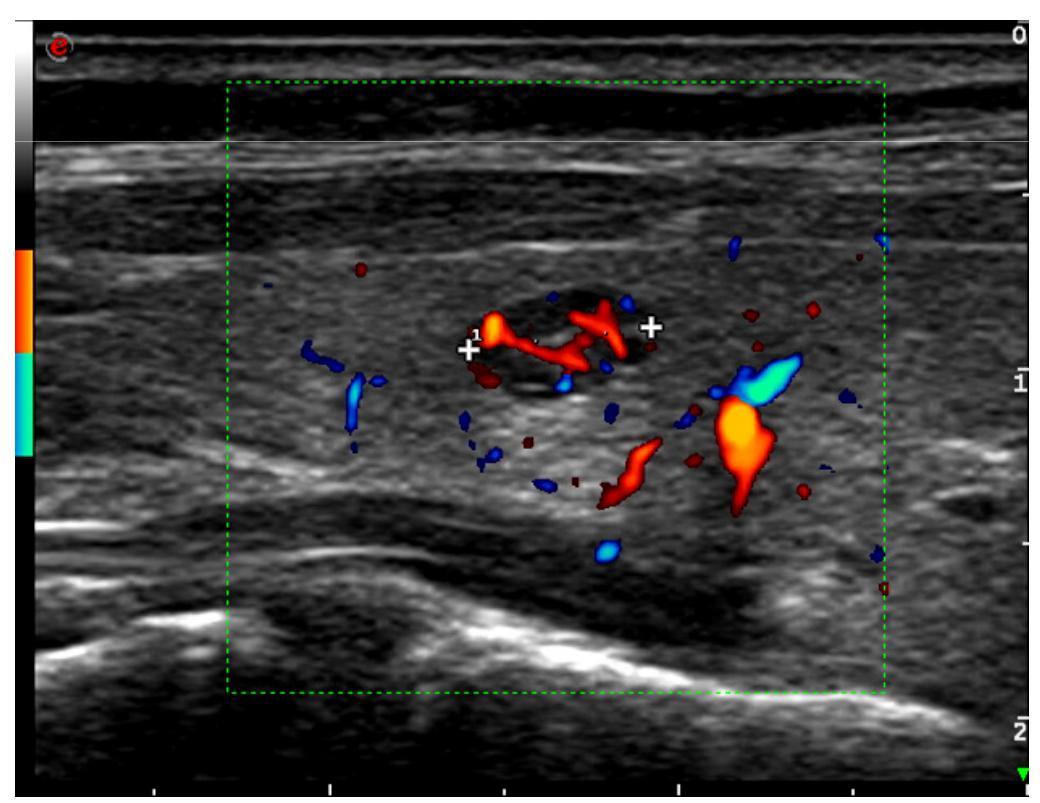


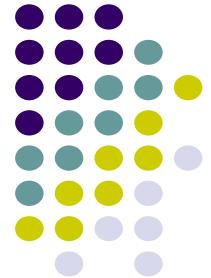
Sensitive color flow mapping

2000



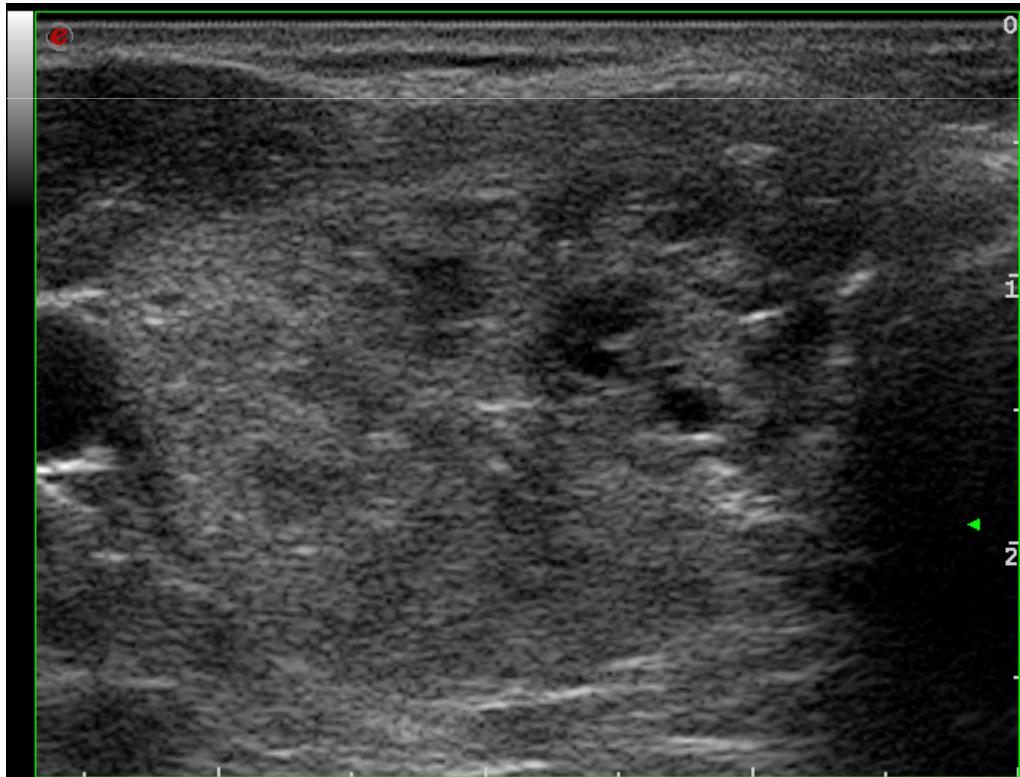
2008





Compound technology

Without compound



