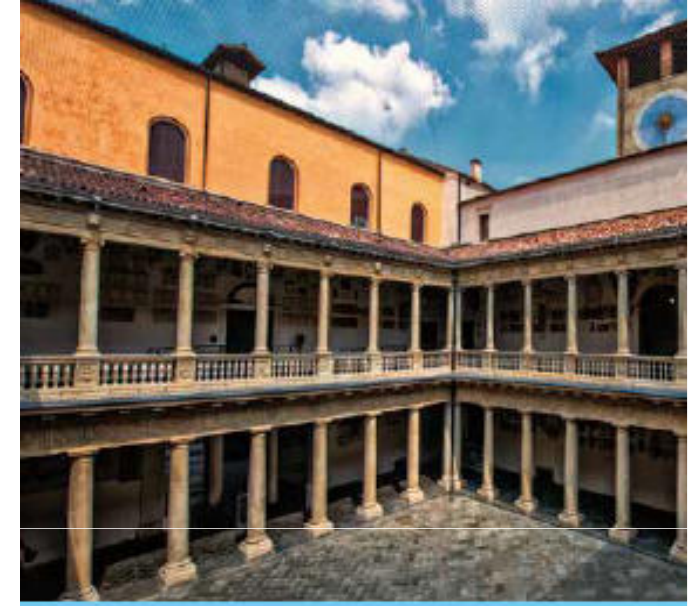


# Uso degli energy devices PROS & CONS

Andrea Droghetti



INCONTRO  
E ASSEMBLEA

**VATS GROUP**

UPDATE DI TECNICA  
E TECNOLOGIA NELLE  
RESEZIONI ANATOMICHE  
TORACOSCOPICHE

30 MARZO 2017

**PADOVA**

Palazzo del Bò, Aula Nievo



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AZIENDA OSPEDALIERA  
CARLO POMA



**Table 2**

Propensity score-matched (3:1) comparison of outcomes after laparoscopic myomectomy with harmonic scalpel versus with electrosurgery.

	Harmonic (n = 31)	Electrosurgery (n = 93)	p
<i>Clinical outcomes</i>			
Fibroids removed (n)	3.1 ± 2.8	3.0 ± 3.5	0.902
Main fibroid size (cm)	7.6 ± 1.9	7.6 ± 2.1	0.942
Blood loss (mL)	300.0 ± 230.6	214.7 ± 215.7	0.063
Hemoglobin decrease (mg/dL)	1.2 ± 0.84	1.5 ± 0.9	0.109
Blood transfusion	5 (16.1)	3 (3.2)	0.571
Complication	0	4 (4.3)	0.023
<i>Efficiency outcomes</i>			
Operating time (min)	119.7 ± 37.1	106.0 ± 48.4	0.154
Postop stay (d)	2.0 ± 0.4	2.5 ± 0.7	<0.001
Hospital charges (NTD)	39,207.7 ± 9315.0	24,078.4 ± 11,051.3	<0.001

Values are presented as mean ± standard deviation or n (%).

NTD = new Taiwan dollar.

450 euro!!!



