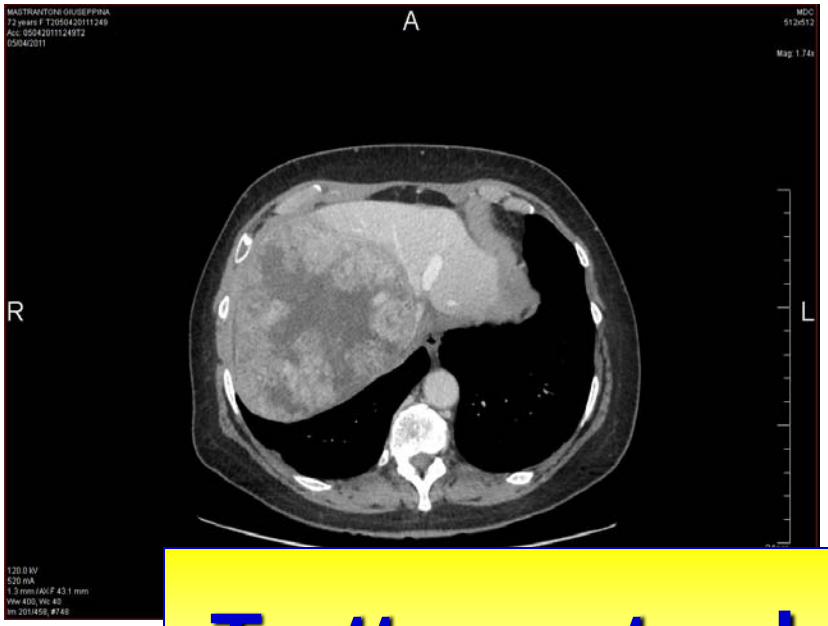
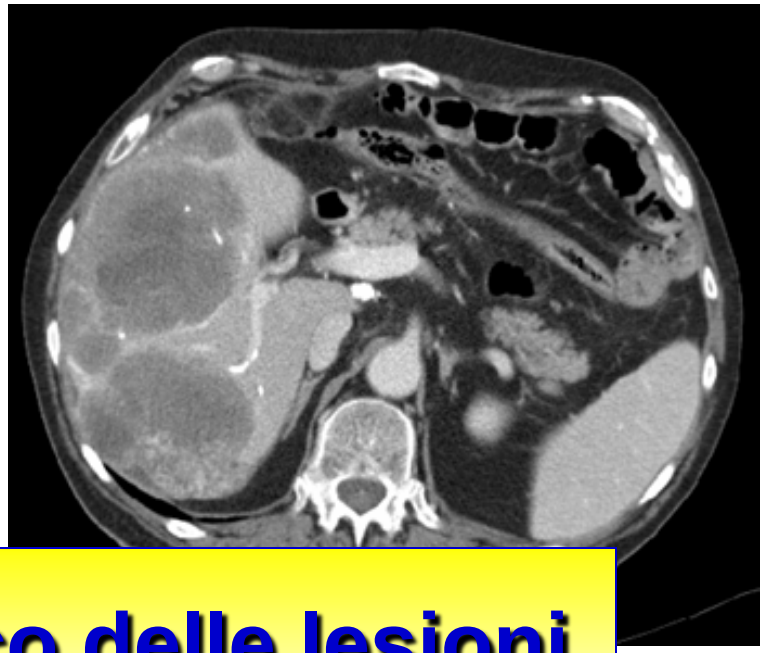
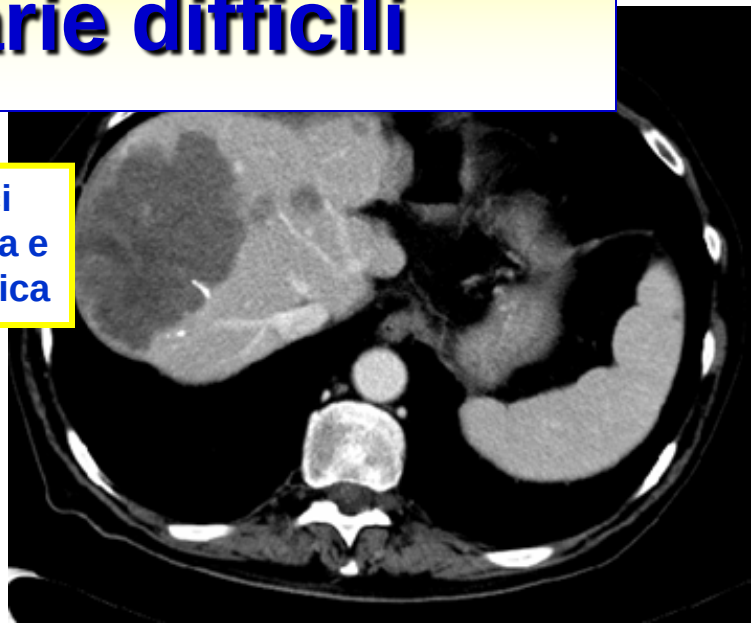


