Carcinoma del colon-retto:
La Chirurgia Robotica nella Malattia Avanzata

Alberto Patriti

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Servizio Sanitario Regionale

- Why MIS for Advanced Colo-Rectal Cancer

- Fields of application of MIS

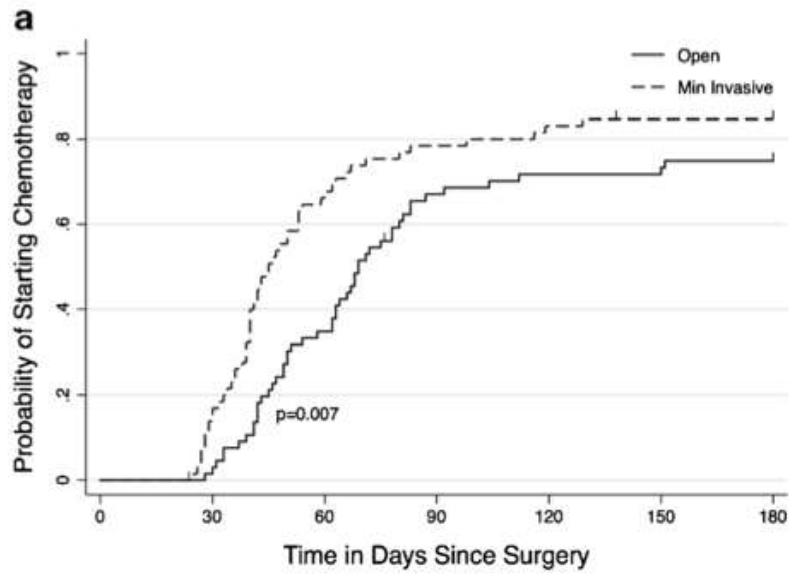
Why MIS for Advanced Colo-Rectal Cancer ?

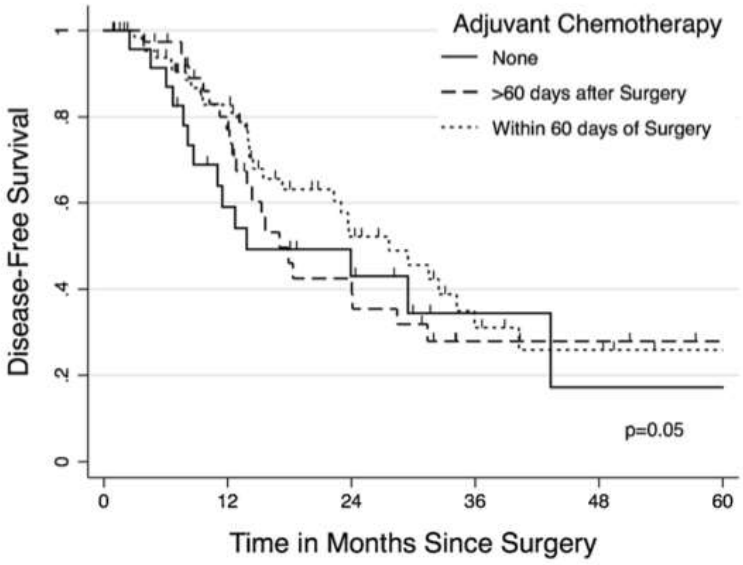
J Gastrointest Surg
DOI 10.1007/s11605-015-2962-5

ORIGINAL ARTICLE

Minimally Invasive Resection of Colorectal Cancer Liver Metastases Leads to an Earlier Initiation of Chemotherapy Compared to Open Surgery

Samer Tohme[1] · Julie Goswami[1] · Katrina Han[1] · Alexis P. Chidi[2] · David A. Geller[1] · Srinivas Reddy[3] · Ana Gleisner[3] · Allan Tsung[1]





Liver Metastases

Why MIS for Advanced Colo-Rectal Cancer ?

Ann Surg Oncol (2014) 21:3587–3591
DOI 10.1245/s10434-014-3703-8

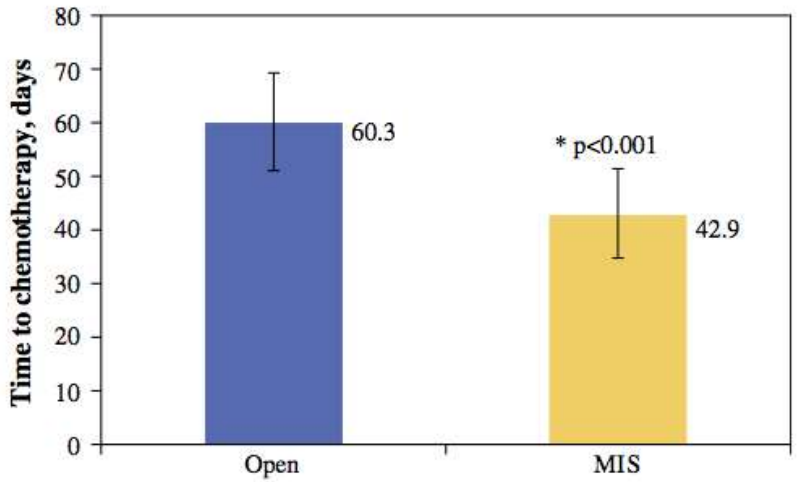
Annals of SURGICAL ONCOLOGY

ORIGINAL ARTICLE – COLORECTAL CANCER

Laparoscopic Colectomy Decreases the Time to Administration of Chemotherapy Compared with Open Colectomy

Vitaliy Poylin, MD, Thomas Curran, MD, Elisa Lee, MD, and Deborah Nagle, MD

Colon & Rectal Surgery, Beth Israel Deaconess Medical Center, Boston, MA



Stage III/IV Colon Cancer

Fields of application of MIS in Advanced Colo-Rectal Cancer

- Metachronous and Recurrent CRLM
- Synchronous CRLM
- Locally advanced rectal cancer
- Locally advanced colon cancer (?)

Robotics

Liver Metastases

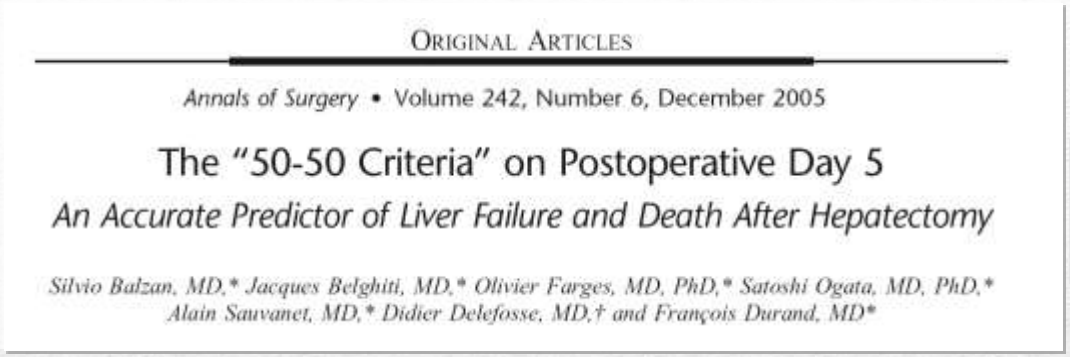
Previous Indications

Current Indications

15%-30%
eligibility for resections

- **Negative resection margins**
- **Future liver remnant >30% total volume**
- **Negative resection margins of extrahepatic metastatic disease**

Parenchymal preservation



ORIGINAL ARTICLES

Annals of Surgery • Volume 242, Number 6, December 2005

The "50-50 Criteria" on Postoperative Day 5

An Accurate Predictor of Liver Failure and Death After Hepatectomy

Silvio Balzan, MD, Jacques Belghiti, MD,* Olivier Farges, MD, PhD,* Satoshi Ogata, MD, PhD,* Alain Sauvanet, MD,* Didier Delefosse, MD,† and François Durand, MD**

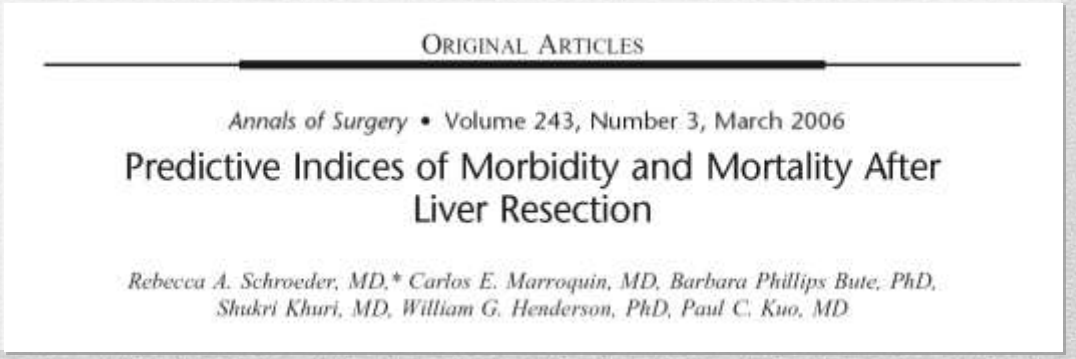
77% of deaths after Major Hx

Recovery from Liver Failure after Hepatectomy for Hepatocellular Carcinoma in Cirrhosis: Meaning of the Model for End-Stage Liver Disease

Alessandro Cucchetti, MD, Giorgio Ercolani, MD, Matteo Cescon, MD, Matteo Ravaioli, MD, Matteo Zanello, MD, Massimo Del Gaudio, MD, Augusto Lauro, MD, Marco Vivarelli, MD, Gian Luca Grazi, MD, Antonio Daniele Pinna, MD

J Am Coll Surg 2006;203:670–676.

