

12° Congresso Nazionale AME – 6° Joint Meeting with AAACE

Bari, November 7-10, 2013

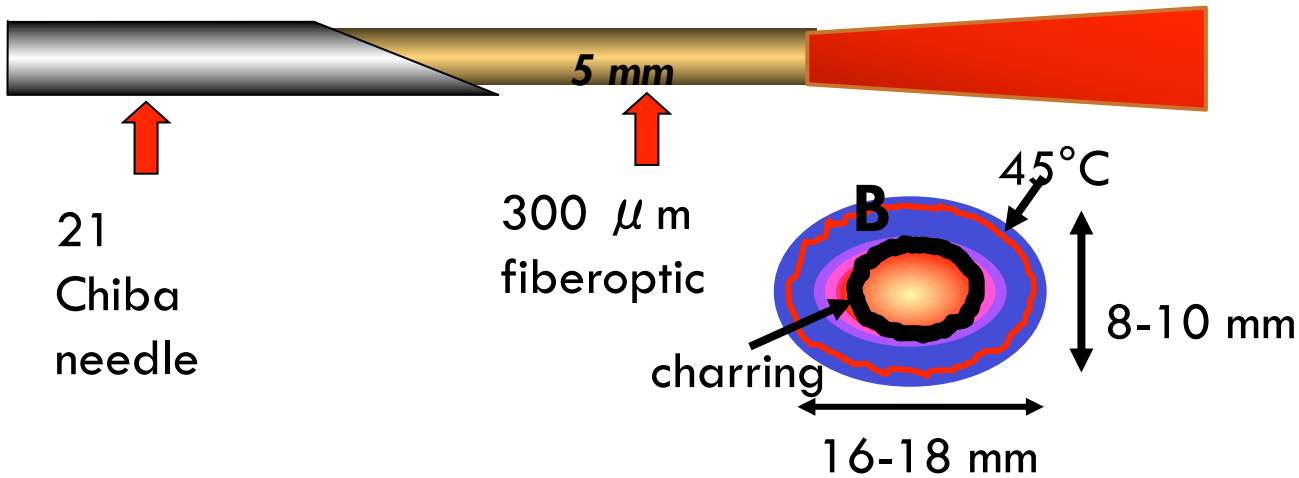
Laser in Benign & Malignant Thyroid Nodules

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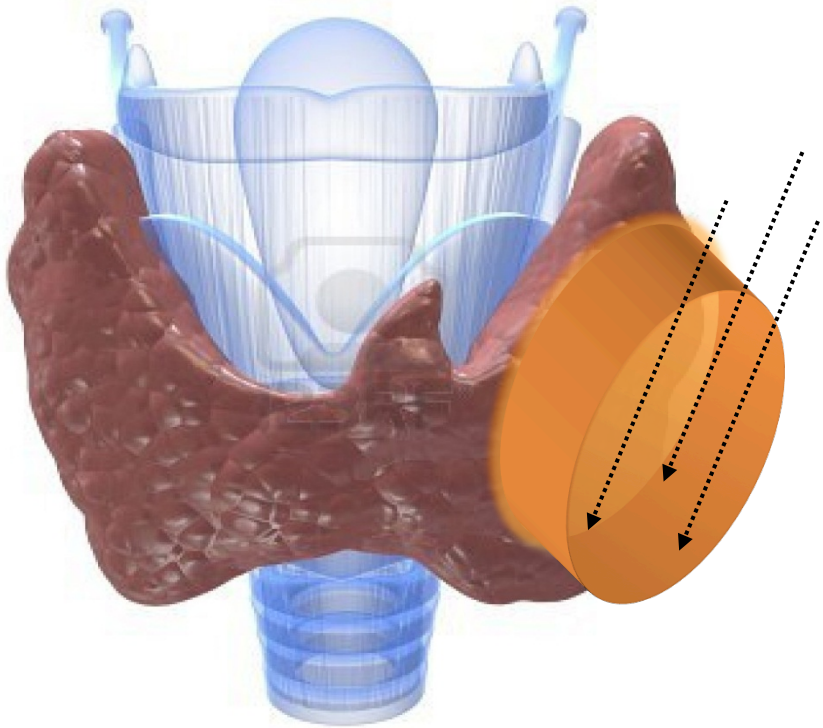
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Interstitial Laser Standard Damage Effect



Laser Ablation Planning.