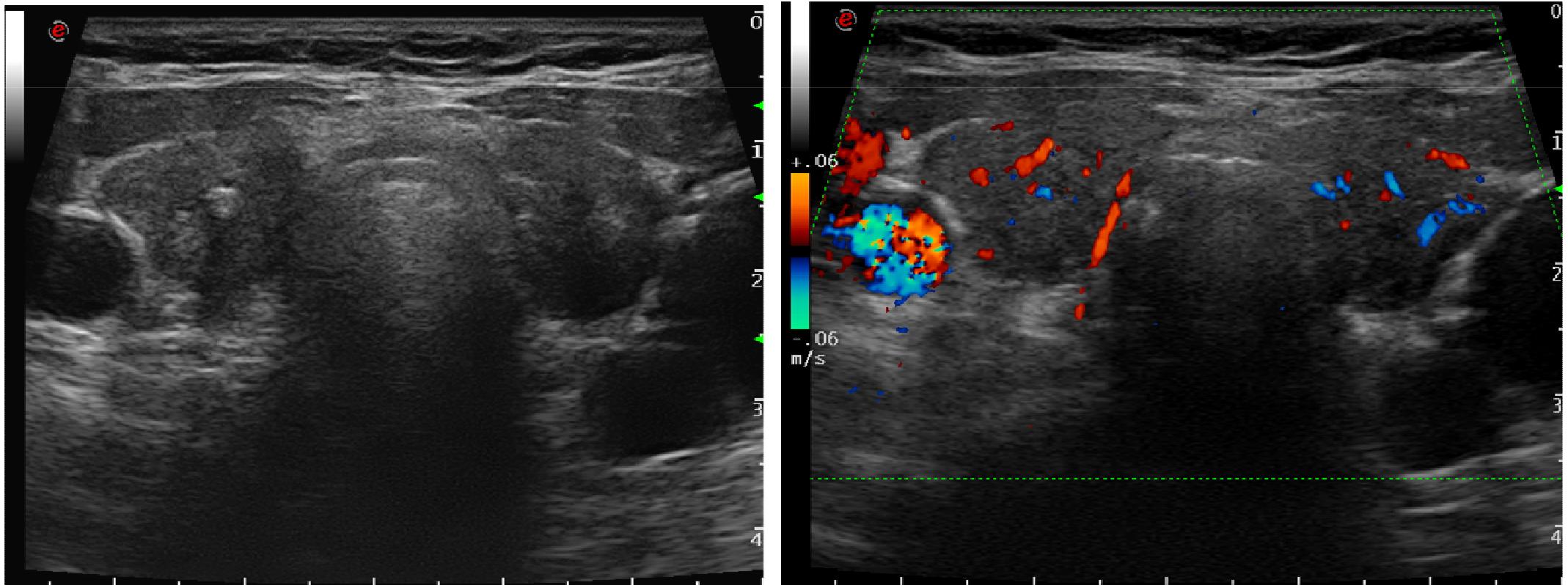
With Compound

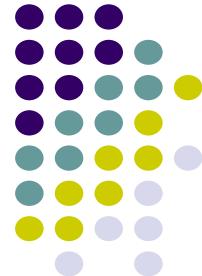




Extended vision

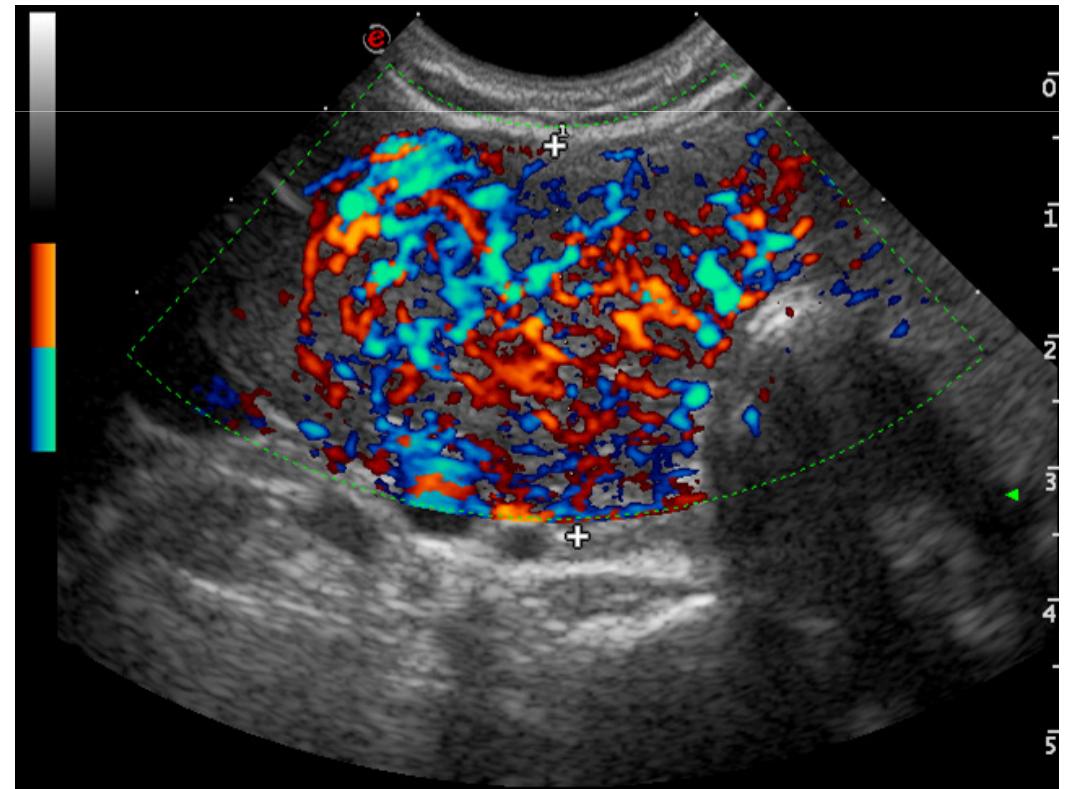
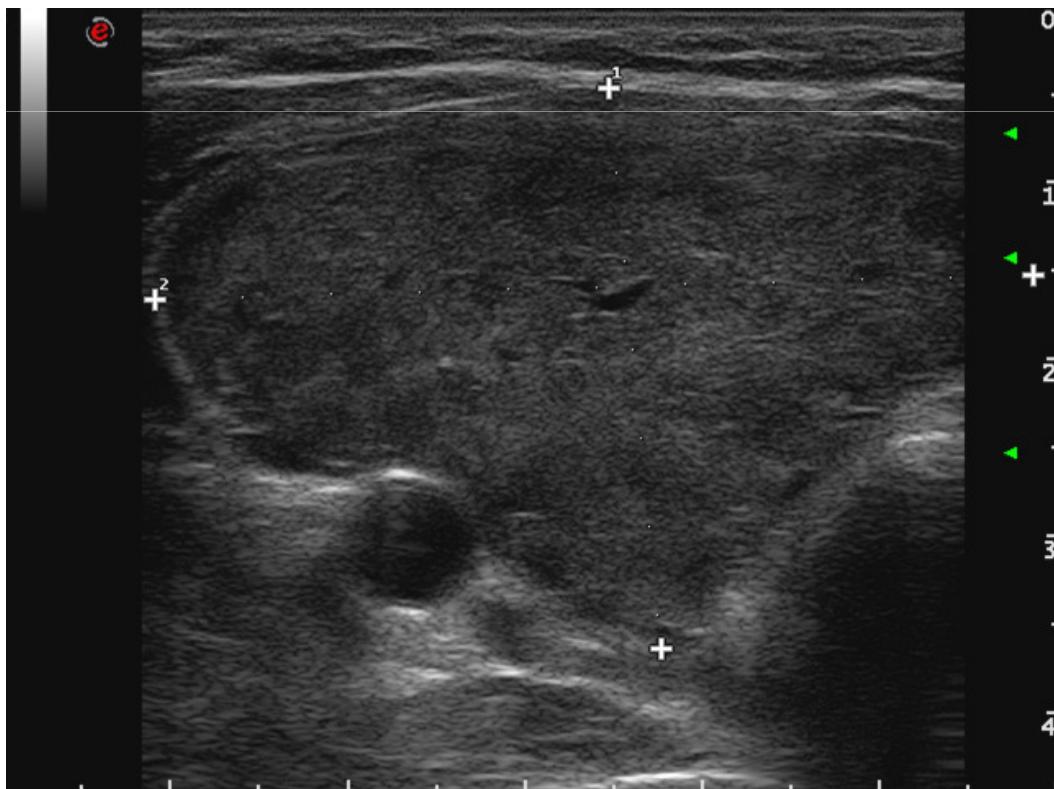
[video](#)