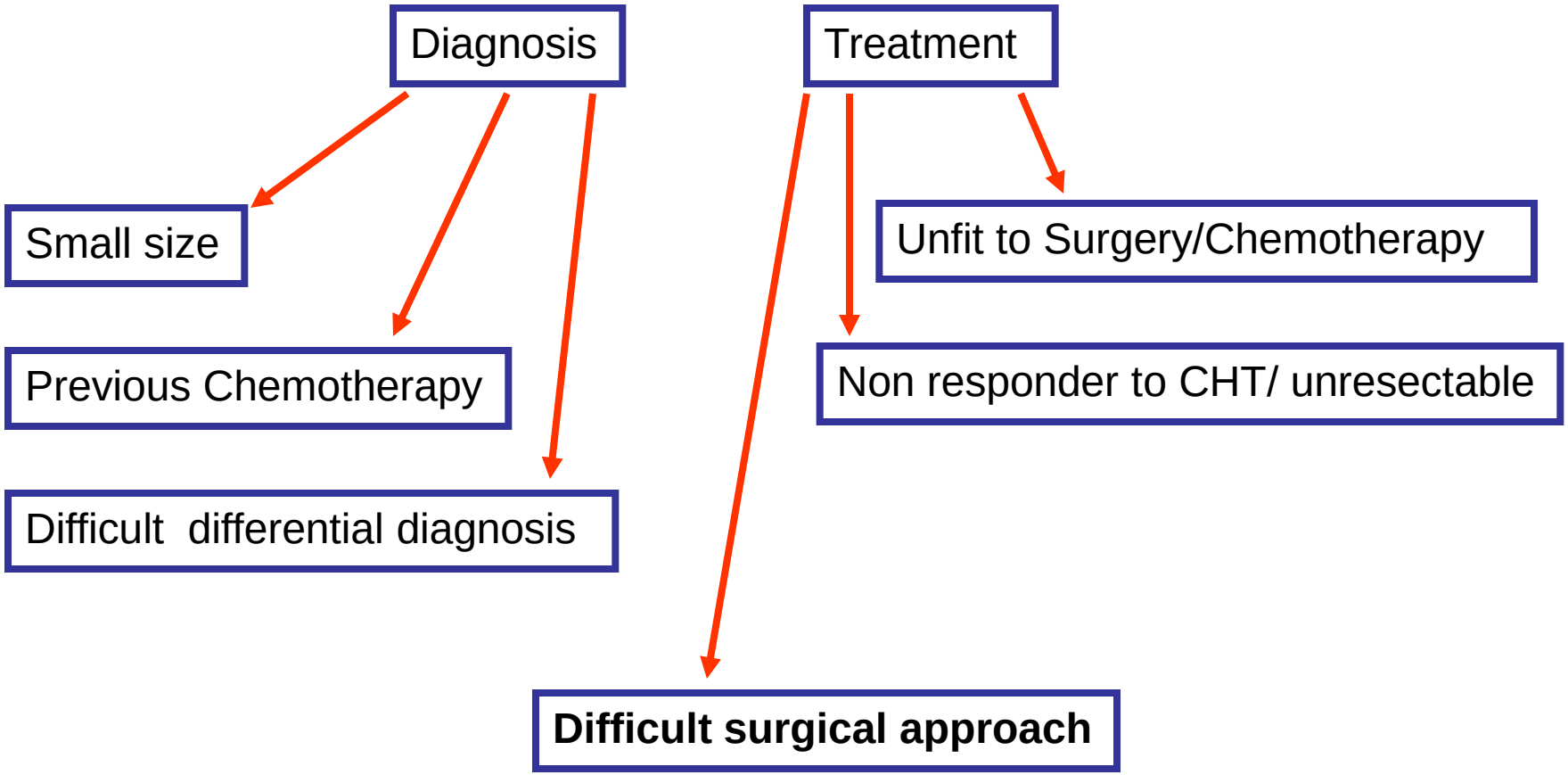


Trattamento chirurgico delle lesioni epatiche secondarie difficili



Adelmo Antonucci
Chirurgia Oncologica e Epato-bilio-pancreatica

What does it mean “difficult lesions”?



Colorectal Cancer (CRC) metastases Epidemiology

- **About one fifth of patients will present with metastatic disease, and an additional 20–30% of patients will develop metastatic disease after initial curative resection of the primary**

- **Liver metastases are the most common site of metastatic disease, with 15–20% of all CRC patients having synchronous lesions at initial presentation.**

- **Liver metastases are found in over 50% of patients who die from colon cancer and hepatic involvement is the most implicated reason for their death.**

Curable Metastatic Colorectal Cancer
Eadens MJ, Grothey A, Curr Oncol Rep. 2011 Feb 5
Department of Oncology, Mayo Clinic

Colorectal Cancer (CRC) metastases
The role of surgery

- **Liver resection offers the only chance of cure for patients with advanced CRC.**

- **The 5-year survival rates following liver resection range from 25% to 40%, compared with between 0% and 5% for patients from the same institute who did not undergo liver resection**

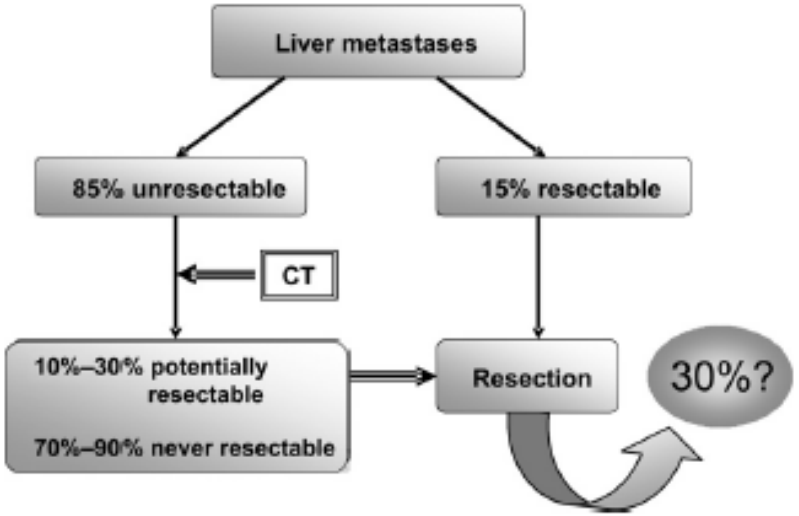
- **Unfortunately, approximately 85% of patients with stage IV CRC have liver disease which is considered unresectable at presentation**

Nordlinger B Eur J Cancer. 2007 Sep;43(14):2037-45

The benefit of surgical resection of liver metastases has not been demonstrated by any randomized trial (because of the large benefit in survival after liver resection when compared to historical controls)

Colorectal Cancer (CRC) metastases
The role of preoperative chemotherapy

- **The rapid expansion in the use of improved combination therapy regimens (given in a neo-adjuvant fashion or as conversion therapy) has increased the percentage of patients eligible for potentially curative surgery**



Conversion therapy
For unresectable/borderline resectable metastasis
Unresectable metastases can be cytoreduced with chemotherapy in order to become amenable for resection. This type of chemotherapy is termed "conversion therapy" in differentiation from "neoadjuvant" therapy in upfront resectable metastases

The role of preoperative chemotherapy

Rescue Surgery for Unresectable Colorectal Liver Metastases Downstaged by Chemotherapy

A Model to Predict Long-term Survival

René Adam, MD, PhD, Valérie Delvart, Gérard Pascal, MD, Adrian Valeanu, MD, Denis Castaing, MD, Daniel Azoulay, MD, PhD, Sylvie Giacchetti, MD, Bernard Paule, MD, PhD, Francis Kunstlinger, MD, Odile Ghémard, MD, Francis Levi, MD, PhD, and Henri Bismuth, MD, FACS Hon

(*Ann Surg* 2004;240: 644–658)

Neoadjuvant treatment of unresectable colorectal liver metastases: correlation between tumour response and resection rates