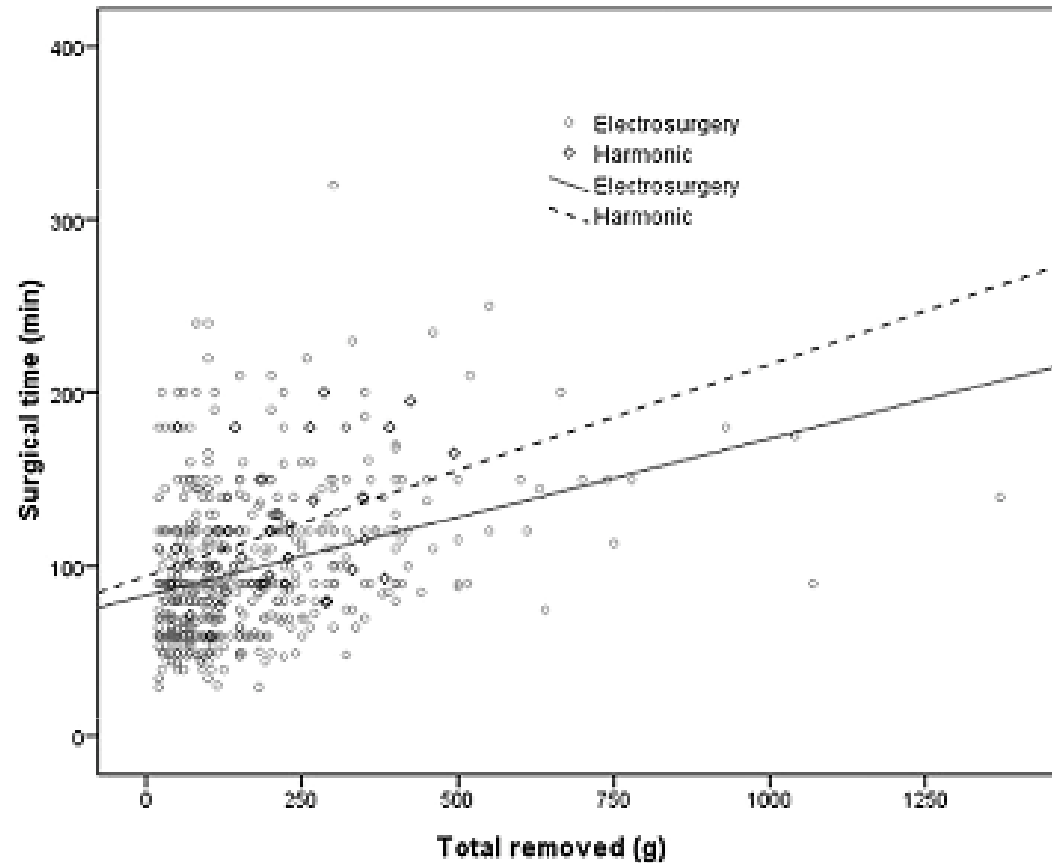
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# A case-controlled study comparing harmonic versus electrosurgery in laparoscopic myomectomy

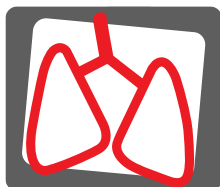
Hsin Hong Kuo<sup>a</sup>, Yichieh Li<sup>a</sup>, Chin-Jung Wang<sup>a,\*</sup>, Hsiao-Ting Juang<sup>b</sup>, Chuan-Yao Lee<sup>a</sup>

<sup>a</sup> Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital at Linkou, College of Medicine, Chang Gung University, Kwei-Shan, Tao-Yuan, Taiwan

<sup>b</sup> Biostatistical Center for Clinical Research, Chang Gung Memorial Hospital at Linkou and Clinical Informatics and Medical Statistics Research Center, Chang Gung University, Taoyuan, Taiwan



Conclusion: Harmonic scalpel is as safe and effective as conventional electrosurgery, and may offer an alternative option for patients undergoing LM. Harmonic scalpel has advantage over conventional electrosurgery in **less postoperative hospital stay but disadvantage in higher cost.**



## Harmonic Scalpel versus Monopolar Electrocauterization in Cholecystectomy

Guanqun Liao, MD, PhD, Shunqian Wen, MD, Xueyi Xie, MD, Qing Wu, MD

**Table 2.**  
Operative and Postoperative Data

	<b>Experimental Group (n = 117)</b>	<b>Control Group (n = 81)</b>	<b>P-value</b>
Operative time, min, mean $\pm$ SD	54.9 $\pm$ 13.1	51.7 $\pm$ 9.6	0.079
Blood loss, mL, mean $\pm$ SD	14.2 $\pm$ 10.6	13.7 $\pm$ 9.1	0.367
Conversion to laparotomy, n (%)	1 (0.8)	0 (0.0)	0.404
Postoperative complications, n (%)			
Surgical site infection	0 (0.0)	1 (1.2)	0.228
Postoperative pneumonia	1 (0.8)	0 (0.0)	0.404
Bile leak	1 (0.8)	0 (0.0)	0.404
CBD injury	1	0	0.404
PHS, days, mean $\pm$ SD	3.0 $\pm$ 0.4	2.9 $\pm$ 0.4	0.315

n = 198.