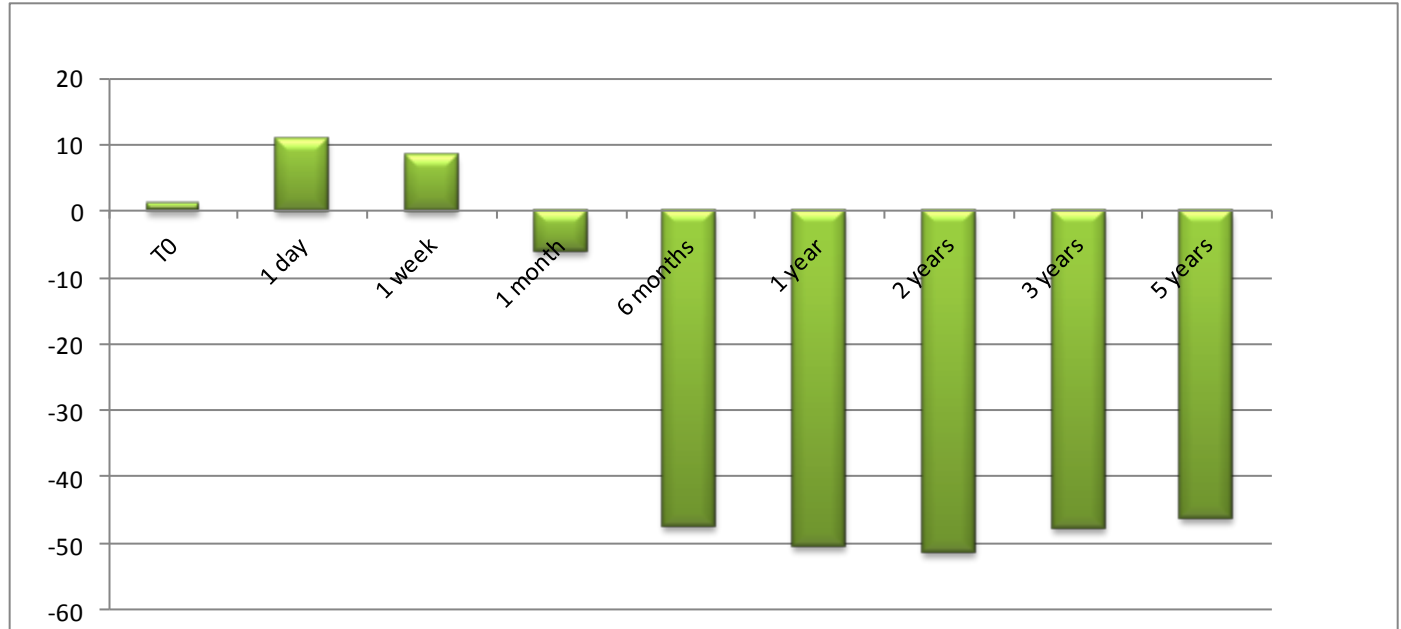
Three Fibres, Isoscele Diedric Shape



Laser Ablation in benign nodules. Clinical results

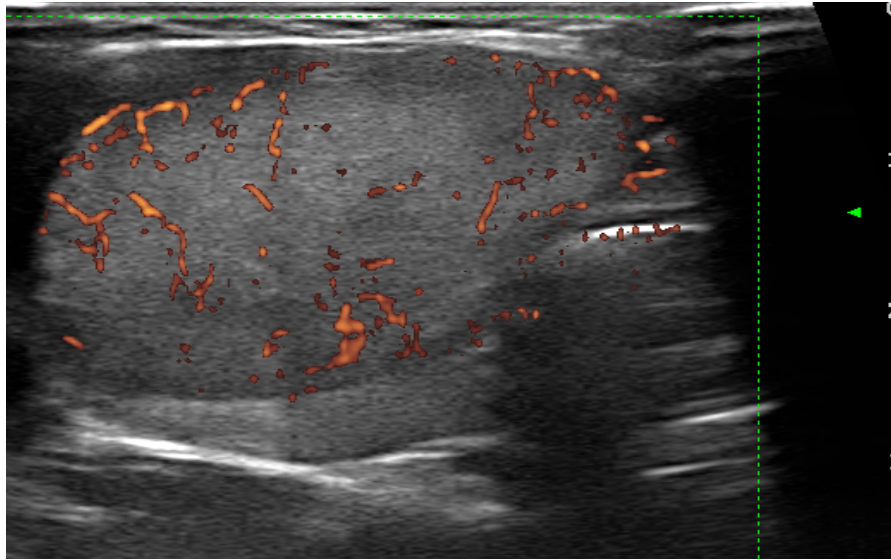
Volume changes in a 5-year follow-up in 77 patients