Major Hx = independent variable for postop. mortality



ORIGINAL ARTICLES

Annals of Surgery • Volume 243, Number 3, March 2006

Predictive Indices of Morbidity and Mortality After Liver Resection

Rebecca A. Schroeder, MD, Carlos E. Marroquin, MD, Barbara Phillips Bute, PhD, Shukri Khuri, MD, William G. Henderson, PhD, Paul C. Kuo, MD*

LR: 6.1% mortality;

Rt Hx: 12%; ext Rt Hx; 16%

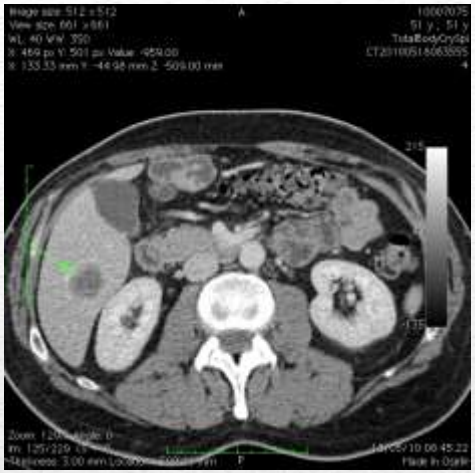
RATE OF MAJOR RESECTION = HIGHER MORTALITY

Parenchymal preservation

Increased Use of Parenchymal-Sparing Surgery for Bilateral Liver Metastases From Colorectal Cancer Is Associated With Improved Mortality Without Change in Oncologic Outcome

Trends in Treatment Over Time in 440 Patients

Jason S. Gold, MD,† Chandrakanth Are, MD, FRCS,* Peter Kornprat, MD,* William R. Jarnagin, MD, FACS,* Mithat Gönen, PhD,† Yuman Fong, MD, FACS,* Ronald P. DeMatteo, MD, FACS,* Leslie H. Blumgart, MD, FACS, FRCS,* and Michael D'Angelica, MD, FACS**



"Radical But Conservative"—The Main Goal for Ultrasonography-Guided Liver Resection: Prospectiv Validation of This Approach

Guido Torzilli, MD, PhD, Marco Montorsi, MD, Matteo Donadon, MD, Angela Palmisano, MD, Daniele Del Fabbro, MD, Andrea Gambetti, MD, Natale Olivari, MD, Masatoshi Makuuchi, MD, PhD

PARENCHYMAL PRESERVATION DOES NOT COMPROMISE RADICALITY

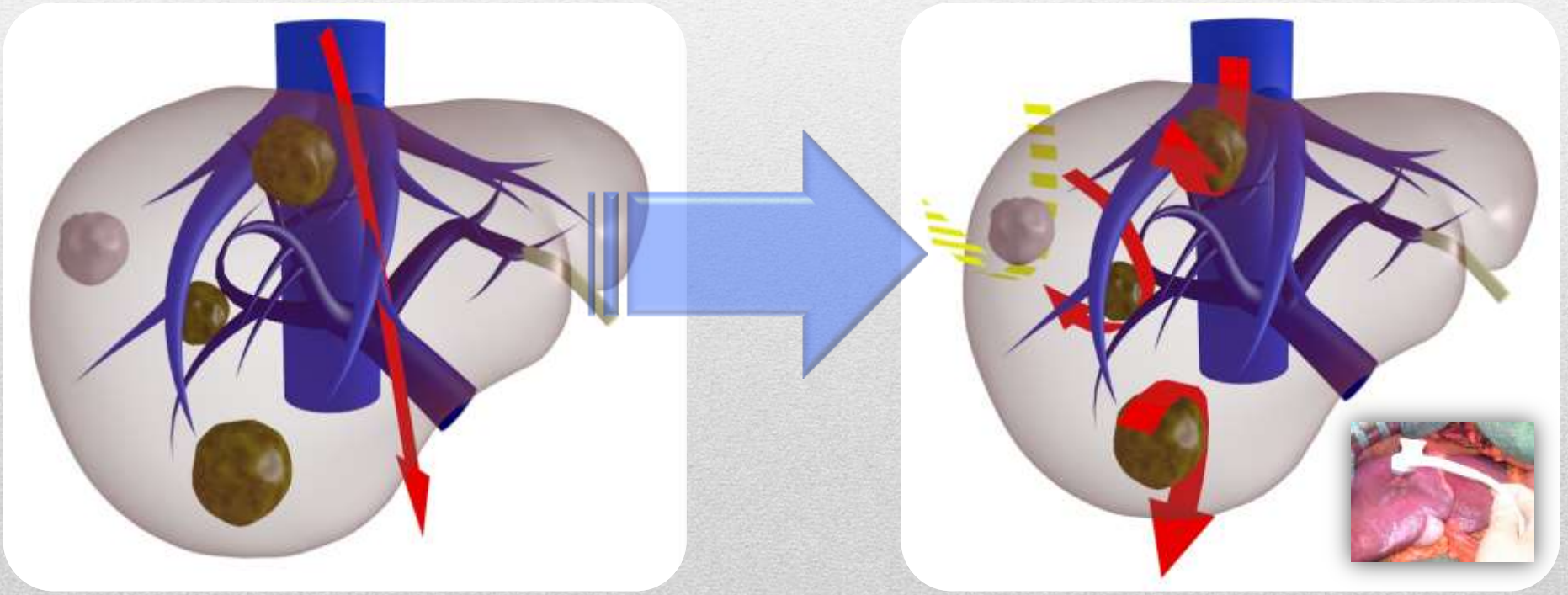
Parenchymal preservation

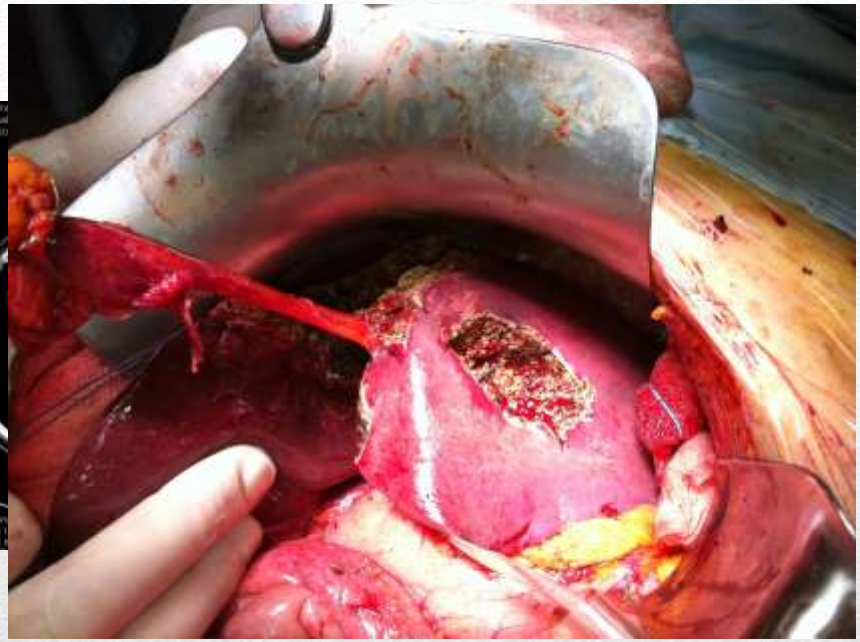
THE STRONGHOLD OF THE MODERN LIVER SURGERY

"Radical But Conservative"—The Main Goal for Ultrasonography-Guided Liver Resection: Prospective Validation of This Approach

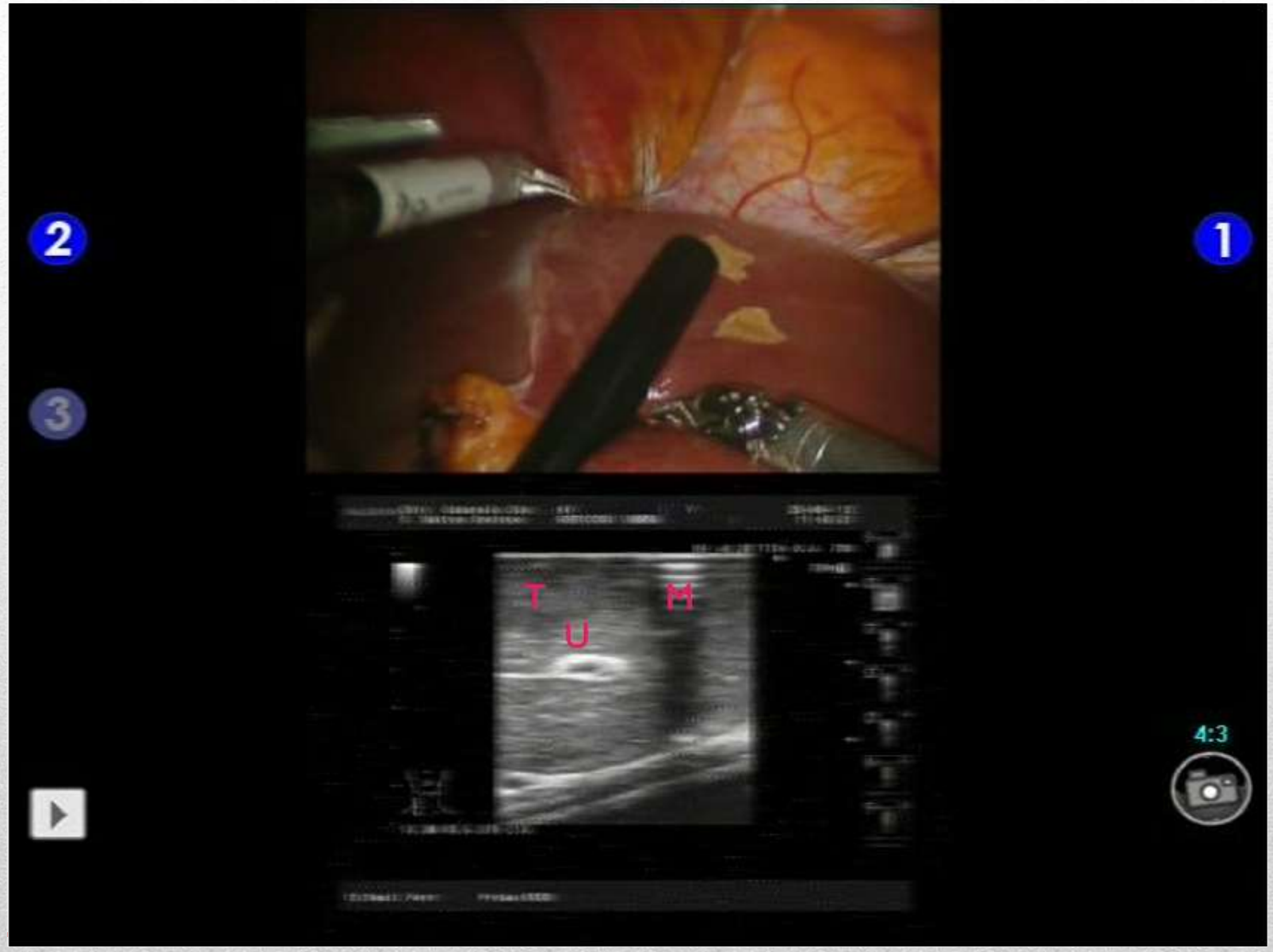
J Am Coll Surg 2005;201:517–528

Guido Torzilli, MD, PhD, Marco Montorsi, MD, Matteo Donadon, MD, Angela Palmisano, MD, Daniele Del Fabbro, MD, Andrea Gambetti, MD, Natale Olivari, MD, Masatoshi Makuuchi, MD, PhD