G. Folprecht[1], A. Grothey[2], S. Alberts[2], H.-R. Raab[3] & C.-H. Köhne[3]*

Annals of Oncology 16: 1311–1319, 2005

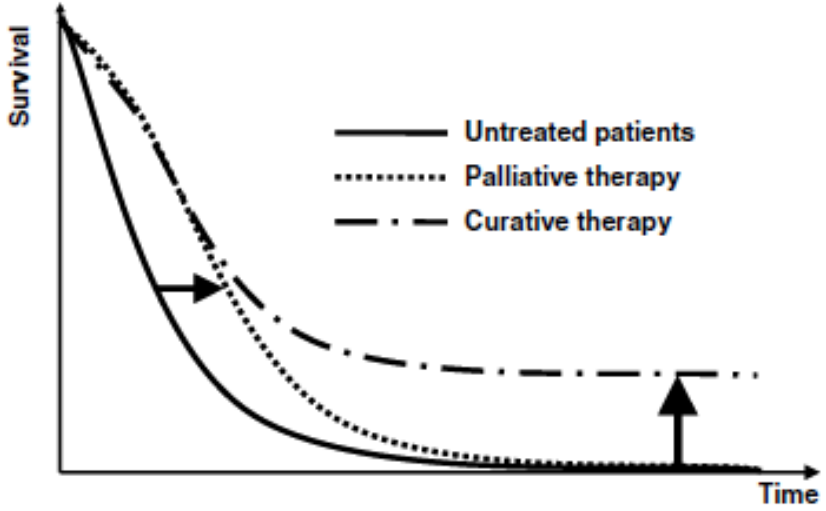
The need for multidisciplinary approaches

Towards a pan-European consensus on the treatment of patients with colorectal liver metastases

Eric Van Cutsem[a,,h], Bernard Nordlinger[b,h], Rene Adam[c], Claus-Henning Köhne[d], Carmelo Pozzo[e], Graeme Poston[f], Marc Ychou[g], Philippe Rougier[b], on behalf of European Colorectal Metastases Treatment Group[i]*

EUROPEAN JOURNAL OF CANCER 42 (2006) 2212–2221

The goal of a multidisciplinary treatment approach is to increase cost-effectively the number of patients with long-term survival by increasing the number of patients undergoing potentially curative liver resections



Patient selection

- **Urgent need for patient selection for treatment with neoadjuvant chemotherapy with the aim of decreasing the size and stage of the liver tumour(s) and thereby increasing the potential for liver resection**

- **Early identification of those patients that are very unlikely to be candidates for resection and those that may, with the help of chemotherapy be rendered resectable**

EUROPEAN JOURNAL OF CANCER 43 (2007) 2037–2045

New staging system

- **Currently stage IV is a 'catch all' classification/term that includes all colorectal tumours with liver metastases (and metastases outside of the liver), irrespective of the potential resectability of those metastases**

- **New staging needed that acknowledges not only the improvements that have been made in surgical techniques for resectable metastases but also the impact that neoadjuvant chemotherapy has had on rendering initially unresectable CRC liver metastases resectable**

- **Distinguish clearly between patients with a chance of cure and those for whom only palliative treatment is possible**

EUROPEAN JOURNAL OF CANCER 43 (2007) 2037–2045

New end-point

- **Resectability could become a new end-point for assessing the efficacy of neoadjuvant (pre-operative) chemotherapy, prior to hepatic resection**

- **The best way to manage patients with unresectable liver metastases is to administer chemotherapy until the metastases become resectable and not until best response**

EUROPEAN JOURNAL OF CANCER 43 (2007) 2037–2045

Treatment strategy

- **Divergence in the treatment strategies for those patients with initially unresectable but potentially resectable metastases and those patients whose liver metastases will never be resectable**

- **Patients whose liver metastases may be rendered resectable by chemotherapy are looking for a chemotherapy regimen that offers a high RR and hopefully, as a consequence, a high resection rate**

- **Patients whose liver metastases will never be resectable are looking for prolonged survival, balanced against a good quality of life and the opportunity for the maximum utilisation of secondline therapy**

EUROPEAN JOURNAL OF CANCER 43 (2007) 2037–2045

Resectability

- **The indications for resection itself are also subjective, dependent not only on the patient and the metastases, but also on the skill and aggressiveness of the surgeon**

- **The choice of initially unresectable patients influences both the resection rate and the assessment of efficacy in these trials**

EUROPEAN JOURNAL OF CANCER 43 (2007) 2037–2045

The need for standardized approaches

Towards a pan-European consensus on the treatment of patients with colorectal liver metastases

Eric Van Cutsem[a,,h], Bernard Nordlinger[b,h], Rene Adam[c], Claus-Henning Köhne[d], Carmelo Pozzo[e], Graeme Poston[f], Marc Ychou[g], Philippe Rougier[b], on behalf of European Colorectal Metastases Treatment Group[i]*

EUROPEAN JOURNAL OF CANCER 42 (2006) 2212–2221

Consensus recommendations

1. Multidisciplinary teams are essential. No patient should be operated on without multidisciplinary team discussion
2. Surgical resection should be considered wherever possible.
3. Improved preoperative workup required: High quality CAT scan/FDG-PET
4. Clear definition of unresectability established
5. Surgical resection can take place right up to the margin
6. Need to develop new staging system to stratify patients from the start of treatment:

•Ability of the surgeon to remove the liver metastases leaving a clear resection margin (R0)
• Liver remnant >/=30% of the original
•Absence of celiac lymph nodes
• Resectability desease outside of the liver

- Stage IVa: easily resectable liver metastases.
- Stage IVb: resectable liver metastases.
- Stage IVc: liver metastases that may become resectable after downsizing.
- Stage IVd: liver metastases that are unlikely to become resectable.
- Stage Va and b: resectable and unresectable disease, respectively, outside of the liver.

ECMTG staging system subdividing patients according to their metastatic status

- M0 – no metastases
- M1a – resectable metastases
- M1b – potentially resectable liver metastases
- M1c – liver metastases that are unlikely to ever become resectable

Resection margin and resectability

Consensus Statement:

1. In patients undergoing liver resection for hepatic colorectal metastases, a positive surgical margin is associated with a higher local recurrence and worse overall survival and should be avoided whenever possible.
2. While a wide (> 1-cm) resection margin should remain the goal when performing a liver resection, an anticipated margin of less than 1 cm should not be used as an exclusion criterion for resection.
3. Assessment of resectability of hepatic colorectal metastases should focus on the ability to obtain a complete resection (negative margins).

