Efficacy of conscious sedation for laser ambulatory ablation of benign thyroid nodules

Manuel López-Baamonde¹, Felicia Hanzu², Mattia Squarcia³, Mireia Mora², Ricard Valero¹, Enrique Carrero¹

¹ Anaesthesiology Department. Hospital Clínic. Universitat de Barcelona

² Endocrinology Department. Hospital Clínic. Universitat de Barcelona

³ Department of Diagnostic Imaging. Hospital Clínic. Universitat de Barcelona

Background

Laser ablation of the thyroid (LAT) is a new minimally invasive technique to treat thyroid benign nodules (TN).

It presents potential risks:

1. Tracheal perforation
2. Great vessel injury
3. Cervical haematoma

Laryngeal oedema is the main risk in the immediate post-operative period

In our hospital we perform LAT under conscious sedation in a prepared echography room with the patient in supine decubitus, cervical hyperextension and laser eyewear protection.

Sedation requirements: **A.** maintain spontaneous breathing, **B.** maintain patient's collaboration with response to verbal stimulus (Ramsay 2-3) ensuring **C.** highest comfort and adequate analgesia.

When the LAT begins oxygen administration must be suspended in order to minimize the ignition possibility and potential associated morbidity.

Objective

- 1) Value the efficacy and safety of conscious sedation for LAT ambulatory procedures in the first 25 cases between April 2014 and January 2016.

Methods

Monitoring: standard non-invasive monitoring (EKG, NIBP, SpO₂, RR, EtCO₂) and oxygen therapy with 2 L/min nasal cannula.

IV Premedication: pantoprazole 40mg, ondansetron 4mg, acetaminophen 1g, methylprednisolone 0.5mg/Kg.

Anaesthetic technique: local infiltration (mepivacaine/lidocaine) + propofol TCI (Target: Ramsay 2-3; 0.5-1 mcg/mL); IV ketamine (1st "rescue" option) and IV phentanyl (2nd "rescue" option).

Interventional technique: echo-guided 25 GA needle and a flexible optic fibre of 300 µm. NT ≤ 10mL are treated with 800J/mL and NT > 10mL with 600 J/mL. Energy source: 2-5 W. Time: 5-10min. Result: central carbonization area contained in a coagulative necrosis zone.

Recovery: 1h in the radiology area box. Patient seated + cervical ice; echography control. Ambulatory procedure → Discharge.

Postoperative period: acetaminophen alternated with dextketoprofen every 8 hours and "rescue" with tramadol. Descendent corticoid prescription during 3 days. Clinical control in 7 days and echography in 1 month.

Results

Demographic Data	
Age, years	43 ± 12
Weight (Kg)	76,9 ± 18,3
Height (m)	1,64 ± 0,09
Women, n (%)	18 (72%)
ASA Classification (%)	ASA I: 1 (4%)
	ASA II: 15 (60%)
	ASA III: 7 (28%)
	ASA IV: 0 (0%)
	ASA V: 0 (0%)
Pathological History	HBP: 12 (48%)
	COPD: 4 (16%)
	OSA: 3 (12%)
	Cardiopathy: 3 (12%)
	DM: 1 (4%)

Respiratory Depression	
Apnoea (≥ 10 s)	2 (8%)
Bradipnoea (FR < 10)	5 (20%)
Desaturation (SpO ₂ < 90%)	4 (16%)
Ramsay 4	3 (12%)
CO ₂ Re-inhalation	1 (4%)
Coughing	1 (4%)
Early detection → Reversibility	
Verbal Stimulus	5 (20%)
Physical Stimulus	1 (4%)
FiO ₂ Rising	0 (0%)
Manual Airway Manoeuvres	0 (0%)
Oropharyngeal Cannula	0 (0%)
Ambu®	0 (0%)
Laryngeal Mask	0 (0%)
Intubation	0 (0%)

Cervical Ice. Recovery Box

Drugs	
Local Infiltration	Mepivacaine 22 (88%)
	Lidocaine 1 (4%)
Propofol TCI	Time: 60,4 ± 27,6 min Dose: 125,3 ± 76,6 mg
"Rescue" drug association	Ketamine 10 (40%)
	Phentanyl 8 (32%)

*All tables represent data in mean ± SD or N (%).

LAT Complications	
Ignition	0 (0%)
Tracheal Perforation	0 (0%)
Oedema	0 (0%)
Stridency	1 (4%)
Perioral Paresthesia	1 (4%)

Postoperative Box Discharge Delay	
HBP	1 (4%)
Pain	NRS 4-7: 3 (12%) NRS > 7: 3 (12%)

Other Complications	
Readmission	0 (0%)
Surgery	0 (0%)
Emergency Consultation	2 (8%)
Fatigue 2-3 days after	5 (20%)
Nodule Swelling (4-5 weeks)	1 (4%)

Conclusions

• Conscious sedation is an effective and safe technique to perform laser ablation of benign thyroid nodules as an outpatient intervention.

• Monitoring and surveillance allow early detection and treatment of potential complications.