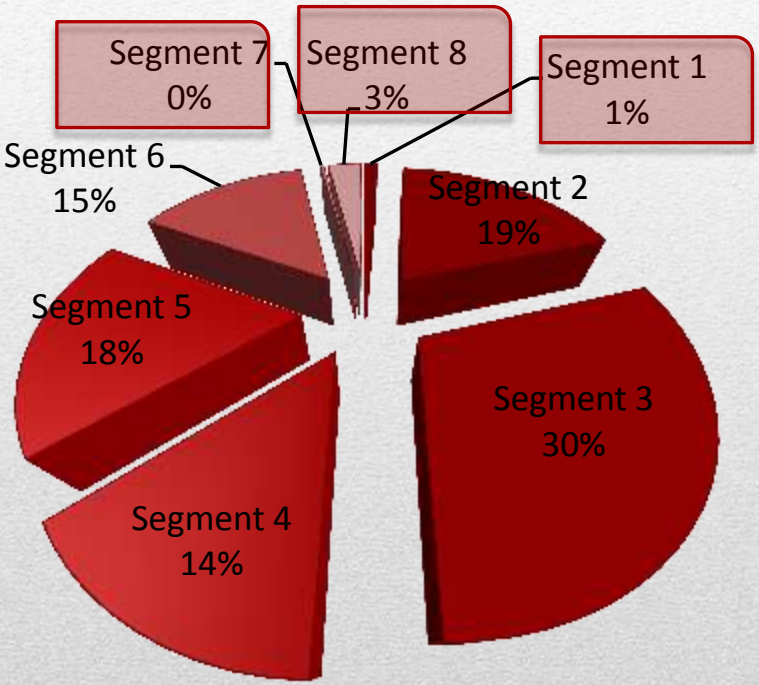
Parenchymal preservation



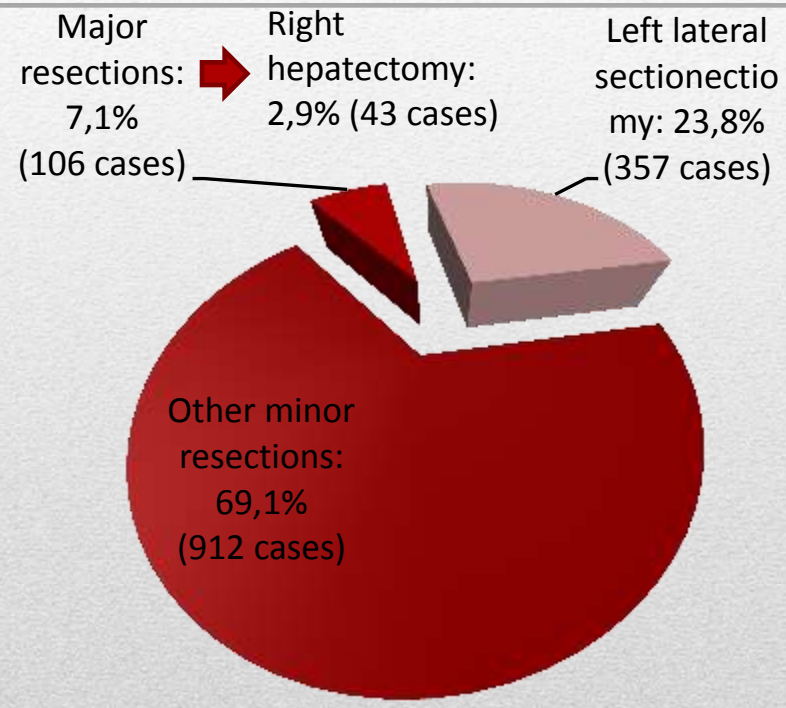
Laparoscopic Liver Resections

Italian Survey on Minimally Invasive Liver Resection (MILR)

1497 resections performed in 39 Italian centers between 1995 and 2012



Lesion position



Extent of liver resections

Aldrighetti L, Cipriani F, Ratti F, Casciola L, Calise F on behalf of the Italian National Survey Study Group (2013) *The Italian experience in minimally invasive surgery of the liver: a National Survey*. In F.Calise, L.Casciola (editors) Minimally Invasive Surgery of the Liver, Updates in Surgery. Springer-Verlag Italia

Laparoscopic Liver Resections

Laparoscopic Resection in Posterior Segments

(*Ann Surg* 2009;250: 849–855)
ORIGINAL ARTICLES

Oncologic Results of Laparoscopic Versus Open Hepatectomy for Colorectal Liver Metastases in Two Specialized Centers

Denis Castaing, MD,†‡ Eric Vibert, MD,*†‡ Luana Ricca, MD,*§¶ Daniel Azoulay, MD, PhD,* Rene Adam, MD, PhD,* and Brice Gayet, MD§¶*

- ✓ Period 1997-2007/08
- ✓ 2 center:
  - 1 center Open Surgery(OC)
  - 1 center Laparoscopic Surgery (LC)
- ✓ 60 patients/center

TABLE 3. Surgical Procedures in the 2 Studied Groups

Surgical Procedures	LH n = 60	OH n = 60
Extended right hepatectomy + wedge	1	3
Extended right hepatectomy	0	4
Extended left hepatectomy	1	1
Right hepatectomy + wedge/es	2	4
Right hepatectomy (segments 5, 6, 7, 8)	20	7
Left hepatectomy (segments 2, 3, 4)	0	1
Central hepatectomy (segments 4, 5, 8)	1	1
Left lobectomy + segmentectomy + wedge/es	1	1
Left lobectomy + segmentectomy	0	2
Left lobectomy + wedge/es	0	1
Left Lobectomy (segments 2, 3)	5	2
Bisegmentectomy + wedge/es	0	1
Bisegmentectomy	5	8
Segmentectomies	0	1
Segmentectomy + wedge	1	5
Segmentectomy	5	10
Wedges	6	5
Wedge	12	3

LH indicates laparoscopic hepatectomy; OH, open hepatectomy.

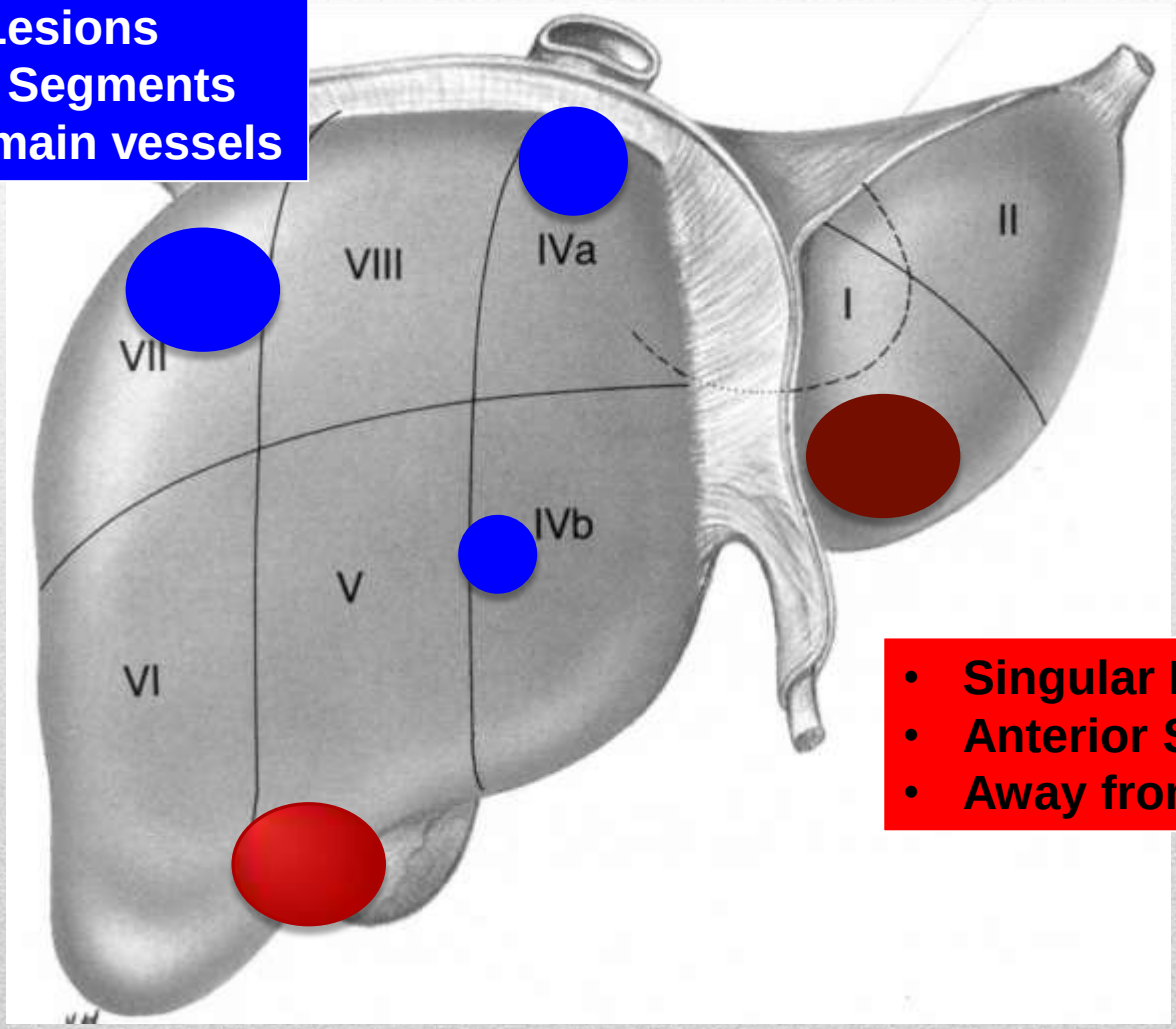
TABLE 4. Postoperative Features of the 2 Studied Groups