Selection of Patients for Resection of Hepatic Colorectal Metastases: Expert Consensus Statement

Chusilp Charnsangavej, MD,[1] Bryan Clary, MD,[3] Yuman Fong, MD,[4] Axel Grothey, MD,[5] Timothy M. Pawlik, MD, MPH,[2] and Michael A. Choti, MD, MBA[2]

The selection of patients towards standardized criteria

Selection of Patients for Resection of Hepatic Colorectal Metastases: Expert Consensus Statement

Chusilp Charnsangavej, MD,[1] Bryan Clary, MD,[3] Yuman Fong, MD,[4] Axel Grothey, MD,[5] Timothy M. Pawlik, MD, MPH,[2] and Michael A. Choti, MD, MBA[2]

Annals of Surgical Oncology, 13(10): 1261–1268

Actual surgical strategies

Stage IV colorectal cancer (liver only)

Non-resectable

Too many M+ too little liver

- ✓ >70-80% of liver involvement
- ✓ < 25% remnant after LR
- ✓ 6 segments involved

→ **Primary CT Investigational treatments**

Possibly Resectable

Advanced Surgery

- ✓PV Embolization
- ✓Two-stage hepatectomy
- ✓> 1 HV involved
- ✓Intraoperative ablation

Resectable

Conventional Surgery

- ✓ Multiple metatstases
- ✓ N + at primary tumor
- ✓ Involvement of < 4 segments

Easy Resectable

Conventional Surgery

- ✓ Single M+ ≤ 5 cm
- ✓ CEA ≤ 200 ng/mL
- ✓ Metachronous
- ✓ N0 at primary tumor

>4 metastases
CEA >200 ng/mL
Synchronous

→ **Neoadjuvant CT**
→ **Surgery**
→ **Adjuvant CT**

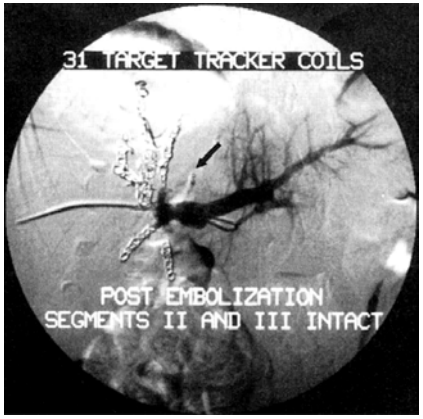
→ **Surgery**

→ **Surgery**

→ **Adjuvant CT**

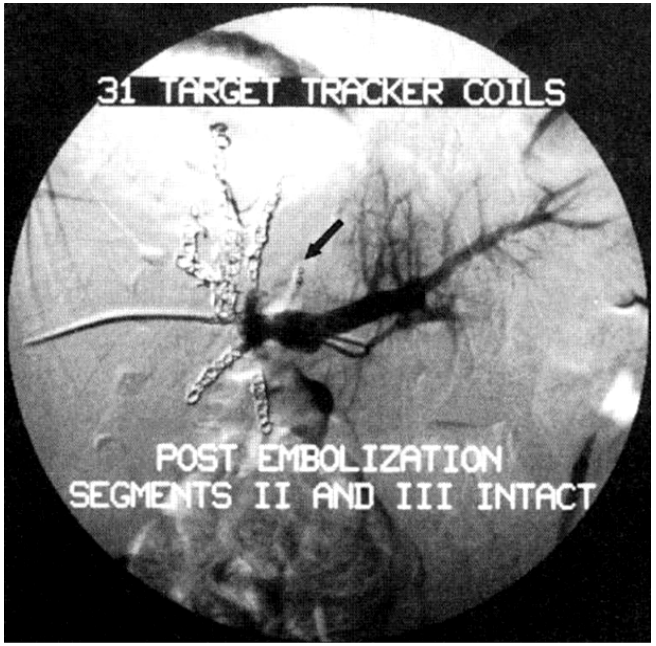
New surgical approaches

- Portal vein embolization
- Two stage Hepatectomy
- Combined ablation and surgery
- Laparoscopic ablation
- Selective segmental transparenchymal clamping
- Us guided resection



Portal vein embolization

Liver volume (mL) =
1072.8 * body surface area (m^2) − 345.7
Liver Transplantation and Surgery
Dec 2003