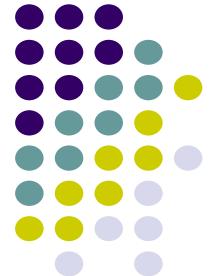




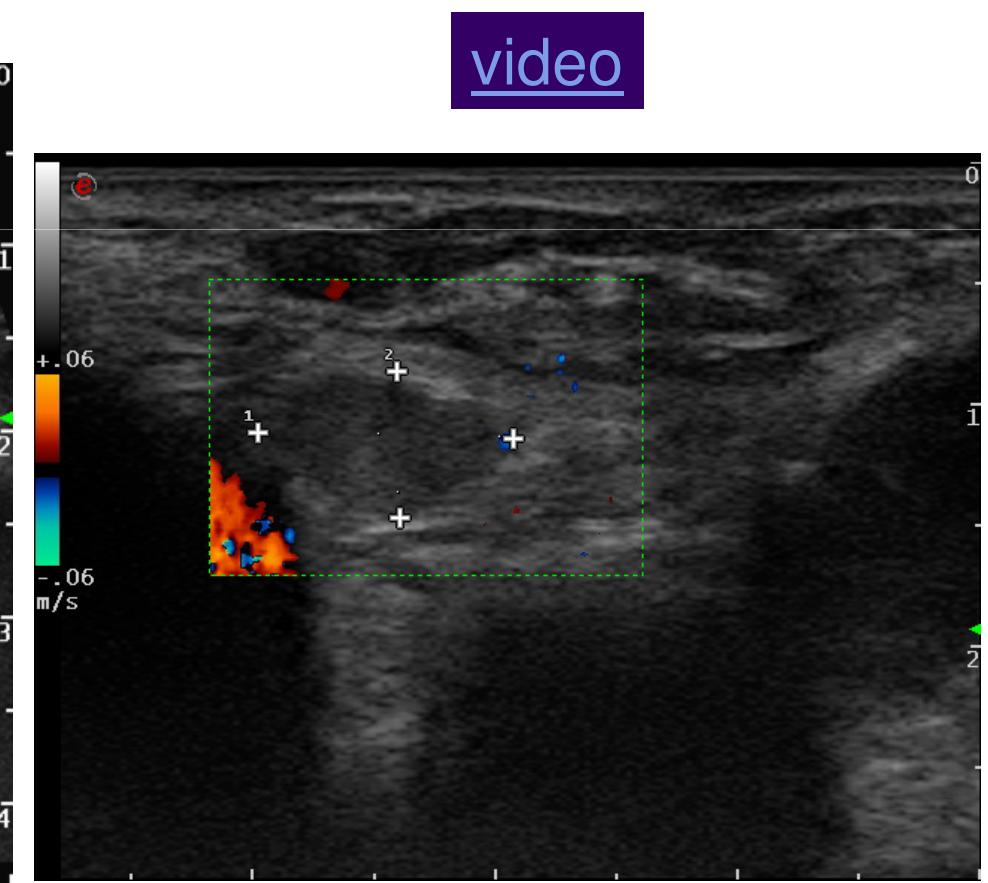
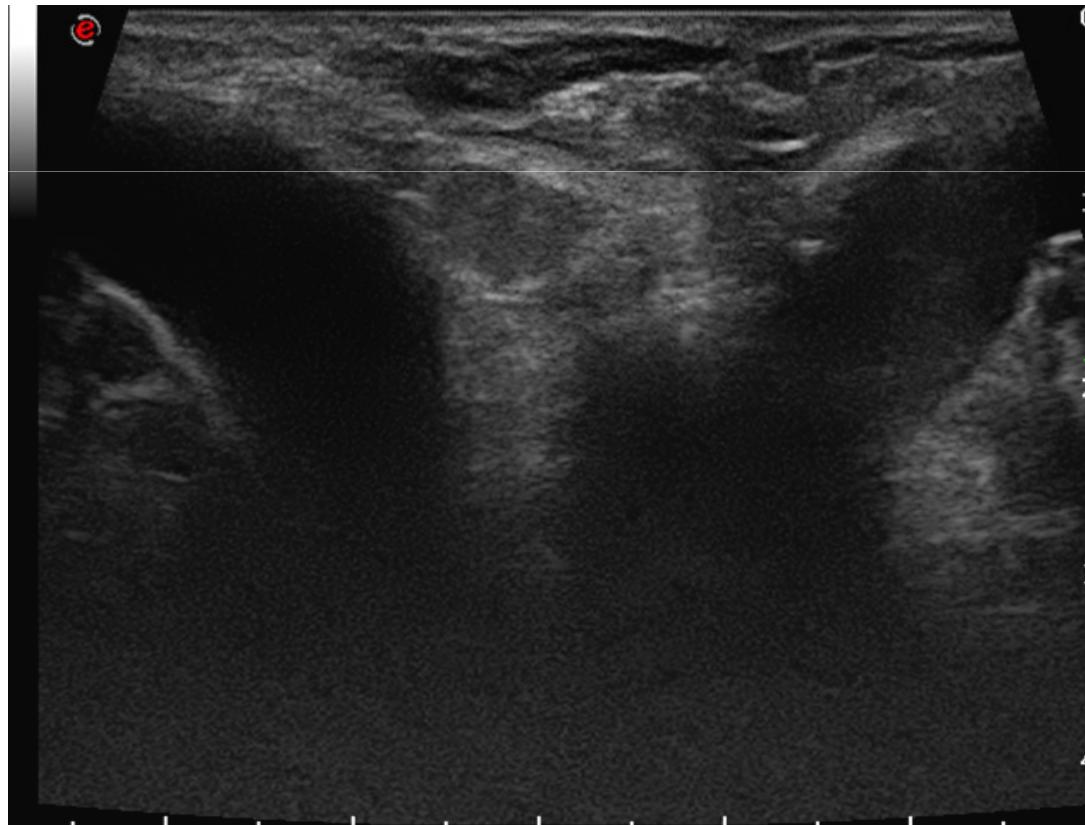
Extended vision