	LH n = 60	OH n = 60	*P*
Histological findings			
No. metastases (mean ± SD)	1.9 ± 1.2	2.2 ± 1.7	0.19
Size of metastases (mm)			
Mean ± SD	30 ± 16	41 ± 31	0.02
Median (range)	30 (5–80)	40 (8–160)	
Free resection margin (mean ± SD)	5.3 ± 7.5	5.2 ± 9.2	NS
R classification			
R0	52 (87%)	43 (72%)	0.04
R1	5 (8%)	17 (28%)	0.05
R2	3 (5%)	0	
Metastatic locoregional nodes [hepatic peduncle ± celiac trunk lymphadenectomy]	0 [17]	1 [11]	NS
Postoperative chemotherapy	34 (57%)	50 (83%)	0.014
No. lines (mean ± SD)	1.3 ± 0.6	1.2 ± 0.6	NS
No. cycles (mean ± SD)	10.3 ± 4.8	8.1 ± 4.7	NS

LH indicates laparoscopic hepatectomy; OH, open hepatectomy; SD, standard deviation; NS, not significant.

The International Position on Laparoscopic Liver Surgery
The Louisville Statement, 2008

- **Multiple Lesions**
- **Posterior Segments**
- **Close to main vessels**



- **Singular Lesion**
- **Anterior Segments**
- **Away from main vessels**

Robotics could add something new to traditional laparoscopy?

Robotics vs Laparoscopy in "Easy" Liver Resections

DOI:10.1111/j.1477-2574.2010.00234.x HPB

ORIGINAL ARTICLE

Robotic versus laparoscopic resection of liver tumours

Eren Berber[1], Hizir Yakup Akyildiz[1], Federico Aucejo[2], Ganesh Gunasekaran[2], Sricharan Chalikonda[2] & John Fung[2]

[1]Endocrinology and Metabolism Institute and [2]Digestive Disease Institute, Cleveland Clinic, Cleveland, OH, USA

J Gastrointest Surg
DOI 10.1007/s11605-012-2040-1

ORIGINAL ARTICLE

Minimally Invasive Liver Resection: Robotic Versus Laparoscopic Left Lateral Sectionectomy

Vignesh Packiam · David L. Bartlett · Samer Tohme · Srinevas Reddy · J. Wallis Marsh · David A. Geller · Allan Tsung

RESEARCH ARTICLE

Robotic Versus Laparoscopic Hepatectomy

A Matched Comparison

Allan Tsung, MD, David A. Geller, MD,* Daniel C. Sukato, BA,* Shirin Sabbaghian, MD,† Samer Tohme, MD,* Jennifer Steel, PhD,* Wallis Marsh, MD,* Srinevas K. Reddy, MD,‡ and David L. Bartlett, MD†*

Comparable intra- and post-operative outcome

Laparoscopic vs Robot-assisted Liver resections

Bi-institutional retrospective analysis

Demographic Data

	ROBOTIC (N=40)	LAPAROSCOPIC (N=223)	p
Demographics			
Age	64.6±12.1	55.3±15.7	0.001
Gender, M	27 (67.5%)	98 (43.9%)	0.010
Indication for resection			
Colo-Rectal Liver Metastases	24 (60%)	108 (48.4%)	
Adenoma	0 (0%)	38 (17%)	
FNH	0 (0%)	32 (14.4%)	
Hemangioma	6 (15%)	9 (4%)	
HCC	3 (7.5%)	9 (4%)	
Hydatid cyst	4 (10%)	4 (1.8%)	
Living donation	0 (0%)	4 (1.8%)	
Cholangiocarcinoma	1 (2.5%)	2 (0.9%)	
Other	2 (5%)	17 (7.6%)	
Pathology (Malignant)	28 (70%)	134 (60.2%)	0.31
Comorbidity			
Cardiac	8 (22.5%)	52 (23.3%)	1
Pulmonary	2 (5%)	12 (5.4%)	1
Renal	1 (2.5%)	3 (1.3%)	0.48
Diabetes	2 (5%)	13 (5.8%)	1
Previous abdominal surgery	13 (32.5%)	148 (66.4%)	<0.001
Combined Colo-Rectal Surgery	10 (25%)	6 (2.7%)	<0.001
Neo-adjuvant chemotherapy	5 (12.5%)	84 (37.7%)	0.004
Repeat hepatectomy	2 (5%)	19 (8.5%)	0.75

Ghent: Referral Center For HBP Surgery

Spoleto: HBP and Colorectal Surgeons work together

Int J Med Rob 2013

Laparoscopic vs Robot-assisted Liver resections

Bi-institutional retrospective analysis

Characteristics of tumoral lesions

	ROBOTIC	LAPAROSCOPIC	p
Total mean size (cm), (range)	51.8±37.6 (1-19)	49.7±37.7 (1-20)	0.75
Pts. with multiple lesions	18 (46.2%)	75 (34.6%)	0.23
Mean lesion number	1.97±1.4	1.57±1.1	0.04
Mean lesion number in P-S	2±1.5	1.78±1.13	0.38
Bilobar location	10 (25%)	31 (14.3%)	0.14
R1 Resection	3 (7.5%)	12 (5.4%)	0.71

Int J Med Rob 2013

Laparoscopic vs Robot-assisted Liver resections

Bi-institutional retrospective analysis

TYPE OF RESECTION	ROBOTIC (N=40)	LAPAROSCOPIC (N=223)	p
Monosegmentectomy	7 (17.5%)	54 (24.2%)	
Subsegmentectomy/Wedge	15 (37%)	36 (16.1%)	
Bisegmentectomy	8 (20%)	33 (14.8%)	
Left Lateral Sectionectomy	2 (5%)	39 (17.5%)	
Mixed Segments*	8 (20%)	26 (11.7%)	
Right Hepatectomy	0	17 (7.6%)	
Left Hepatectomy	0	16 (7.2%)	
Right Extended Hepatectomy	0	2 (0.9%)	
Major Hepatectomy	0	37 (16.6%)	0.011
P-S Segments**	22 (55%)	76 (34.1%)	0.019

Int J Med Rob 2013

Laparoscopic vs Robot-assisted Liver resections

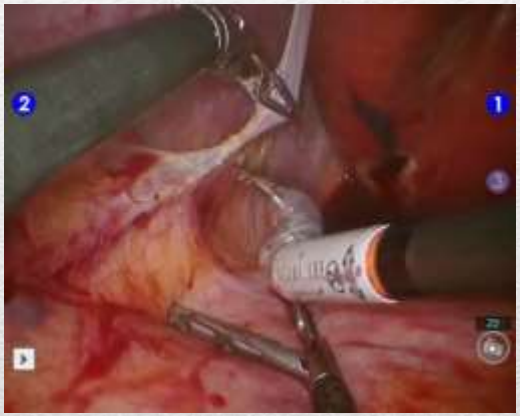
Bi-institutional retrospective analysis

- Perioperative details

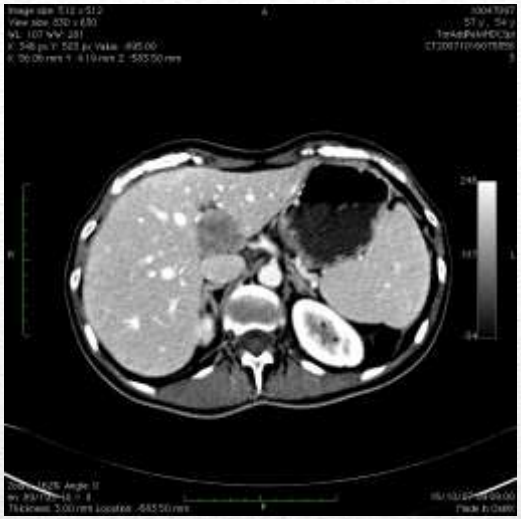
	ROBOTIC (N=40)	LAPAROSCOPIC (N=223)	p
Liver surgical time (min)	271±100	262±111	0.67
Liver surgical time + CRS (min)	354±149	395±124	0.58
Pringle maneuver (n)	18 (45%)	6 (2.7%)	<0.001
Blood loss (ml)	330±303	174±133	<0.001
Blood loss in CRS (ml)	367±461	415±229	0.82
Conversion rate (number)	8 (20%)	17 (7.6%)	0.034
Conversion rate in P-S (number)	2/10 (20%)	6/17 (35.3%)	0.38
Specimen extraction			
Trocar incision	32 (100%)	108 (52.4%)	
Pfannestiel incision	0 (0%)	93 (45.1%)	<0.001
Previous incision	0 (0%)	5 (2.4%)	
Postoperative stay (days)	6.1±2.6	5.9±3.8	0.78
Postoperative stay + CRS	14.1±11.6	14.5±13	0.95