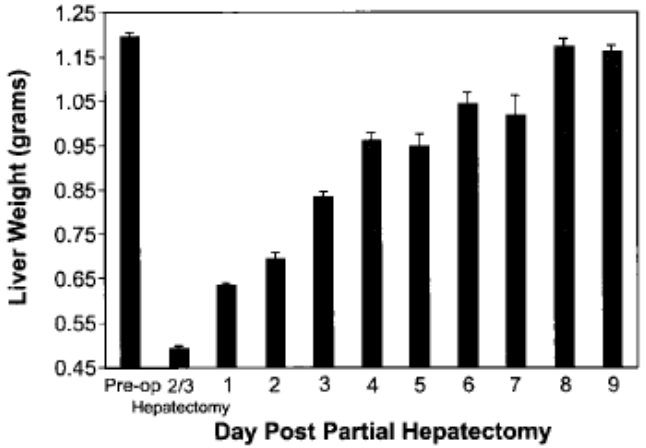


Hepatic Regeneration—Revisiting the Myth of Prometheus

Hepatic Regeneration—Revisiting the Myth of Prometheus

Victor Ankoma-Sey

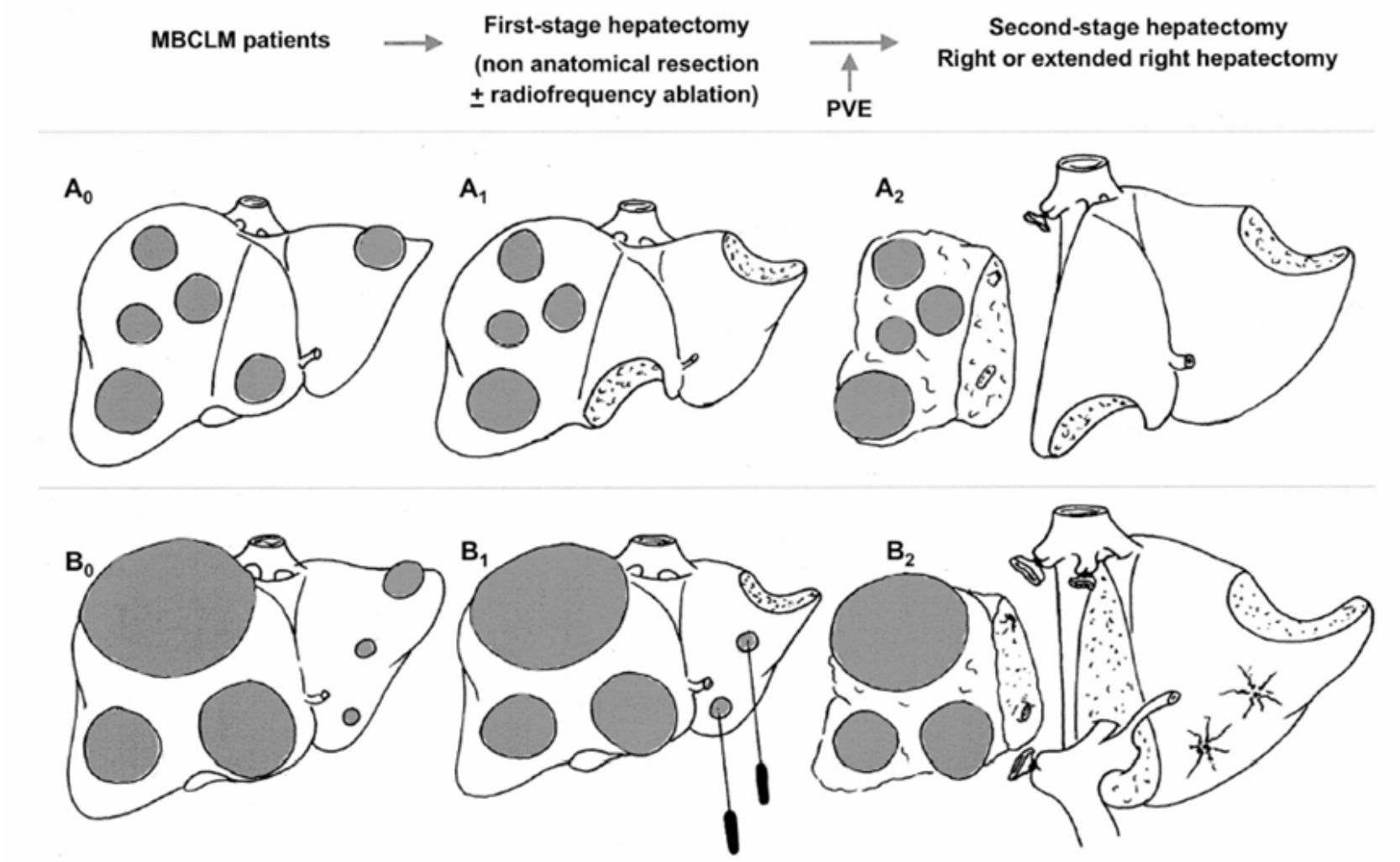
Myriad signals such as growth factors, cytokines, growth inhibitors, hormones, ions, extracellular matrix, and the resident hepatic cells are involved in the regulation of hepatic regeneration. These regulatory factors ultimately mediate changes in gene expression, a critical step in this well-orchestrated restorative process.



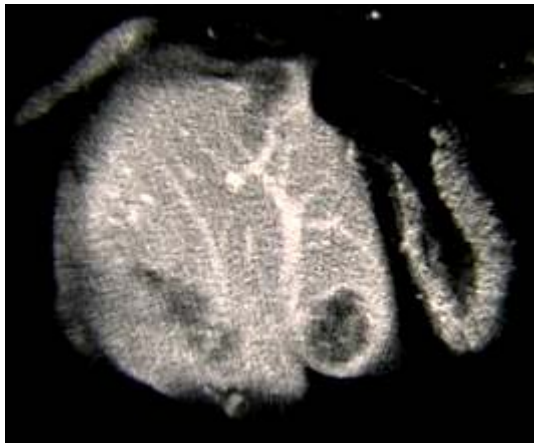
ANNALS OF SURGERY
Vol. 237, No. 4, 530–535

News Physiol. Sci. • Volume 14 • August 1999

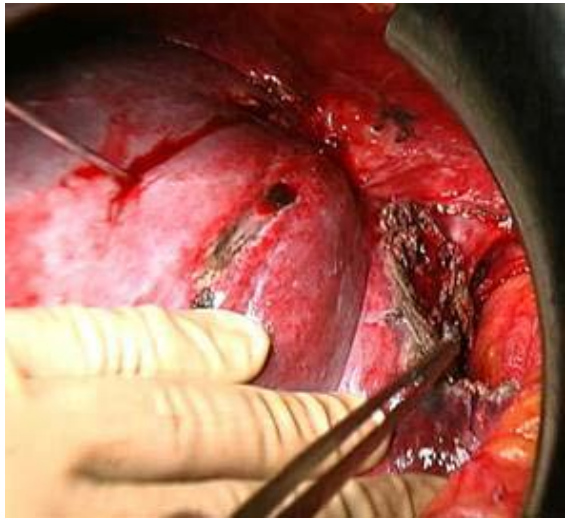
Two-stage Hepatectomy for Multiple Bilobar Colorectal Liver Metastases