[video](#)

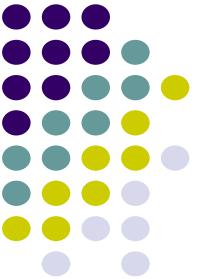




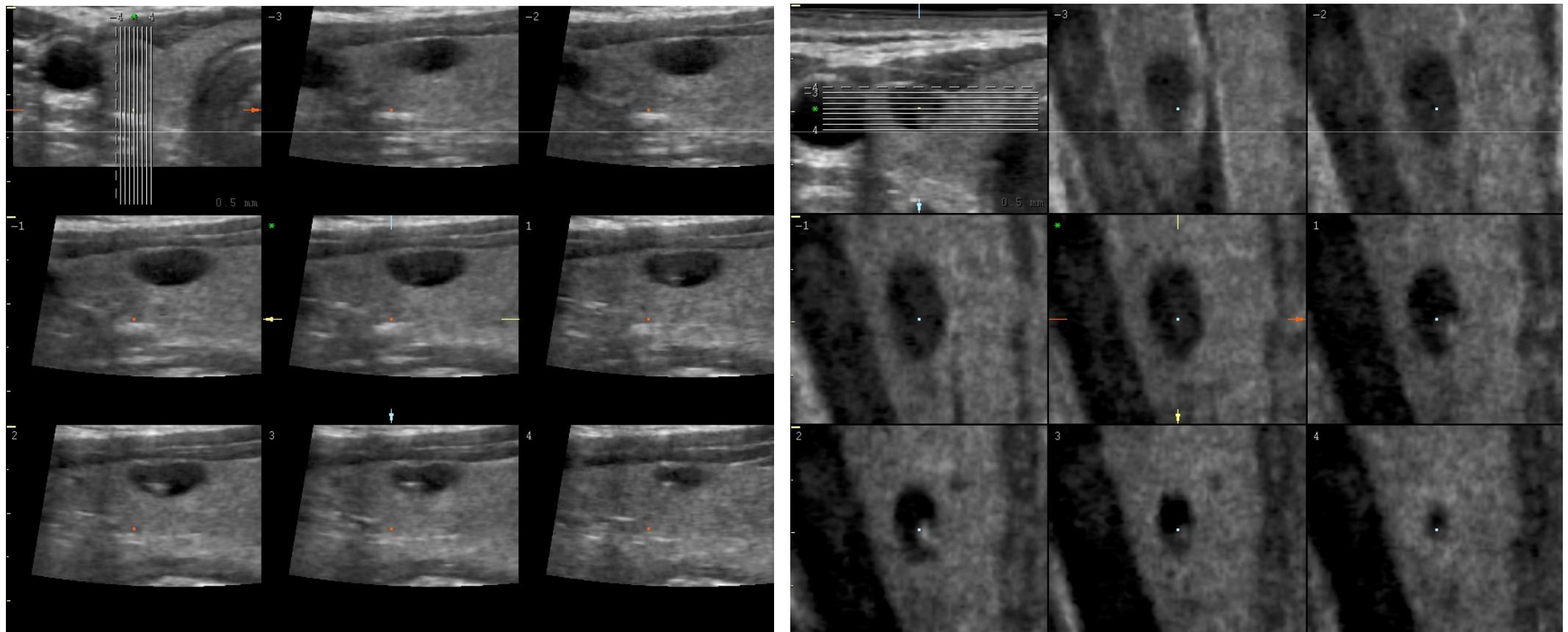
Tissue harmonic



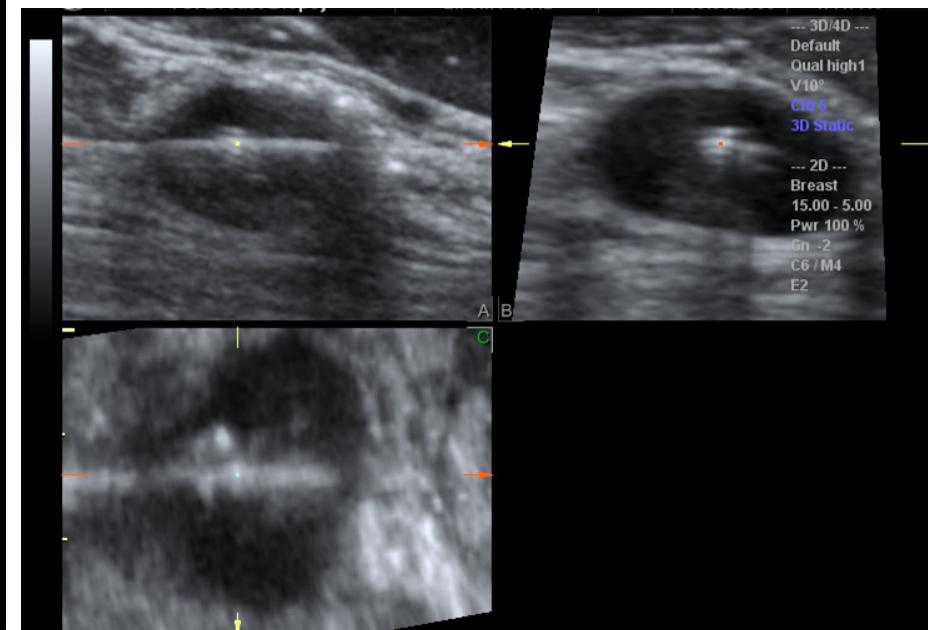
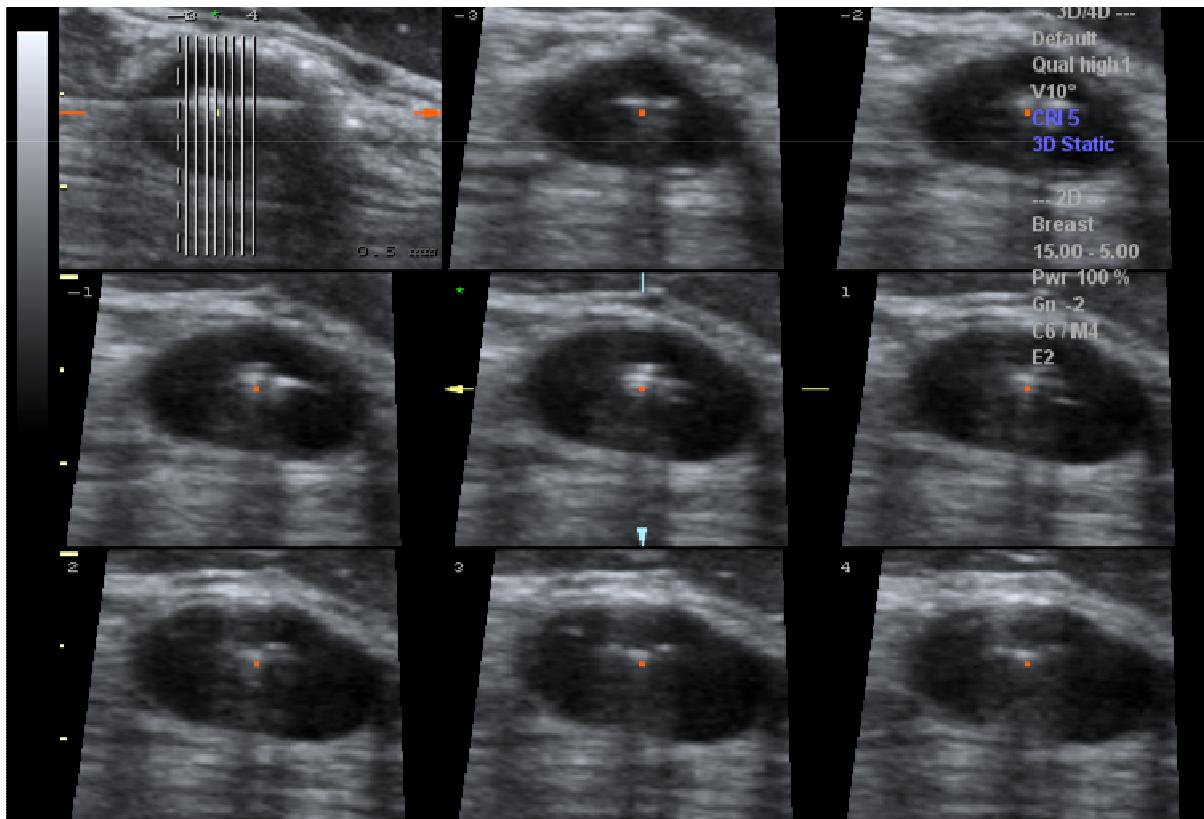
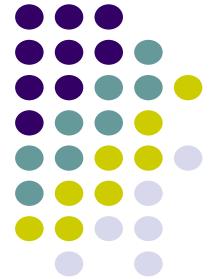
[video](#)