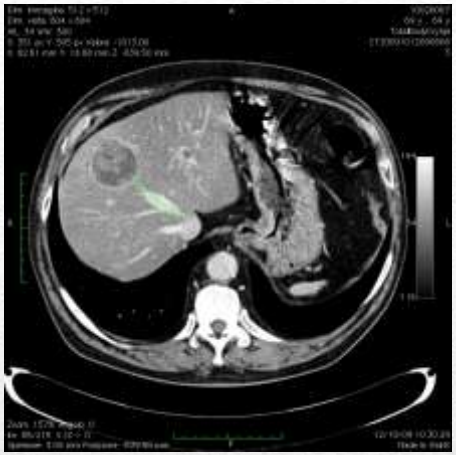
Int J Med Rob 2013

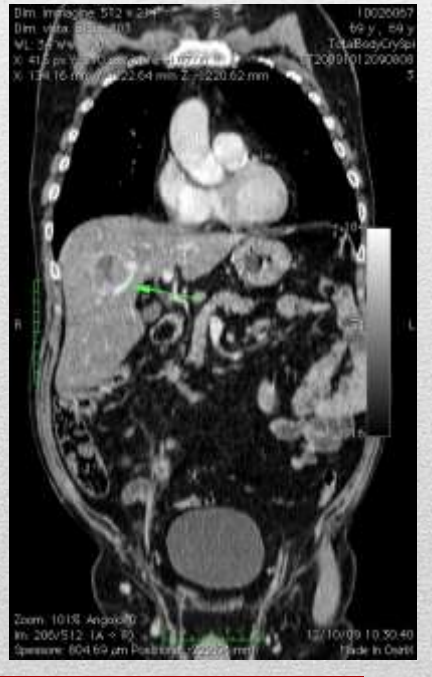
Site and Number



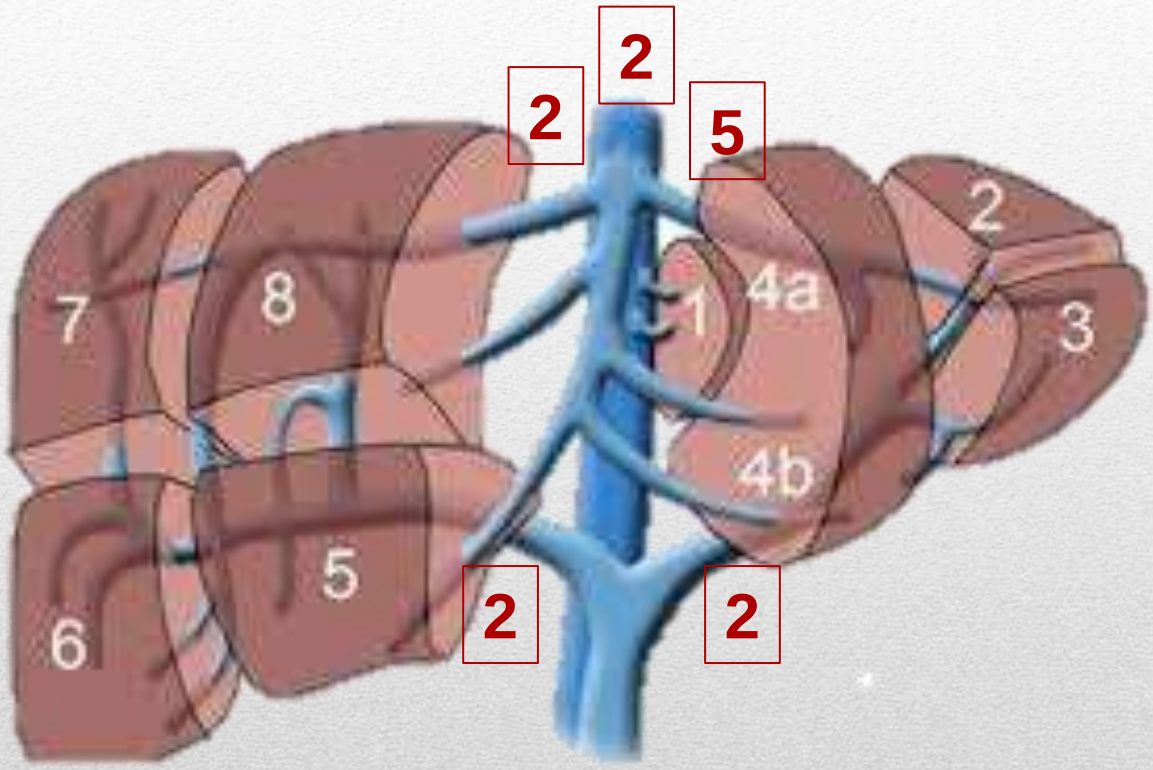
Vessels







Vessels



58 Robotic Liver Resections

Robotics in Liver Resections

It is likely that Robotics could:

- Allows a “more parenchyma-preserving” surgery
- Easier approach to posterior segments
- Allows to resect patients with more advanced disease

Patriti et al. Int J Med Rob 2013

Synchronous CRLM

J Hepatobiliary Pancreat Surg
DOI 10.1007/s00534-009-0073-y

SURGEON AT WORK

Laparoscopic and robot-assisted one-stage resection of colorectal cancer with synchronous liver metastases: a pilot study

Alberto Patriti · Graziano Ceccarelli · Alberto Bartoli · Alessandro Spaziani · Luigi Maria Lapalorcia · Luciano Casciola

Table 1 Patient characteristics, surgical procedures, and outcomes

	Characteristics				Tumor site		History	Operation						Hospital stay days	30-Day morbidity	Follow up
	Age (years)	Sex	ASA	BMI	Colon	Liver		Colon	Liver	Tools	Clamping	Blood loss (ml)	Duration (min)			
1	67	F	3	27	Sigmoid	S7	Asymptomatic	Left colectomy + oophorectomy	Metastasectomy S7	Gyrus Harmonic scalpel	No	<100	300	8	None	Disease-free at 10 months
2	79	M	4	24	Sigmoid	S3-6	Asymptomatic	Left colectomy	Metastasectomy S3 Segmentectomy S6	Monopolar Harmonic scalpel	Yes	1500*	240	9	None	Recurrence S8 at 7 months
3	82	F	3	27	Right	S4a	Asymptomatic	Right colectomy	Metastasectomy S4	Gyrus Harmonic scalpel	No	<100	180	8	None	Peritoneal recurrence at 8 months
4	55	F	2	23	Sigmoid	S1–2–4–6–7	Colon obstruction-Stenting-Chemotherapy	Left colectomy	Bisegmentectomy S2-3 Segmentectomy S1 RFA S4–6–7	Gyrus Harmonic scalpel	No	200	480	10	None	Disease-free at 11 months
5	63	M	3	29	Sigmoid	Multiple	Colon obstruction-Stenting-Chemotherapy	Left colectomy	Metastasectomy S2-3 and 3 RFA S4 PVE	Bipolar Harmonic scalpel	No	600	540	10	None	Disease-free at 3 months
									Right hepatectomy	Gyrus Harmonic scalpel	No	2000*	480	7	None	
6	61	F	3	32	Sigmoid	S2	Colon obstruction-Stenting-	Left colectomy	Segmentectomy2	Gyrus Harmonic scalpel	No	360	300	8	None	Disease-free at 5 months
7	84	M	3	19	Rectum	S8	Asymptomatic	Total mesorectal excision	Metastasectomy S8	Gyrus Harmonic scalpel	No	180	360	7	None	Disease-free at 1 month

* Intraoperative transfusion required

Patriti et al. J Hepatobiliary Pancreat Surg 2009

Synchronous CRLM

World J Surg
DOI 10.1007/s00268-013-2034-4

ORIGINAL SCIENTIFIC REPORT

Laparoscopic Simultaneous Resection of Colorectal Primary Tumor and Liver Metastases: Results of a Multicenter International Study

Stefano Ferretti[1] · Hadrien Tranchart[1] · Joseph F. Buell[2] · Constantino Eretta[3] · Alberto Patriti[4] · Marcello Giuseppe Spampinato[5] · Jung Wook Huh[6] · Luca Vigano[7] · Ho Seong Han[8] · Giuseppe Maria Ettorre[9] · Elio Jovine[10] · Thomas Clark Gamblin[11] · Giulio Belli[12] · Go Wakabayashi[13] · Brice Gayet[14] · Ibrahim Dagher[1]

Ferretti et al World J Surg 2015

Synchronous CRLM

142 Cases	
Primary tumor	
Rectal cancer	*40.8%*
Right Colon	*26.8%*
Left Colon	*32.4%*
Liver Metastases	
Median Lesion Number	*1(1-9)*
Bilobar	*19.7%*
Diameter (mm)	*28(1-100)*