The increased cost and negligible benefits shown in this study make it inadvisable to use the Harmonic scalpel in uncomplicated LC when compared with monopolar electrocautery.





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# Energy-Based Ligation of Pulmonary Vessels: A Six-Year Experience With Ultrasonic Shears in Video-Assisted Thoracoscopic Lobectomy and Segmentectomy

Abby White, DO, Suden Kucukak, MD, Daniel N. Lee, BS, and Scott J. Swanson, MD

Department of Surgery, Division of Thoracic Surgery, Brigham and Women's Hospital, Boston, Massachusetts

Table 2. Perioperative Outcomes

Outcomes	Patients (n = 82)	Ultrasonic Ligation (n = 82)	Conventional Ligation (n = 201)	p Value
Vessels divided with ultrasonic shears	118			
Pulmonary venous	21			
Pulmonary arterial	97			
Vascular dehiscence following ligation		1 (1%)	2 (1%)	0.565
Overall complications		21 (26%)	76 (38%)	0.05
Air leak >7 days		11 (13%)	40 (20%)	0.198
Return to operating room		4 (5%)	11 (5%)	0.839
Empyema		1 (1%)	2 (1%)	0.867
Perioperative blood transfusions		0	2 (1%)	0.365

Non differenze statisticamente significative!!!



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## Usefulness of vessel-sealing devices for $\leq 7$ mm diameter vessels: a randomized controlled trial for human thoracoscopic lobectomy in primary lung cancer

Masayuki Toishi, Kazuo Yoshida\*, Hiroyuki Agatsuma, Takao Sakaizawa, Takashi Eguchi, Gaku Saito,  
Masahiro Hashizume, Kazutoshi Hamanaka and Takayuki Shiina

Table 3: Comparison of clinical data

	VSD (n = 44)	Control (n = 14)	P-value	VSD (n = 44)			P-value
				EnSeal (n = 17)	LigaSure (n = 15)	Harmonic (n = 12)	
Operative time (min)	242 ± 83	278 ± 109	0.1019	258 ± 91	226 ± 80	239 ± 77	0.5557
Intraoperative blood loss (ml)	122 ± 98	217 ± 157	0.0241	122 ± 106	95 ± 73	155 ± 110	0.2965
Instances of endostapler use	5.3 ± 1.3	5.2 ± 1.7	0.4266	5.5 ± 1.5	5.0 ± 1.3	5.3 ± 1.2	0.5441
Surgeon stress (measured by VAS)	47 ± 20	69 ± 16	0.0002	46 ± 25	47 ± 16	48 ± 19	0.9715
Drainage volume (ml)	437 ± 213	613 ± 320	0.0358	437 ± 197	471 ± 208	395 ± 249	0.6625
Drainage duration (days)	4.1 ± 2.0	5.7 ± 3.1	0.0449	4.1 ± 1.7	4.3 ± 2.4	3.9 ± 2.1	0.8639