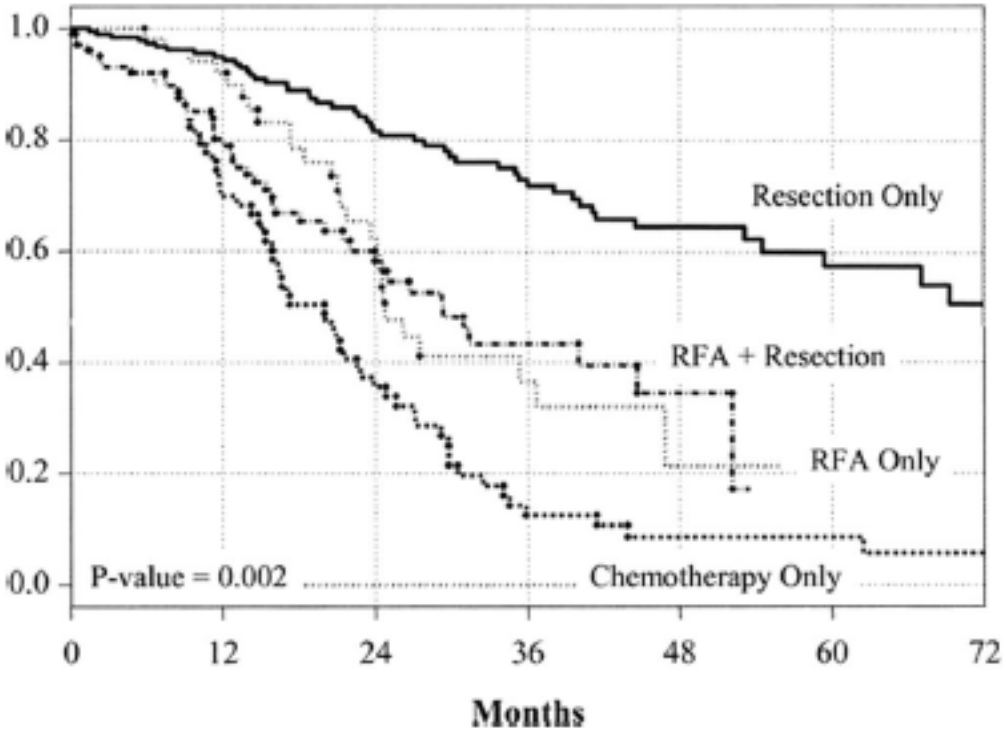
Combined intraoperative approach



Ablative Therapies associated with Liver Resection



Combined resection and ablation



Patients treated by RFA were deemed not completely resectable. Numbers of patients: resection, 190; RFA resection, 101; RFA, 57; and chemotherapy, 70

Abdalla EK, et al *Ann Surg.* 2004;239:818–825

Tumor ablation RFA

Local Recurrence After Hepatic Radiofrequency Coagulation

Multivariate Meta-Analysis and Review of Contributing Factors

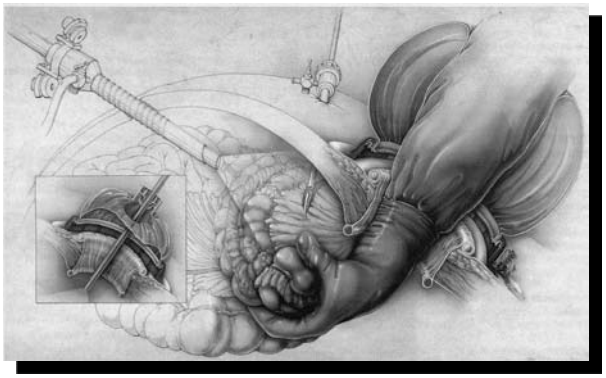
5224 liver tumors / 763 CRC metastases

TABLE 2. Local Recurrence Rate According to Size and Approach

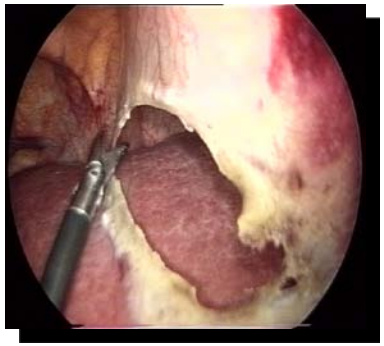
	Percutaneous (%)	Laparoscopy/Laparotomy (%)
≤3 cm	16.0	3.6
3–5 cm	25.9	21.7
>5 cm	60.0	50.0