Ferretti et al World J Surg 2015

Synchronous CRLM

142 Cases	
Mortality	2.1%
Morbidity	15.5%
Colorectal Morbidity	7.7%
Reoperation	7.7%
Hospital Stay (days)	8 (3-84)

Ferretti et al World J Surg 2015

Synchronous CRLM

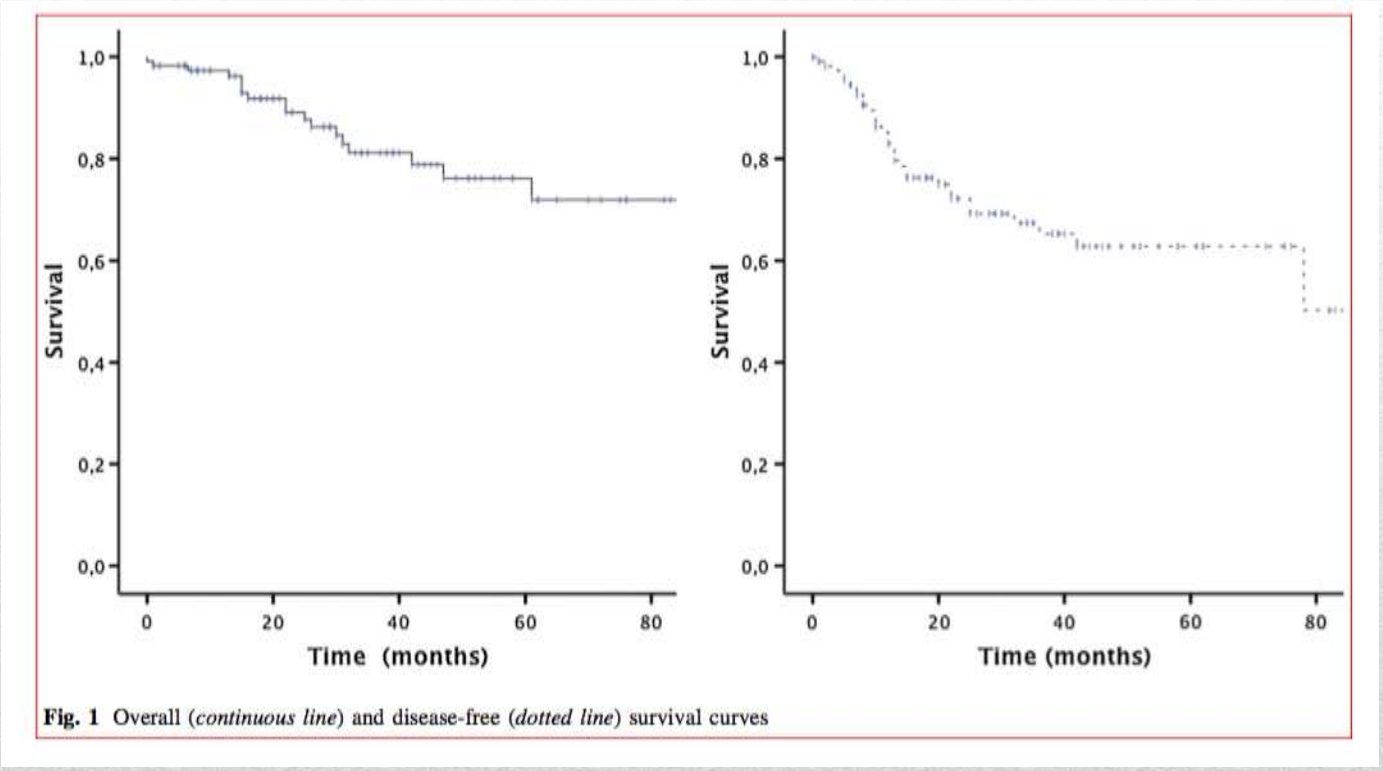


Fig. 1 Overall (*continuous line*) and disease-free (*dotted line*) survival curves

5-y OS 79%

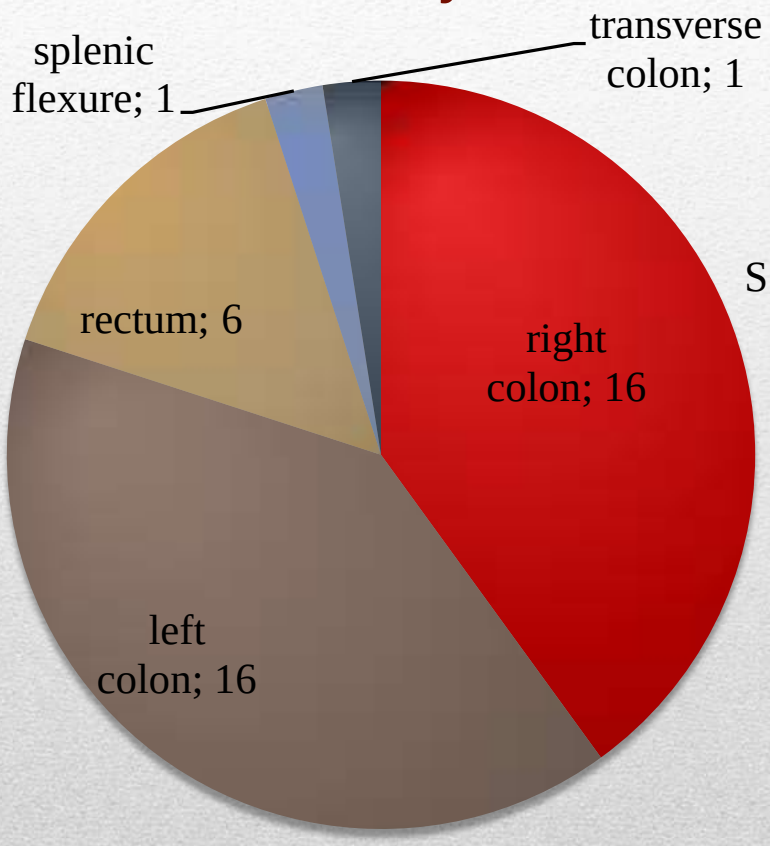
5-y DFS 63%

Ferretti et al World J Surg 2015

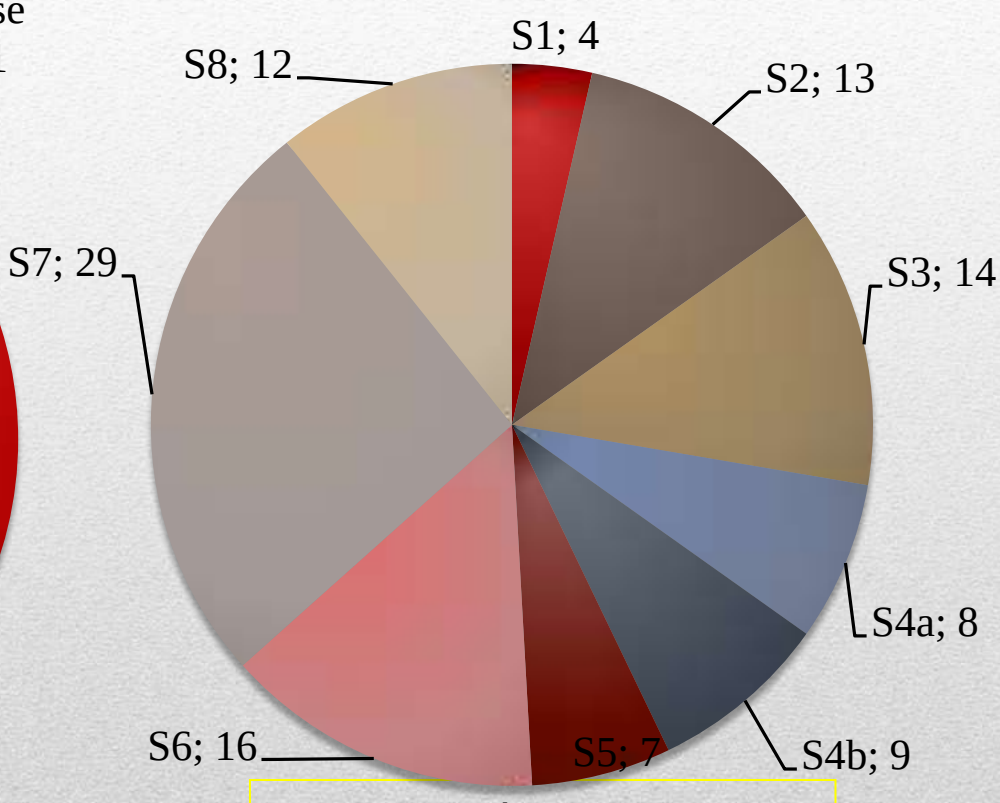
Synchronous colo-rectal liver metastases