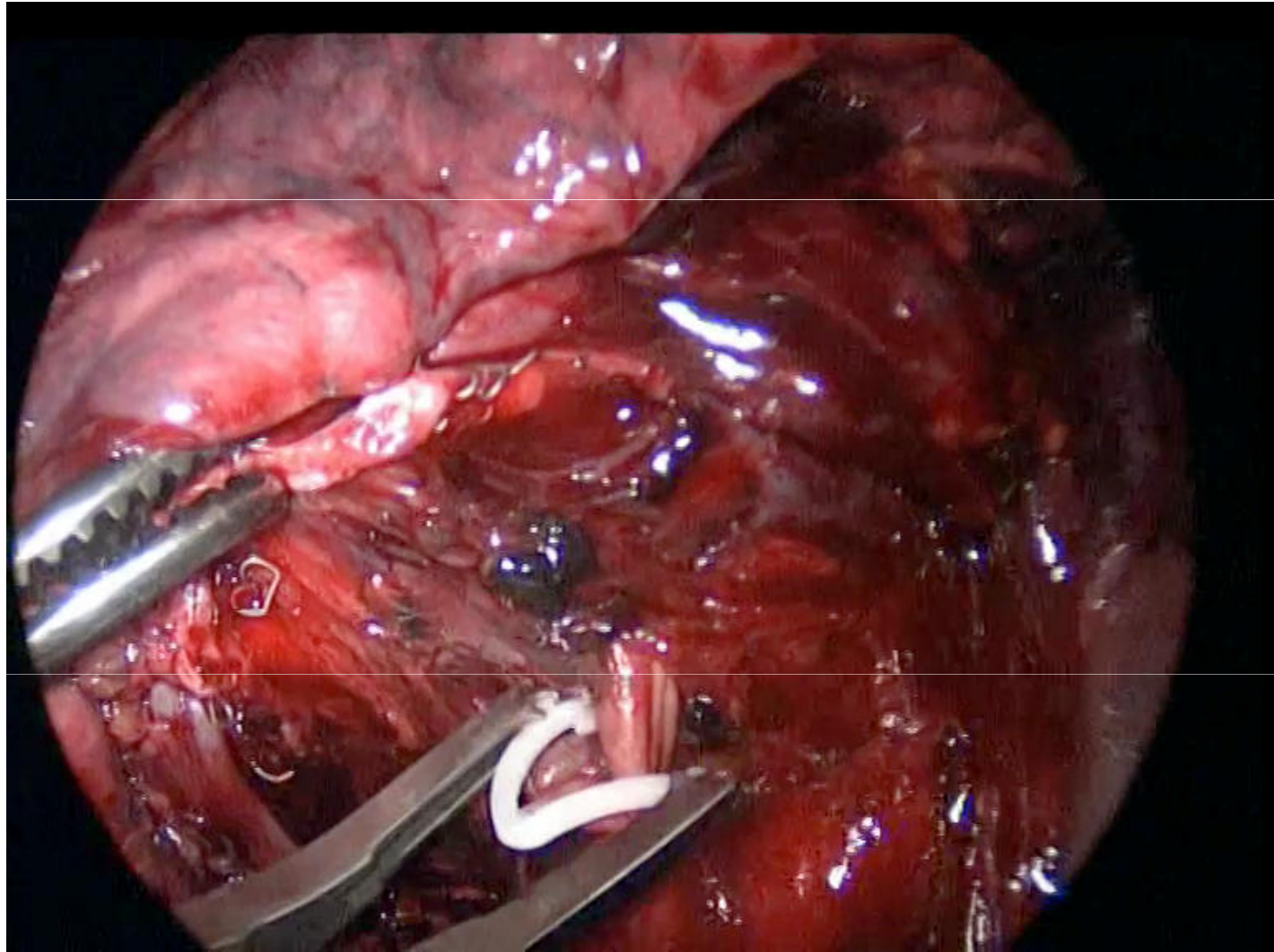
Continuous variables were expressed as mean ± standard deviation.  
VAS: visual analogue scale; VSD: vessel-sealing devices.