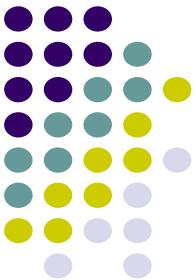


Ultrasound tomography

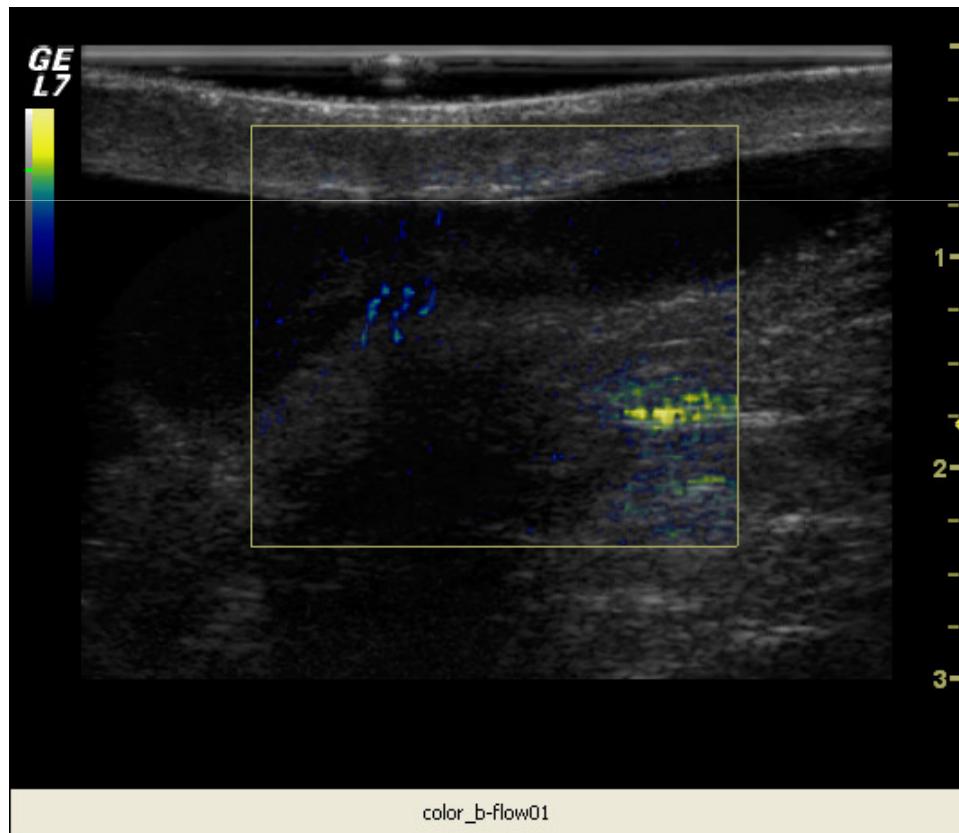


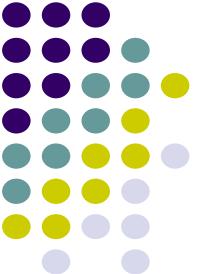
Biopsy with Ultrasound Tomography





B-flow technology

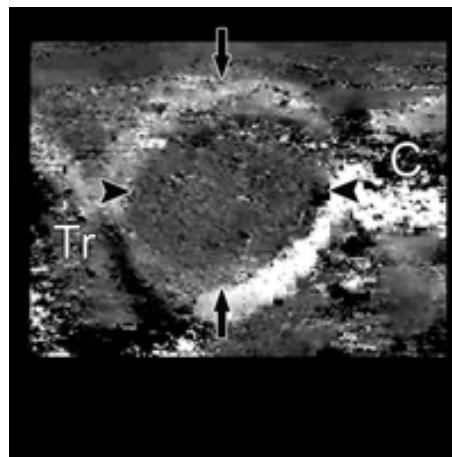
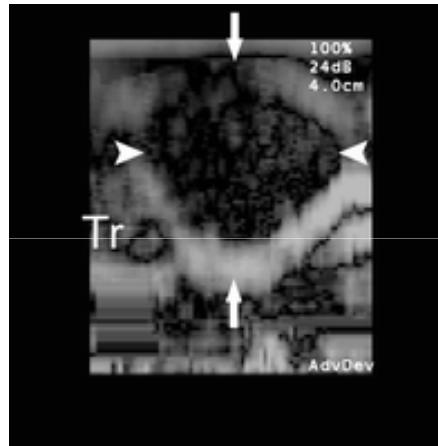
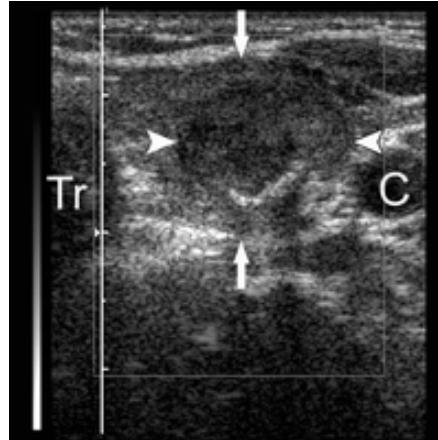




Elastography

Papillary carcinoma.