Mulier , Ann Surg 2005

Hand-assisted laparoscopic RF ablation
possible advantages

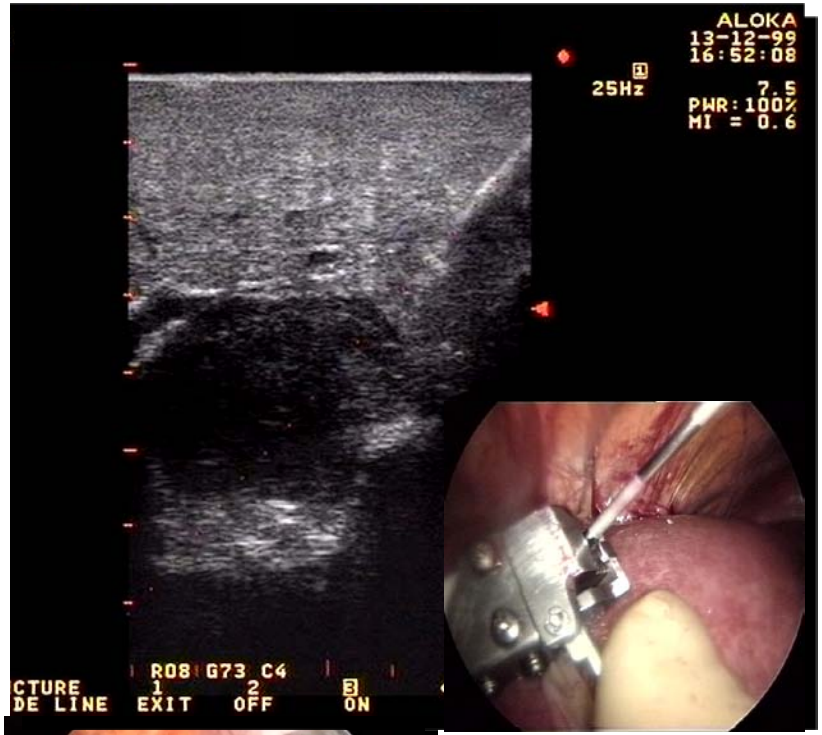


Hand port device

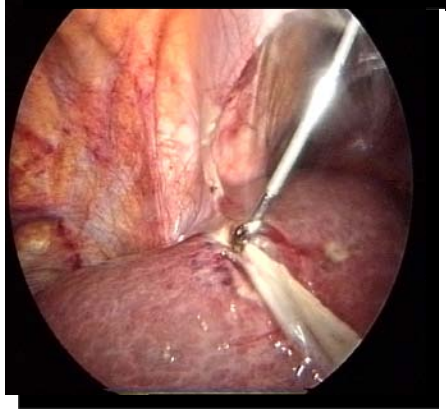


Liver mobilization

Use of IOUS probe with puncture guide

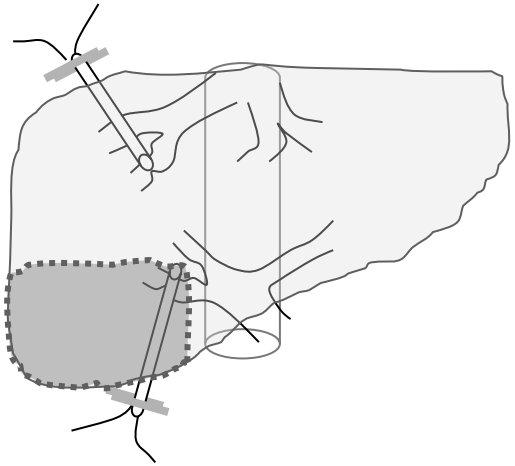


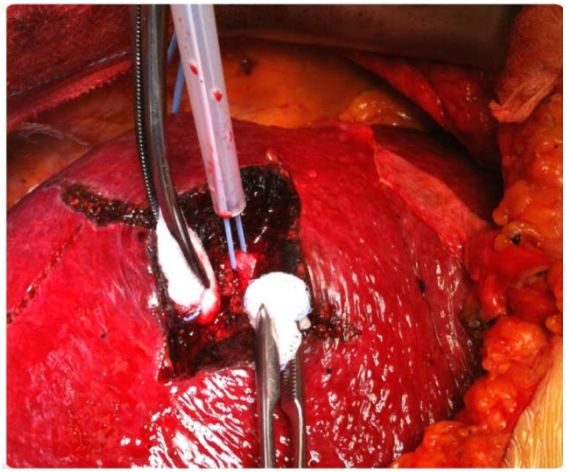
Hilar control for ischemia

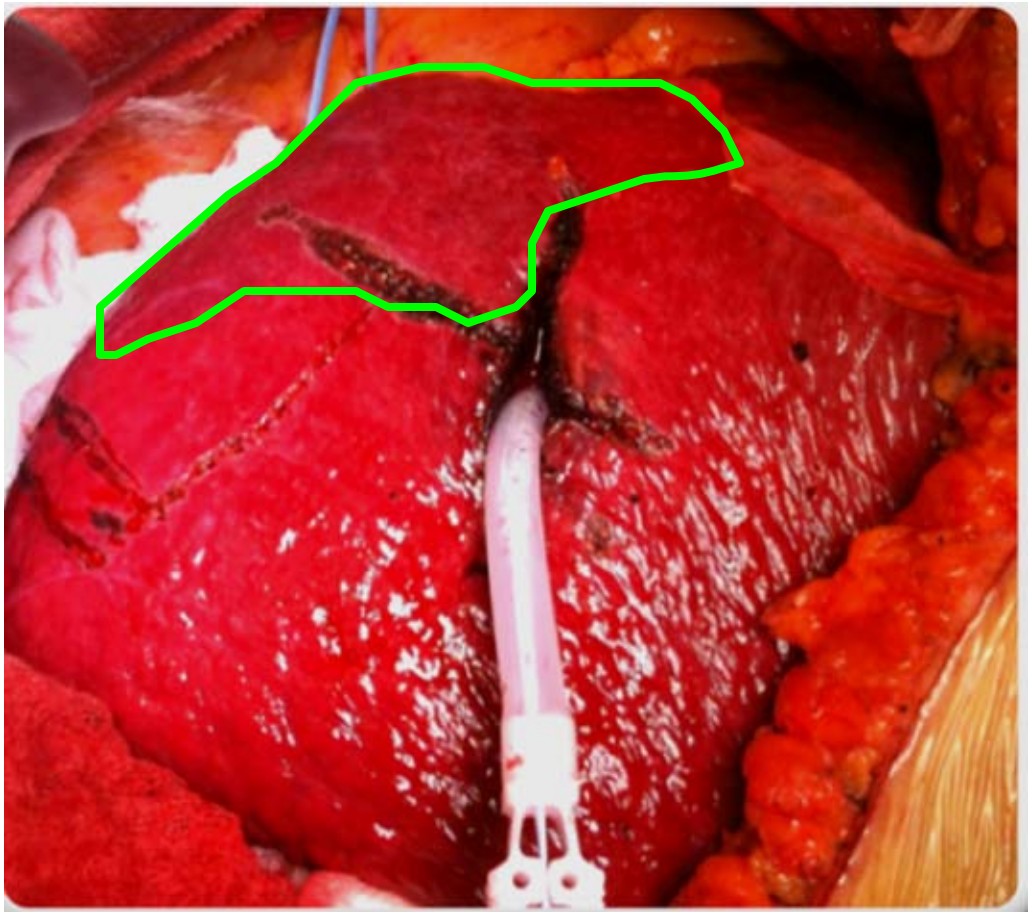


Control of haemostasis/ needle track

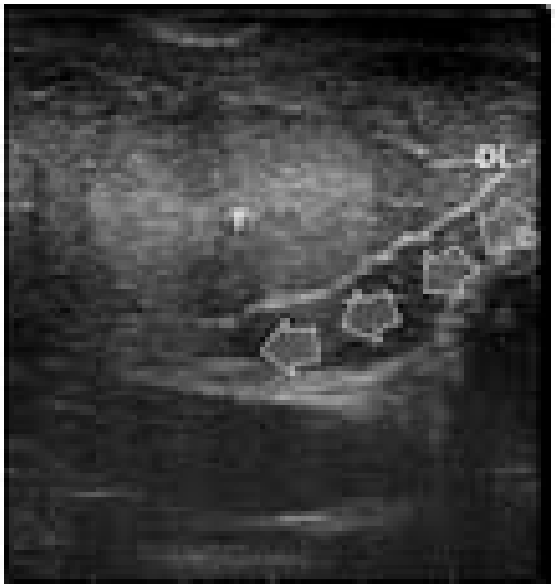
Segmental trans-parenchymal selective clamping