Perdite ematiche ridotte  
Stress chirurgo ridotto  
Volume liquido drenato postoperatorio ridotto  
Tempo di drenaggio postoperatorio ridotto

Tempi operatori uguali  
Uso di staplers uguale  
Costi aumentati



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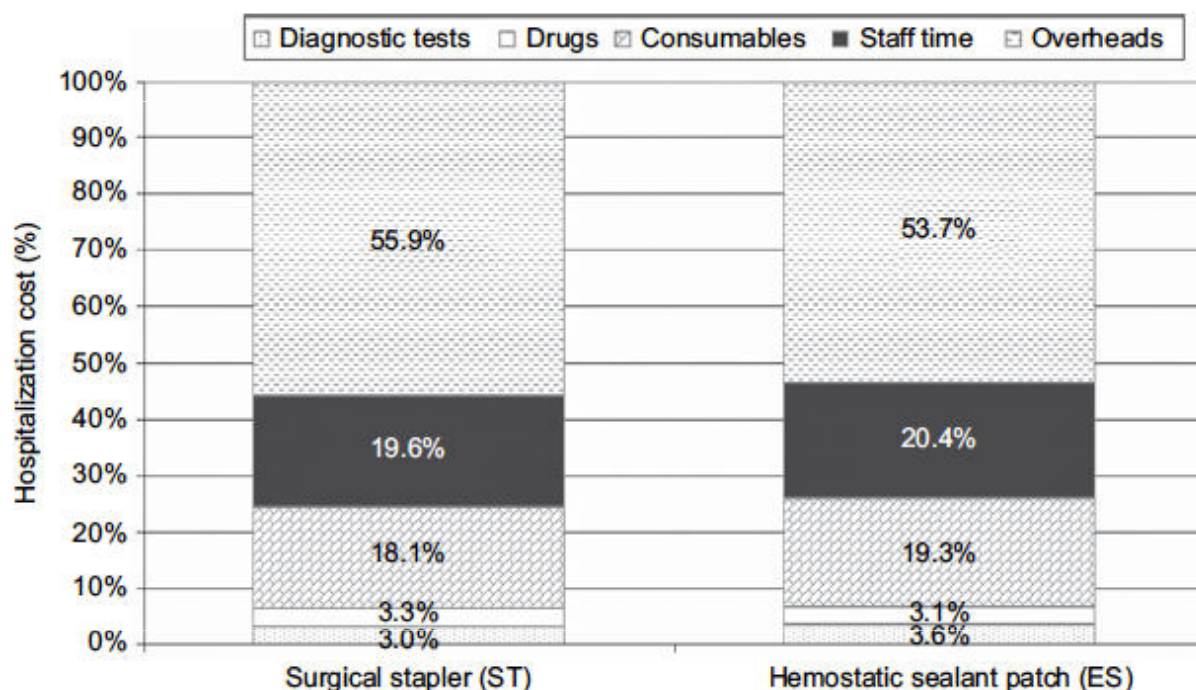


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Open Access Full Text Article

ORIGINAL RESEARCH

# Cost analysis of pulmonary lobectomy procedure: comparison of stapler versus precision dissection and sealant



Andrea Droghetti<sup>1</sup>  
 Giuseppe Marulli<sup>2</sup>  
 Jacopo Vannucci<sup>3</sup>  
 Michele Giovanardi<sup>1</sup>  
 Maria Caterina Bottoli<sup>1</sup>  
 Mark Ragusa<sup>3</sup>  
 Giovanni Muriana<sup>1</sup>

<sup>1</sup>Thoracic Surgery Division, Carlo Poma Hospital, Mantova, <sup>2</sup>Thoracic Surgery Division, University of Padova, Padova, <sup>3</sup>Thoracic Surgery Division, University of Perugia, Perugia, Italy

**Table 3 Results: mean cost per resource type**

Variables	Stapler group (ST)	%	Electrocautery and sealant group (ES)	%	Difference, ES vs ST, %
Staff time	€2,050.44	19.6	€1,840.60	20.4	-10.2
Diagnostic tests	€315.30	3.0	€322.27	3.6	2.2
Drugs	€349.70	3.3	€277.62	3.1	-20.6
Consumables	€1,893.22	18.1	€1,738.24	19.3	-8.2
Overheads	€5,851.98	55.9	€4,849.22	53.7	-17.1
Total hospitalization cost	€10,460.64		€9,027.95		-13.7

# LASER

Lasers Med Sci (2013) 28:505–511  
DOI 10.1007/s10103-012-1097-0

ORIGINAL ARTICLE

## A prospective randomized trial comparing stapler and laser techniques for interlobar fissure completion during pulmonary lobectomy