- Transverse B-mode sonogram,
- real-time elastogram
- off-line processed elastogram



Lyshchik et al, Radiology 2005; 237:202-11

Thyroid Elastography using Carotid Artery Pulsation

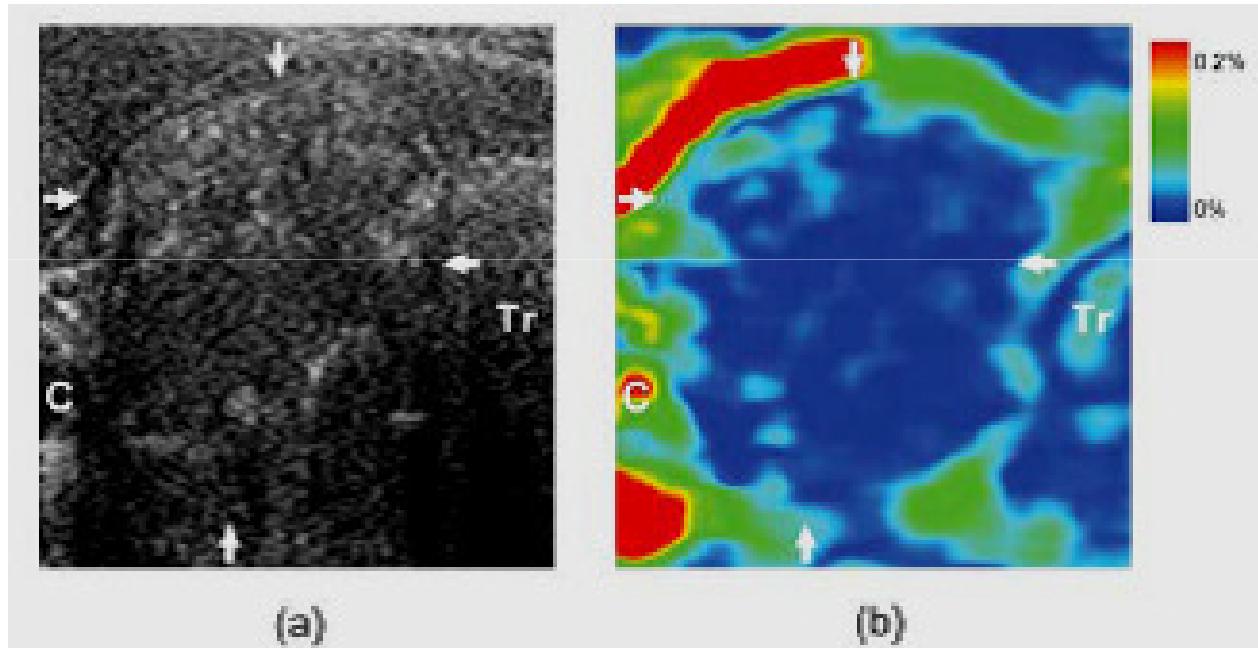
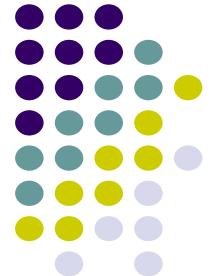


Figure 6. B-mode (a) and strain (b) images of papillary carcinoma. Arrows indicate the thyroid nodule. Abbreviations are as in Figure 1.