Time period 2008-2014

Primary



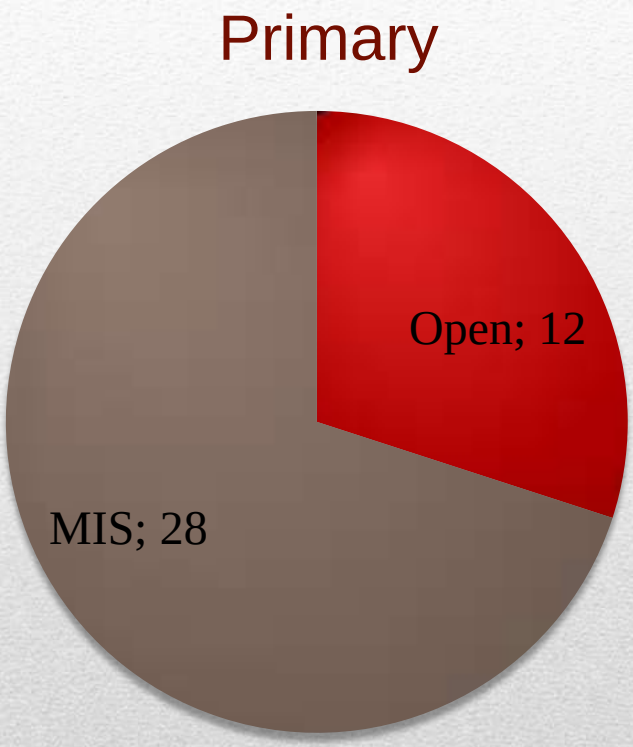
Liver Metastases

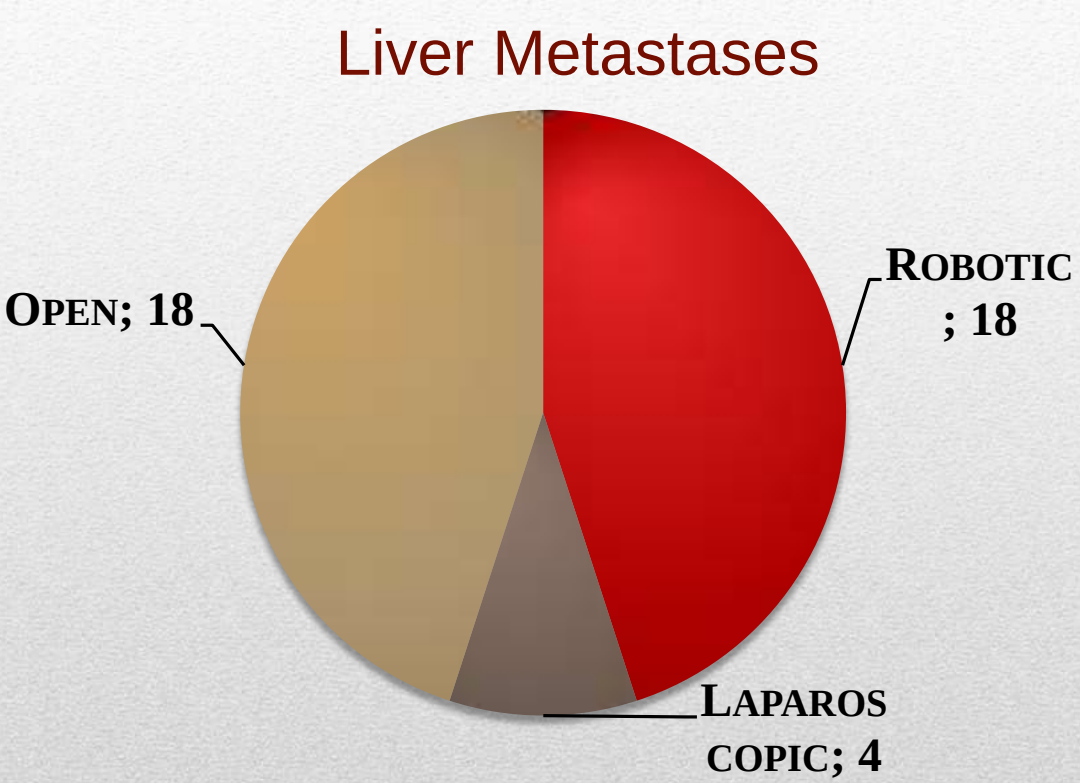


Mean number 5.5 ± 6.6
N° > 5 lesions : 14 cases
Total Resections 112

Synchronous colo-rectal liver metastases

Time period 2008-2014





Synchronous colo-rectal liver metastases

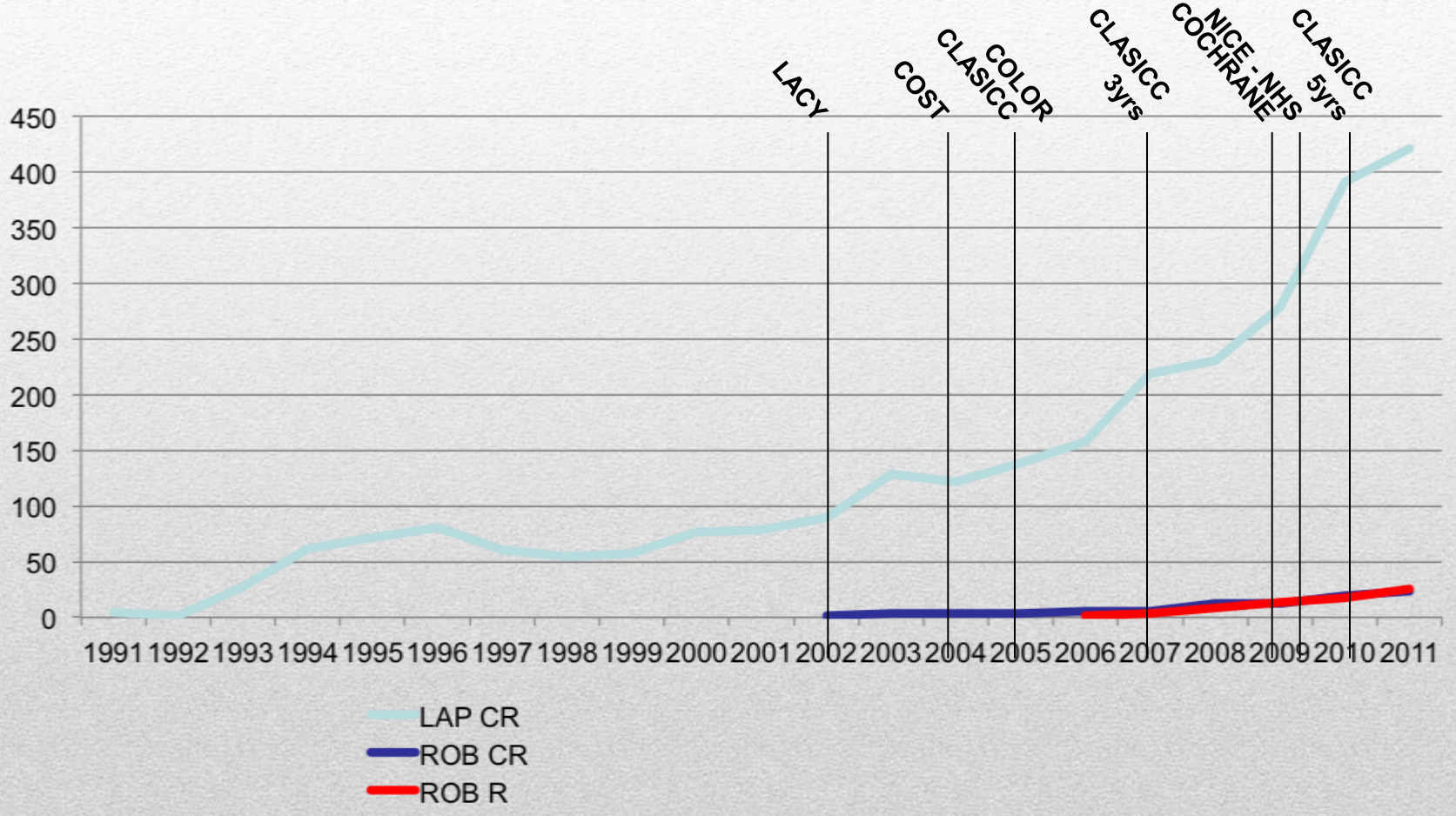
Time period 2008-2014

Early Outcome

	Open	MIS
Blood loss (mean)	503	380
Operative Time Liver (min)	298	329
Hospital stay (days)	15.8	12.7
Clavien class >3 complication (n.)	2 (16%)	2 (9.5%)
Post-op Transfusion	3 (25%)	3 (14%)
R1 resection	1 (8.3%)	1 (4.7%)

Minimally Invasive colo-rectal resections over the years

1991-2011



Evaluating the Degree of Difficulty of Laparoscopic Colorectal Surgery

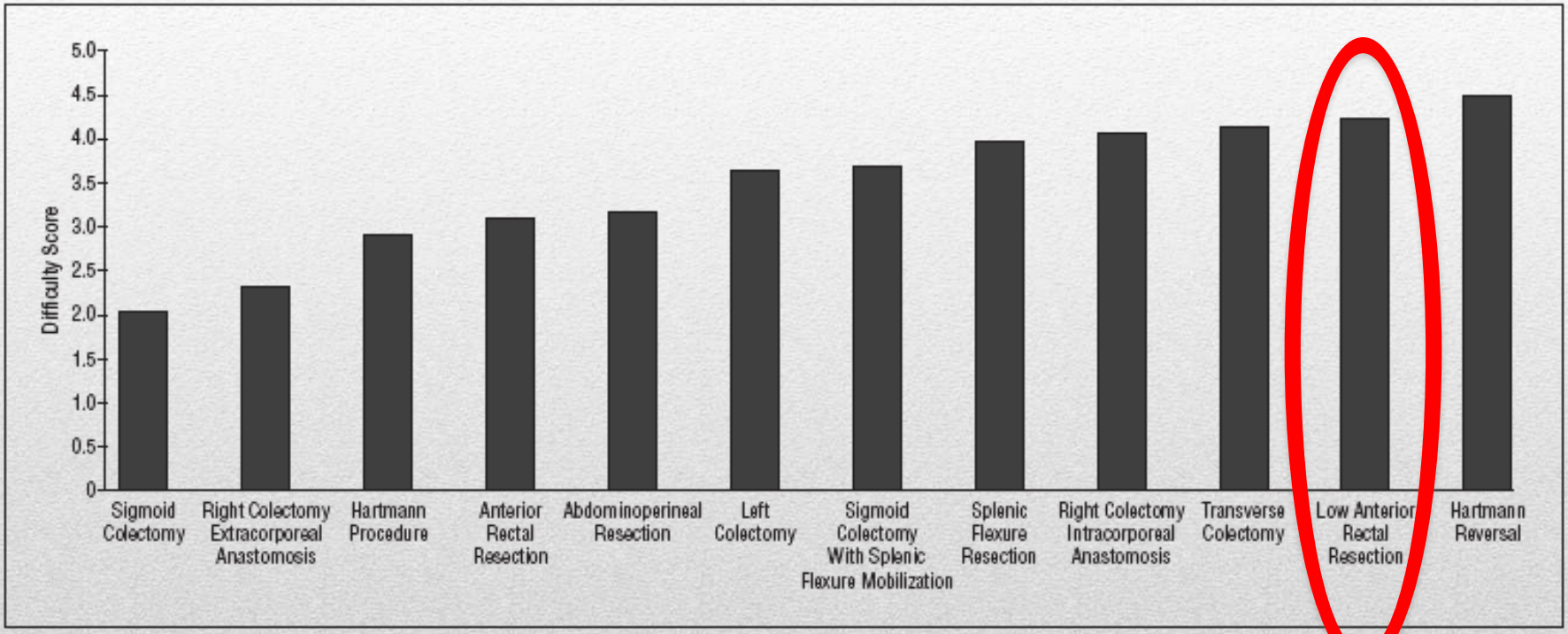


Figure 1. Overall difficulty score for each of the 12 rated procedures.

ARCH SURG/VOL 143 (NO. 8), AUG 2008

Jamali FR, Soweid AM, Dimassi H, Bailey C, Leroy J, Marescaux J

United Kingdom Medical Research Council

Conventional vs Laparoscopic-Assisted Surgery in Colorectal Cancer (MRC-CLASICC)

Laparoscopic surgery for RC is associated with

- **high rates of conversion,**
- **circumferential resection margin (CRM) positivity**
- **urinary/sexual dysfunction especially in male patients.**

Guillou et al Lancet 365:1718–1726.2005

What Makes Rectal Cancer Surgery Demanding?