Giuseppe Marulli • Andrea Droghetti •  
Francesco Di Chiara • Francesca Calabrese •  
Alessandro Rebusso • Egle Perissinotto •  
Giovanni Muriana • Federico Rea

*Stapler vs laser: +77% costo procedurale*

*Stapler vs Laser: 8147 vs 5650 euro costo di degenza*

*300 procedure di resezione polmonare per ammortizzare il costo iniziale del sistema Laser*

Marulli, Droghetti et al. Lasers in Medical Science - 2013

Cyber™  
Thulium laser

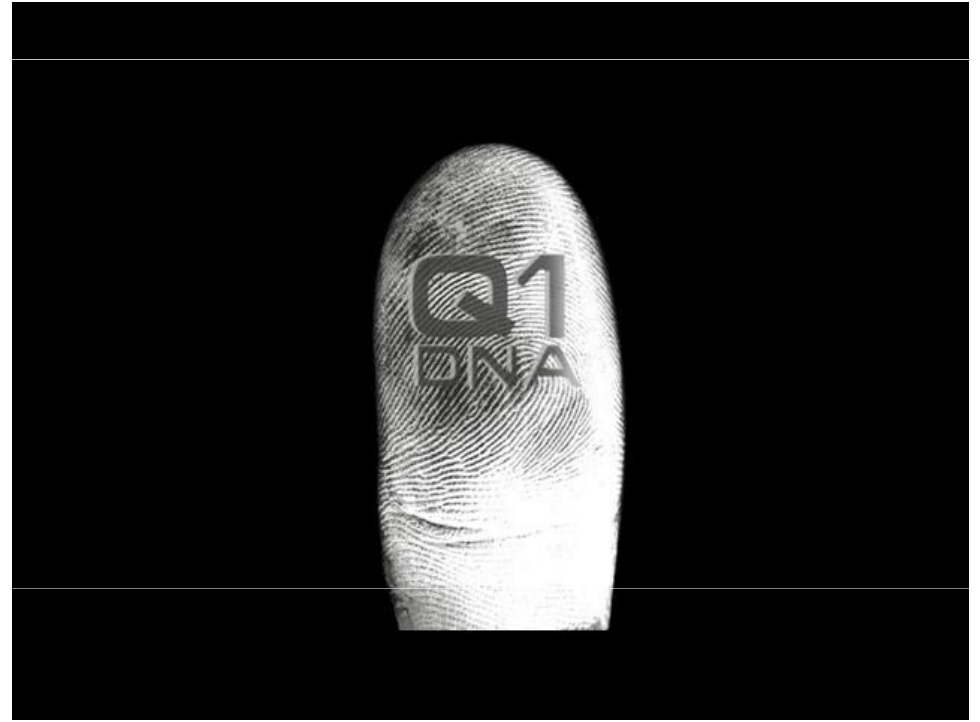
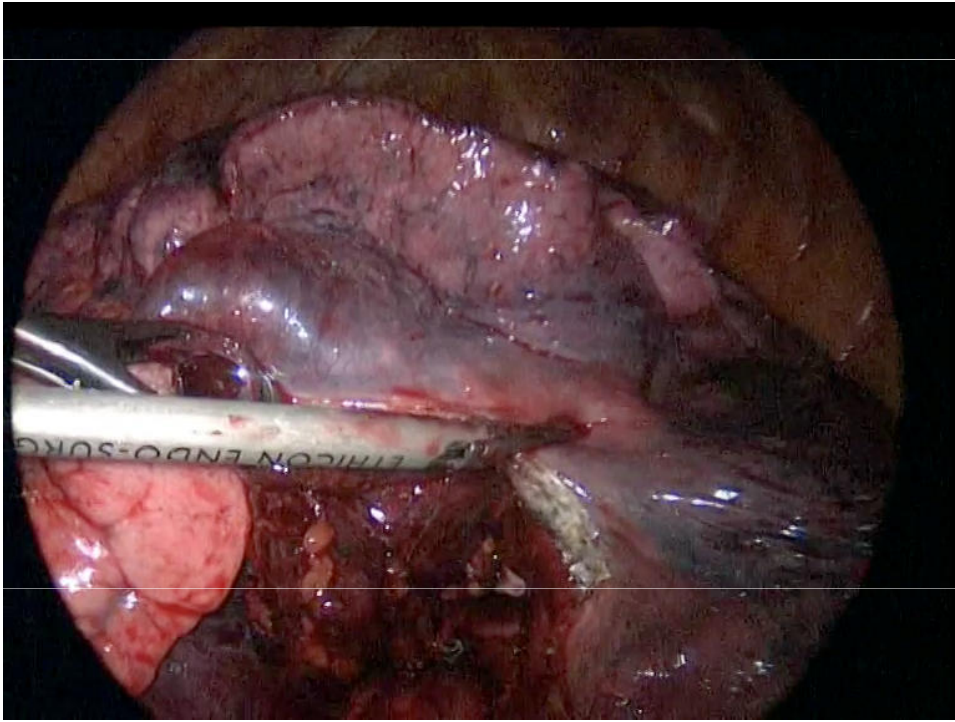
SPECIFICATIONS	
Wavelength	2 µm
Power	Up to 150W
Power setting	20W to 150W in 1, 5, 10W increment steps
Treatment mode	Continuous wave or pulsed (5 - 1000 ms)
Beam delivery	Wide range of flexible silica frontal / side-firing fibers
Aiming beam	Red or green on choker, (adjustable <4 mW)
Electrical requirements	200-240VAC, single phase, 50-60Hz, 16A
Cooling	Air cooled
Noise level	Less than 50 dBA
Operating temperature	10°C-30°C
Storage temperature	10°C-40°C
Humidity	30%-90%
Dimensions	21.6 in/55 cm (W) x 30.5 in/75 cm (D) x 43.3 in/110 cm (H)
Weight	440 lbs./200 kg