Mean Delta
Volume %

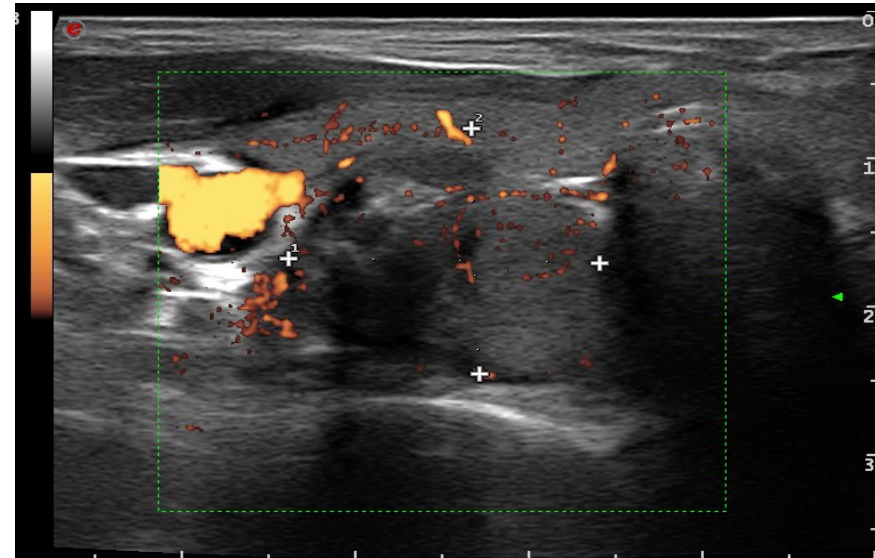


LA: Compact Nodule

Before and After 5 Years



-38% Δ Volume



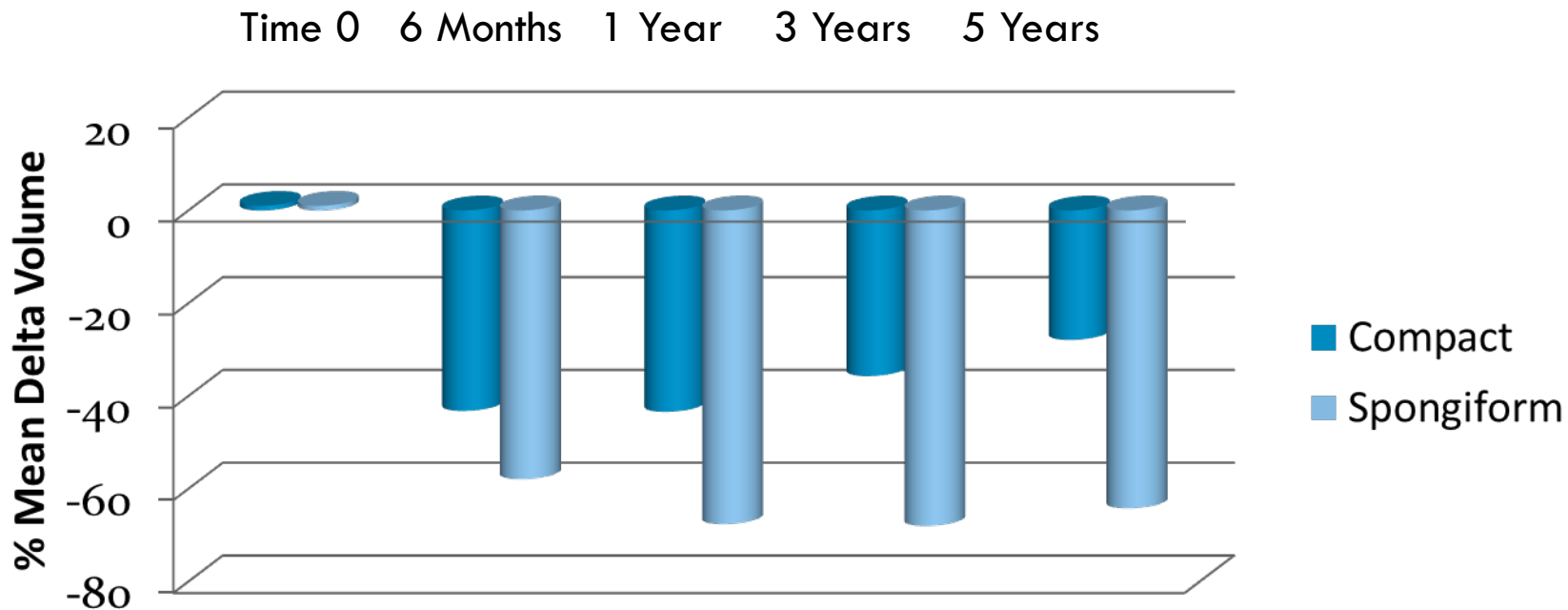
LA: Spongiform Nodule Before and After 5 Years



-71% Δ Volume



US Structure & Volume Change after 5 Years in 77 Patients