Cancer Related

- Low Rectal Cancer
- Advanced Tumors

Patient Related

- Narrow Pelvis
- Male Patients
- Obesity

Low Rectal Cancer

SCIENTIFIC PAPER

Short- and Medium-Term Outcome of Robot-Assisted and Traditional Laparoscopic Rectal Resection

Alberto Patriti, MD, PhD, Graziano Ceccarelli, MD, Alberto Bartoli, MD, Alessandro Spaziani, MD, Alessia Biancafarina, MD, Luciano Casciola, MD

Table 2.
Intraoperative and Pathologic Data

	TLAR*	RLAR*	P Value
Type of Proctectomy*			<0.05
PME	24	3	
TME	8	18	
APR	3	5	
CAA	2	5	
Operative Times (minutes)			
Total	208 ± 7	202 ± 12	>0.05
PME	217 ± 6	270 ± 67	<0.05
TME	210 ± 37	165.9 ± 10	<0.05
APR	285 ± 21	213 ± 2	<0.05
CAA	240-360	228 ± 32	
Estimated Blood Loss (mL)	127 ± 169	137.4 ± 156	>0.05
Conversion to Open Surgery	7	0	<0.05
Distal Margin (cm)	4.5 ± 7.2	2.1 ± 0.9	>0.05
Radial Margin	Negative	Negative	
Nodes Retrieved	11.2 ± 5	10.3 ± 4	>0.05
Concomitant Procedures	1 Robot-assisted wedge liver resection;	1 Robot-assisted wedge liver resection	
	1 Wedge bladder resection;	1 Right colectomy	
	1 Cholecystectomy;	1 Vaginal resection	
	1 Adhesiolysis	1 Adhesiolysis	

*TLAR = traditional laparoscopic anterior rectal resection; RLAR = robot-assisted anterior rectal resection; PME = partial mesorectal excision; TME = total mesorectal excision; APR = Abdominoperineal resection; CAA = intersphinteric resection with coloanal anastomosis.

Locally Advanced Rectal Cancer

ORIGINAL ARTICLE

Robotic versus laparoscopic surgery for mid or low rectal cancer in male patients after neoadjuvant chemoradiation therapy: comparison of short-term outcomes

Kersat Rahmi Sorin[1] · Fatma Ayca Gultekin[2] · Burçin Batmaz[2] · Serdar Ay[2] · Yersu Kapran[3] · Sezer Saglam[3] · Oktar Asoglu[1]

Table 2 Perioperative outcomes

	R-TME (n = 14)	L-TME (n = 65)	p value
Sphnicter saving procedures (n)			
Low anterior resection	4	41	
Intersphinteric resection	10	24	
Conversion to open (n)	0	2	
Operative time (min)[a]	182 (140–220)	140 (90–300)	0.033
Days to 1st flatus (days)[a]	2 (1–5)	1 (0–11)	0.410
Oral reintake (days)[a]	2 (1–5)	2 (1–12)	0.939
Hospital stay (days)[a]	5 (4–10)	6 (2–32)	0.175

[a] Values are expressed as median with interquartile range

Table 4 Pathological outcomes

	R-TME (n = 14)	L-TME (n = 65)	p value
Lymph node harvested[a]	32 (17–56)	23 (4–67)	0.008
Specimen length (cm)[a]	20.5 (15–45)	21 (20–50)	0.656
Proximal resection margine (cm)[a]	14.8 (4.5–35)	16 (2.4–30)	0.230
Distal resection margine (mm)[a]	27.5 (5–60)	15 (10–70)	0.014
Circumferantial resection margine (mm)[a]	10 (1–30)	6.5 (0–35)	0.047
Tumor diameter (mm)[a]	32.5 (20–70)	30 (0–75)	0.081
Macroscopic quality of TME specimen			
Complete, n (%)	14 (100 %)	52 (80 %)	0.109
Incomplete, n (%)	0	13 (20 %)	

[a] Values are expressed as median with interquartile range

Sexual and Urinary Function

ORIGINAL ARTICLE

Impact of Robotic Surgery on Sexual and Urinary Functions After Fully Robotic Nerve-Sparing Total Mesorectal Excision for Rectal Cancer

Fabrizio Luca, MD, Manuela Valvo, MD,* Tiago Leal Ghezzi, MD,† Massimiliano Zuccaro, MD,* Sabina Cenciarelli, MD,* Cristina Trovato, MD,‡ Angelica Sonzogni, MD,§ and Roberto Biffi, MD**

TABLE 5. Sexual Function Data

Male	**IIEF (38 Pts.)**	**Range**	**Before Surgery***	**30 Days After Surgery***	**6 Months After Surgery***	**1 Year After Surgery***
	Erectile function	(0–30)	19.1 ± 8.7	11.9 ± 10.2	13.9 ± 10.6	16.1 ± 10.9
	Orgasmic function	(0–10)	6.6 ± 3.1	4.1 ± 3.5	5.1 ± 3.7	5.7 ± 3.4
	Sexual desire	(2–10)	5.8 ± 2.3	4.8 ± 2.1	5.2 ± 2.9	5.8 ± 2.9
	Intercourse satisfaction	(0–15)	7.7 ± 4	4.1 ± 3.9	5.3 ± 4.4	6.8 ± 3
	Overall satisfaction	(2–10)	6.9 ± 2.4	5.3 ± 2.5	5.2 ± 2.8	5.7 ± 2.8
Female	**FSFI (36 Pts.)**	**Range**	**Before Surgery[a]**	**30 Days After Surgery[a]**	**6 Months After Surgery[a]**	**1 Year After Surgery[a]**
	Desire	(1.2–6)	2.4 ± 1.3	1.8 ± 1	2 ± 1	2.4 ± 2.1
	Arousal	(0–6)	2.6 ± 3.3	0.8 ± 1.4	1.8 ± 1.9	2.3 ± 2
	Lubrication	(0–6)	2.1 ± 2.1	0.8 ± 1.5	2.2 ± 2.2	2.2 ± 2.1
	Orgasm	(0–6)	2.5 ± 2.5	0.8 ± 1.6	2.1 ± 2.3	2.4 ± 2.3
	Satisfaction	(0.8–6)	2.4 ± 2.5	0.7 ± 1.6	1.9 ± 2.9	2.5 ± 2.4
	Pain	(0–6)	2.4 ± 2.6	0.8 ± 1.8	1.8 ± 2.1	2.4 ± 2.4

*Mean ± SD expressed.

TABLE 6. Male and Female Urinary Function Data

Male	**(38 Pts.)**	**Range**	**Before Surgery***	**30 Days After Surgery***	**6 Months After Surgery***	**1 Year After Surgery***
	VS	(0–20)	3.6 ± 3.8	3.6 ± 3.3	2.5 ± 3	3 ± 3.2
	IS	(0–20)	2.4 ± 2.6	1.1 ± 1.2	0.9 ± 1.2	1.25
Female	**(36 Pts.)**	**Range**	**Before Surgery***	**30 Days After Surgery***	**6 Months After Surgery***	**1 Year After Surgery***
	FS	(0–20)	2.6 ± 1.7	4.1 ± 2.8	2.6 ± 2.5	2 ± 1.5
	VS	(0–20)	1.3 ± 1.8	2.8 ± 2.7	1.6 ± 2.3	2 ± 2.4
	IS	(0–20)	2.1 ± 2.2	3.2 ± 2.7	2.2 ± 2.5	2.8 ± 3.2

VS indicates voiding symptoms; IS, incontinence symptoms; FS, filling symptoms.
*Mean ± SD expressed.

TABLE 7. Male and Female Urinary Incontinence Data

Male (38 Pts.)	**Before Surgery**	**6 Months After Surgery**	**1 Year After Surgery**
Urinary incontinence*	1 (2.6%)	0 (0%)	0 (0%)
Female (36 Pts.)	**Before Surgery**	**6 Months After Surgery**	**1 Year After Surgery**
Urinary incontinence*	2 (5.5%)	1 (2.7%)	1 (2.7%)

Values in n (%).
*Score ≤12.

At 1 year sexual and urinary functions = preoperative period

Ann Surg Oncol
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Annals of
SURGICAL ONCOLOGY

ORIGINAL ARTICLE – COLORECTAL CANCER

Multicentric Study on Robotic Tumor-Specific Mesorectal Excision for the Treatment of Rectal Cancer

Alessio Pigazzi[1], Fabrizio Luca[2], Alberto Patriti[3], Manuela Valvo[2], Graziano Ceccarelli[3], Luciano Cascíola[3], Roberto Biffi[2], Julio Garcia-Aguilar[1], and Jeong-Heum Baek[3,4]

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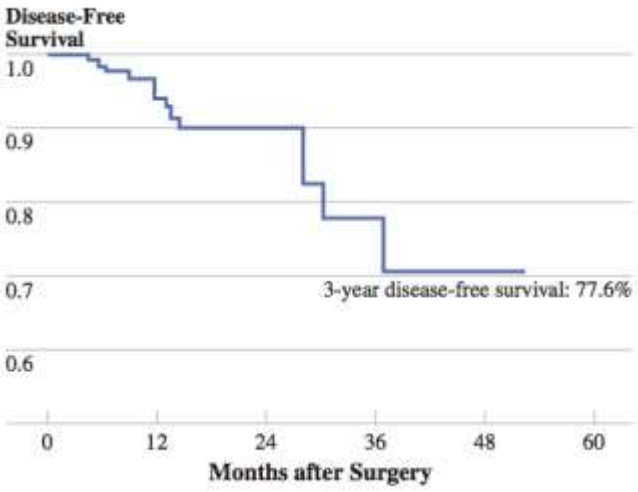

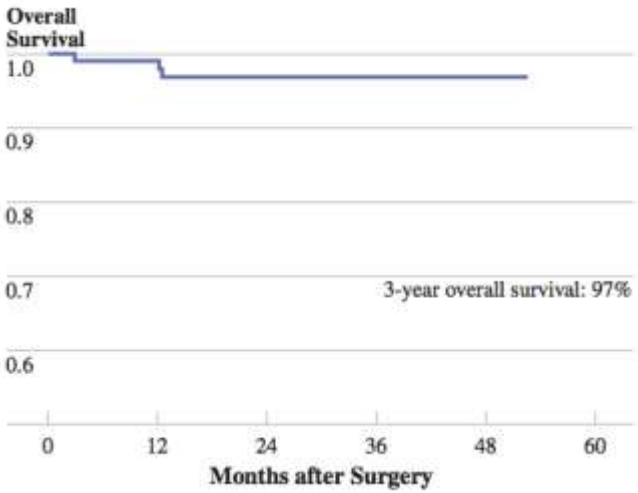

Robotics in Rectal Cancer

Waiting for ROLARR trials…

- Same long term survival of open surgery
- Facilitation of demanding steps of RR (+ obesity,narrow pelvis)
- Better TME for low and locally advanced Rectal Cancers