Bae et al, J Ultrasound Med 2007; 26:797-805



Contrast enhanced ultrasound

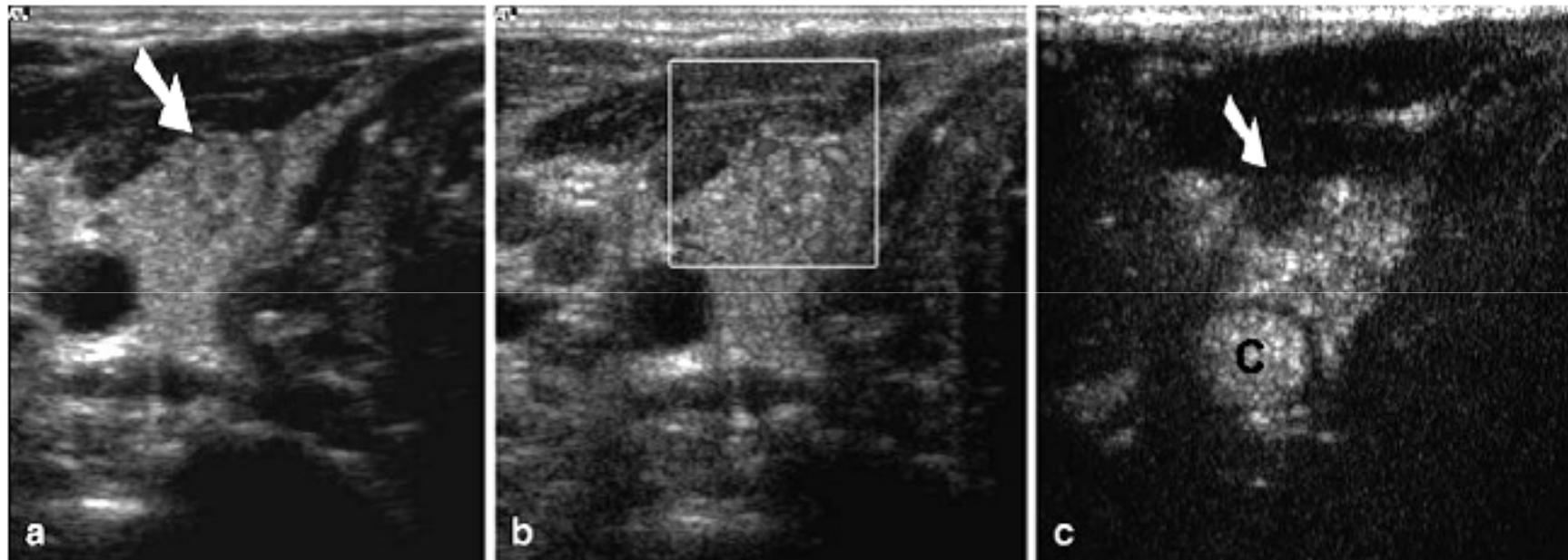
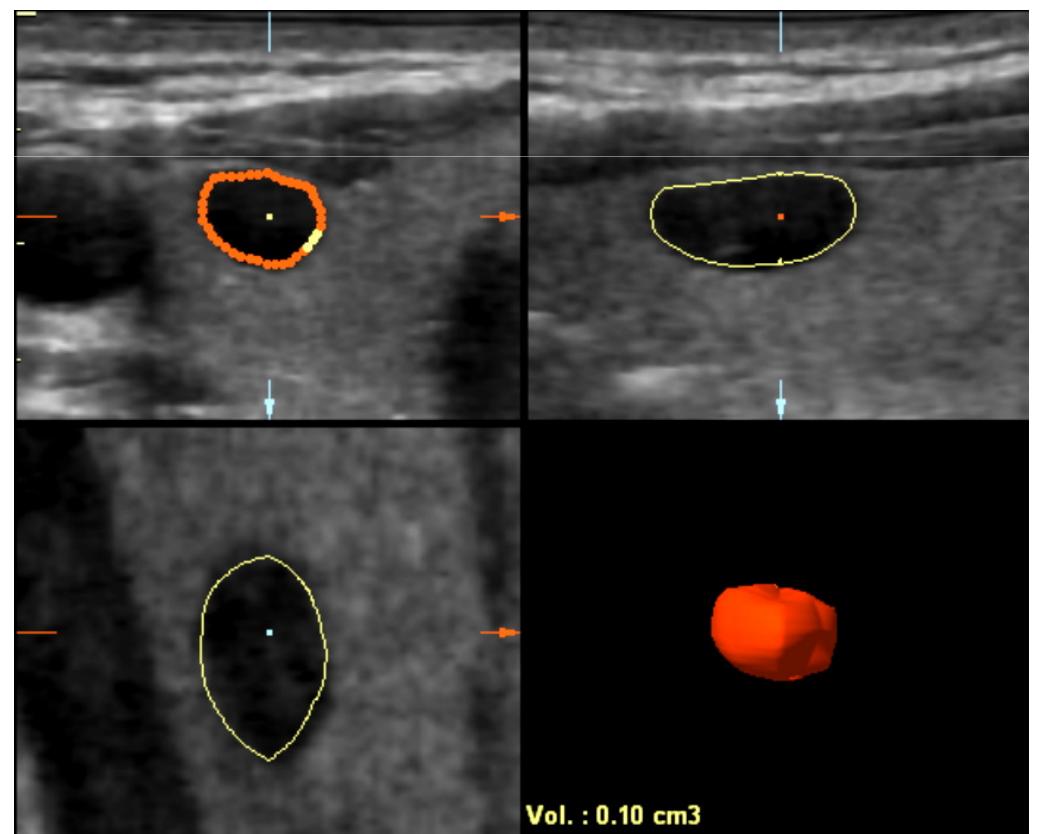
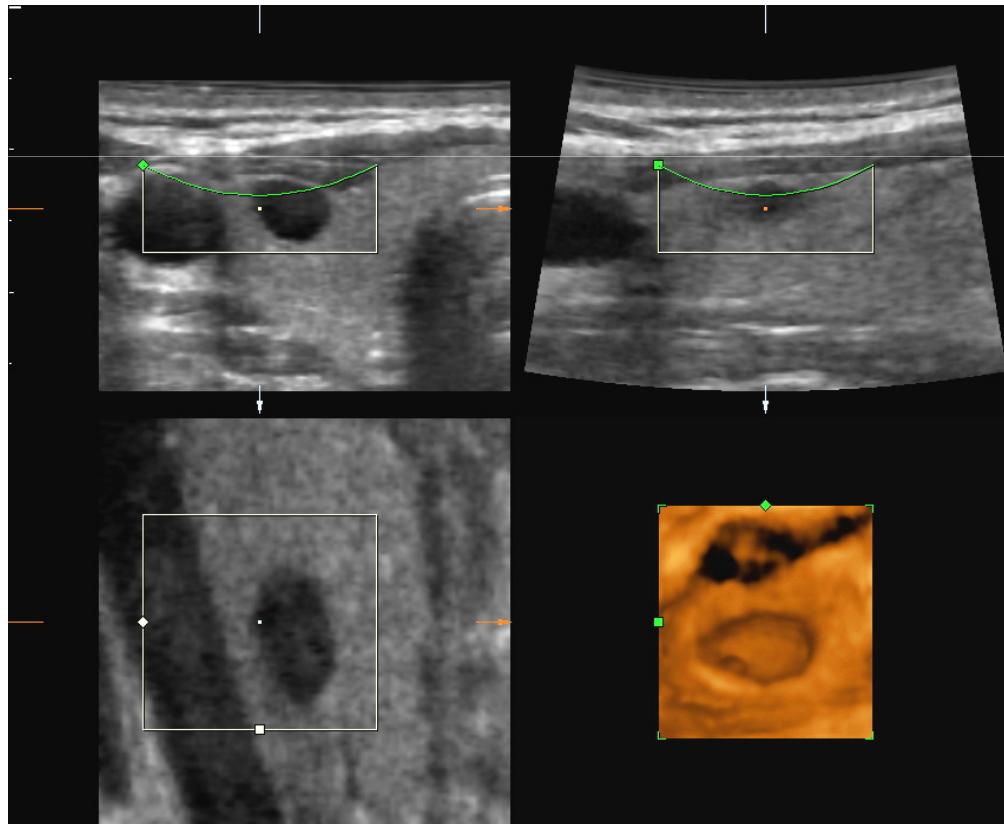


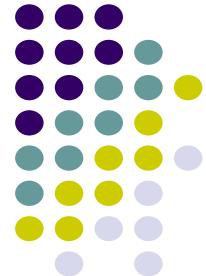
Fig. 1 a–c a Baseline axial image in a 32-year-old man shows an isoechoic nodule sized 1 cm (arrow) in the right lobe of the thyroid. b Color Doppler reveals a perinodular flow (pattern II). c On the axial image obtained in the arterial phase (25 s after SonoVue

injection) the lesion shows lack of contrast enhancement (arrow); note the strong enhancement of the ipsilateral carotid artery (C): Papillary carcinoma (case # 9 of Tables 1 and 2)



3D/4D Ultrasound





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Azienda Ospedaliera di Reggio Emilia
Arcispedale S. Maria Nuova

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