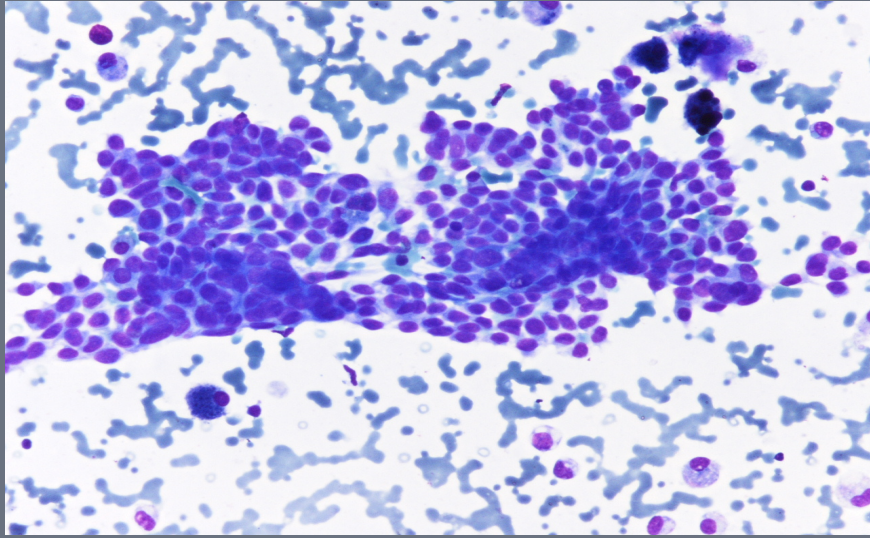


Indications for LA Therapy in Benign Thyroid Nodules

- Benign thyroid nodules are effectively reduced by LA
- The mean volume reduction after 5 years is about 50%
- Spongiform nodules after 5 years are best reduced (−68%) than compact nodules (−27%) $P < 0.0023$