FIBERS	
•	1000 µm core frontal fiber, 3m long, sterile
•	800 µm core frontal fiber, 3m long, sterile
•	600 µm core frontal fiber, 3m long, sterile
•	400 µm core frontal fiber, 3m long, sterile

ACCESSORIES	
•	Smoke evacuator
•	Surgical handpieces with curved and flat tips
•	Fiber stripper sterilizable for all fibers



Quanta System S.p.A.  
Via IV Novembre, 116 - 21055 Sobriano Olona (VA) Italy  
Tel. +39 0331 376797 - Fax +39 0331 367815  
quanta@quantasystem.com  
www.quantasystem.com



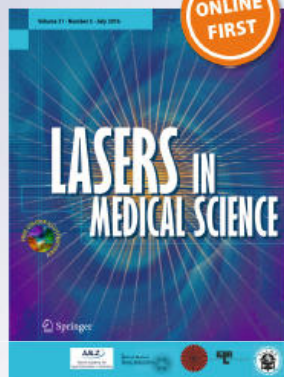
*Pleurodesis with Thulium Cyber Laser versus talc poudrage: a comparative experimental study*

**Andrea Droghetti, Jacopo Vannucci,  
Antonello Bufalari, Guido Bellezza,  
Valentina De Monte, Giuseppe Marulli,  
Maria Caterina Bottoli, et al.**

Lasers in Medical Science

ISSN 0268-8921

Lasers Med Sci  
DOI 10.1007/s10103-016-2002-z



 Springer

*Droghetti, Vannucci et al. Lasers in Medical Science - 2016*



# Energy Device Ideale:

1. eliminare la necessità di altri devices per la stessa procedura
2. avere differenti dimensioni di tips intercambiabili
3. articolabilità per raggiungere anche i siti più difficili
4. differenti setting di energia per differenti utilizzi (vasi, parenchima, aderenze...)



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*Grazie*