Interstitial Tissue Laser Ablation (LA) in primary micro-PTC



LASER IN PRIMARY MICRO PTC

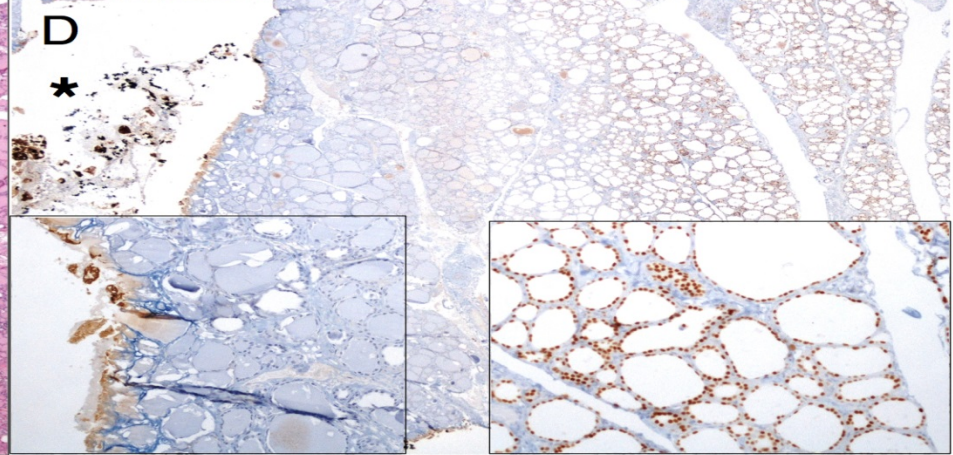
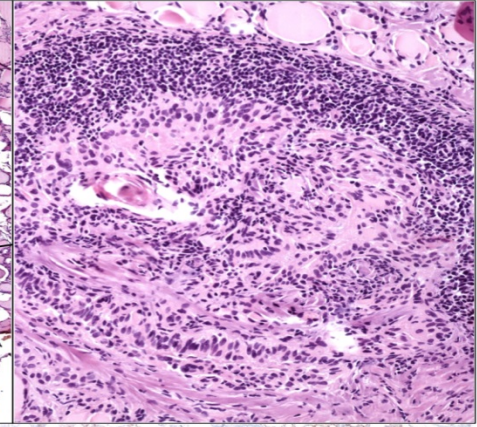
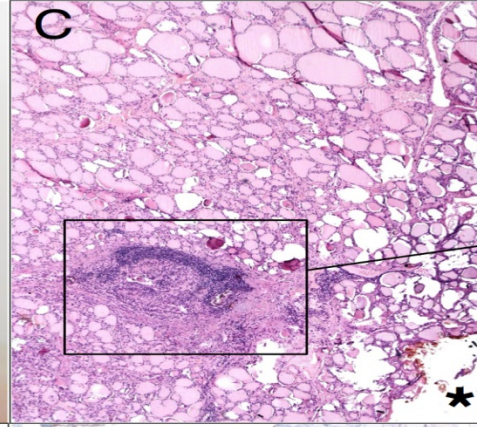
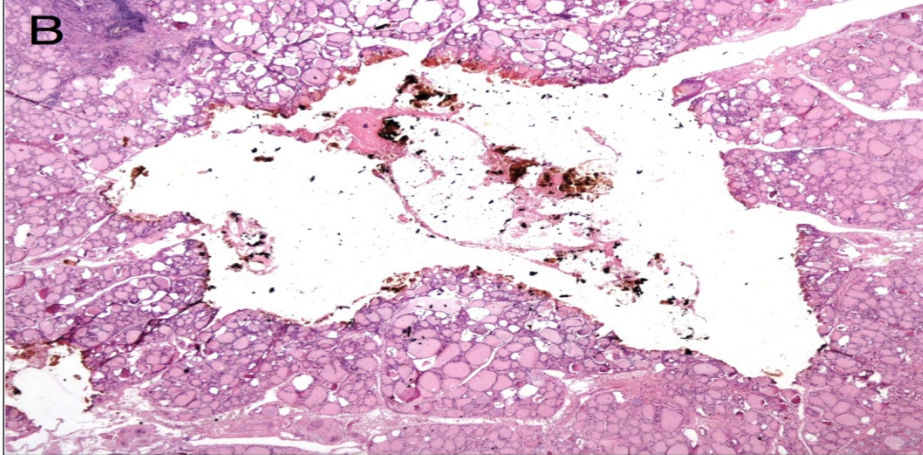
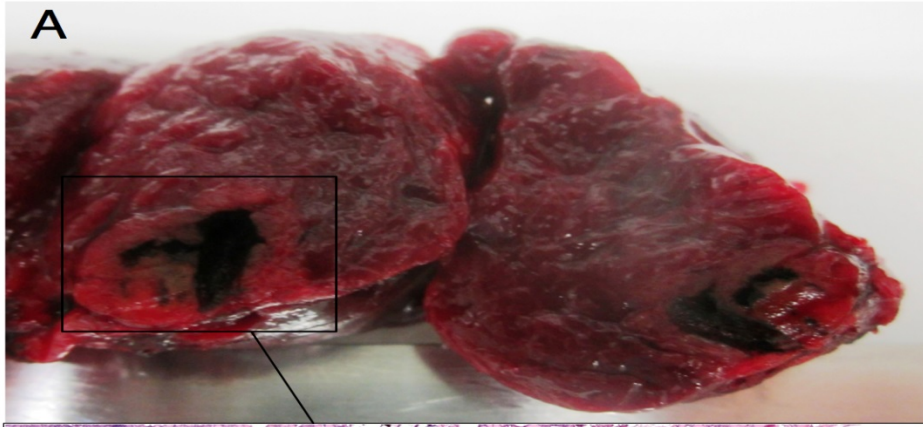
A Feasibility Study on 3 Cases

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Us-guided Percutaneous Laser Ablation of Primary Thyroid PMC (Papillary MicroCarcinoma)

- **Objective of the study:** evaluate the feasibility of LA on thyroid PMC as a primary treatment and to prove histologically the tumor destruction
- **Methods: Ethical Committee Approved.** Three volunteers with a single PMC smaller than 10 mm diagnosis at fine needle aspiration cytology (FNAC) underwent percutaneous ultrasound-assisted LA of the PMC in the operating room under general anesthesia
- Total energy delivery was 1,800 Joules
- The surgeon directly started a standard total thyroidectomy
- **Results: Tumor destruction was demonstrated** by loss of TTF1 and anti-mitochondria antibody expression in the whole ablated area and in the rim of normal tissue surrounding the tumor

Laser in primary PMC: Histology



Us-guided Percutaneous Laser Ablation of Primary Thyroid PMC (sex: all females)

Patient No.		1	2	3
AGE		42	55	60
MORPHOLOGIC FEATURES	Tumor Diameter mm	9	10	8
	Multifocality	Absent	Present 3 foci, 1 mm each, all in the right lobe	Present 2 foci: 1 in the right lobe, 2 mm; 1 in the left lobe, 3 mm
	Vascular Invasion	Absent	Absent	Absent
	Lymph-node Metastases	Absent	Present 1/3 lymph nodes resected	Absent
BRAFV600E MUTATION		Present	Present	Absent

Conclusions

- Percutaneous LA is technically feasible for complete PMC destruction
- Tumor multi-focality and micrometastasis cannot be recognized preoperatively with ultrasound or molecular biological markers
- LA may be useful in selected patients with PMC (poor surgical risk, surgical treatment refusal)
- LA may become a primary choice treatment for PMC if future new knowledge would permit preoperative detection of multifocality and lymph node metastasis

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EMILIA ROMAGNA

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Donato Nicolò, SN



LA 5-Year follow-up study

Patients and Methods

□ Pts with 5 yrs follow-up	77 (M 17, F 60)
□ Age	52.2 ± 12.3 years
□ Cytology	benign hyperplasia
□ No. of optic fibers	1-4 (2.4 ± 0.6)
□ Energy delivered	8,522 ± 5,365 J (1,200–32,000 J)
□ Output power	2-4 Watts (3.1 ± 0.5 W)
□ Treatment time	19 ± 8 min
□ Pre-treatment volume	23.1 ± 21.3 ml (2.6-86.4 ml)