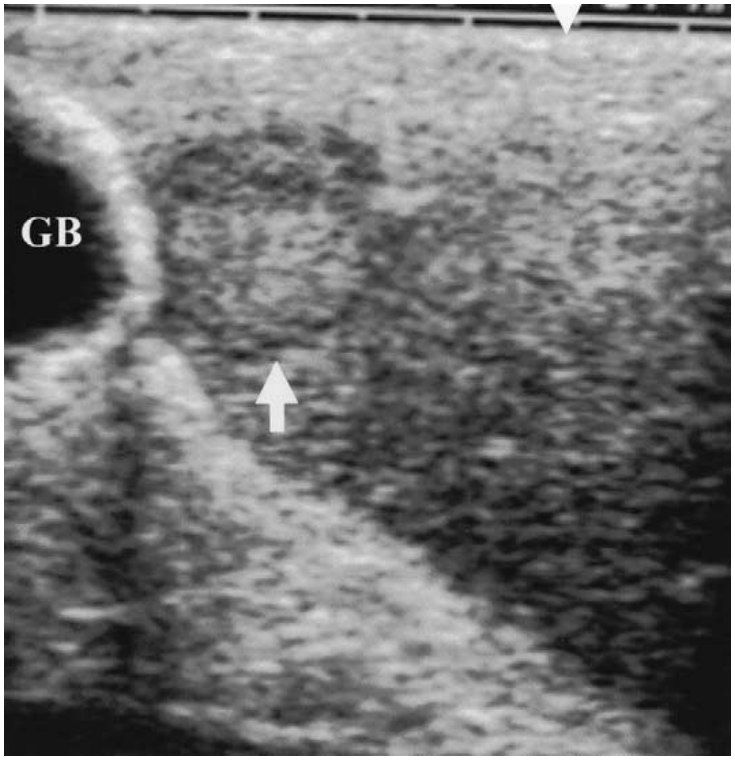


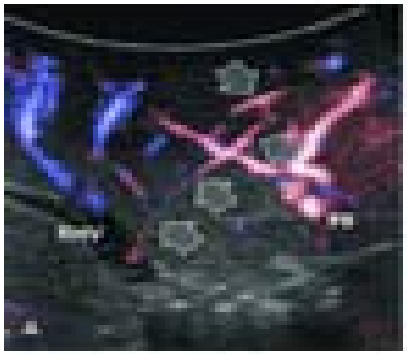


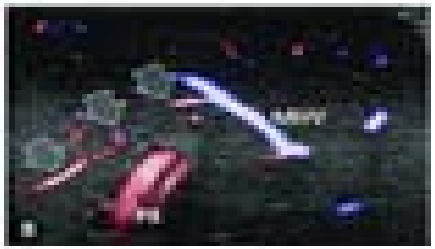


US guided resection
Hooking Technique



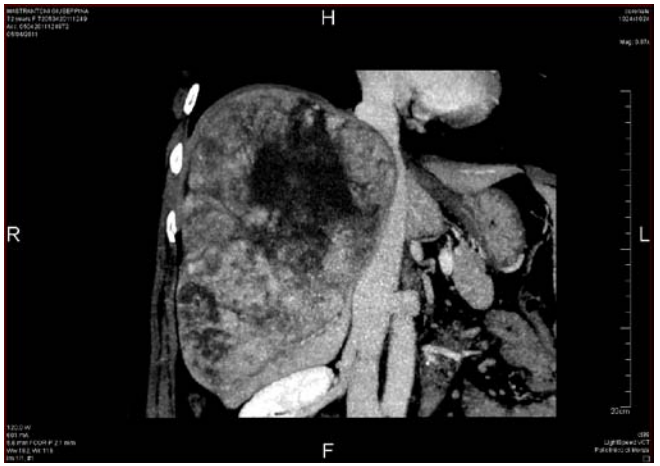






Liver resections - Our experience 10.2007- 4.2011

- ✓ **107 Total liver resections (37 Major resections)**
- ✓ **18 Liver resection for HCC**
- ✓ **11 Liver resection for benign deseases**
- ✓ **5 Gallbladder tumor**
- ✓ **73 Resection for liver metastasis.**
- ✓ **38 MCRC.**
- ✓ **13 Resection + RF ablation**



Multidisciplinary approach
Our experience

Bruera et al. BMC Cancer 2010, 10:567
http://www.biomedcentral.com/1471-2407/10/567

BMC Cancer

RESEARCH ARTICLE Open Access

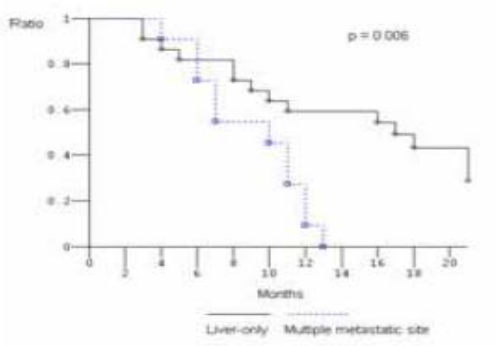
"Poker" association of weekly alternating 5-fluorouracil, irinotecan, bevacizumab and oxaliplatin (FIr-B/FOx) in first line treatment of metastatic colorectal cancer: a phase II study

Multidisciplinary approach
Our experience

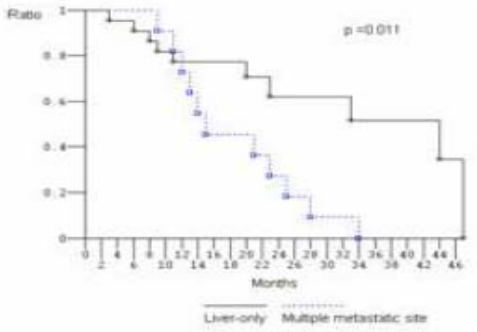
A priori resectability	Total				Single LM				Multiple LM				
	T	Res	cCR	NR	T	Res	cCR	NR	T	Res	cCR	NR	nv
Non R	6	3	1	2	-	-	-	-	6	3	1	2	-
Pot res HR AS	4	3	-	1	2	2	-	-	2	1	-	1	-
Res HR CS	7	4	-	3	2	2	-	-	5	2	-	2	1
Res LR CS	5	2	2	1	5	2	2	1	-	-	-	-	-
Total	22	12	3	7	9	6	2	1	13	6	1	5	1
%	100	54	14	32	100	67	22	11	100	46	8	38	8
%	100	68			100	89			100	54			

Abbreviation: Non R, non resectable; Pot Res HR AS, potentially resectable high risk, advanced surgery; Res HR CS, resectable High risk conventional surgery; Res LR CS, resectable low risk conventional surgery; LM liver metastases; T total; Res resected; cCR clinical complete response; NR non resected; nv not valuable

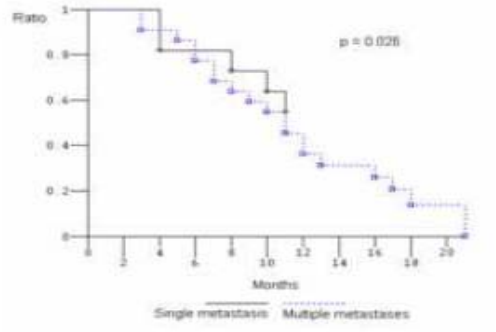
Multidiscplinary team
Our experience



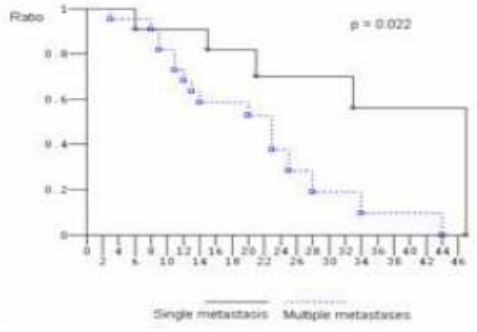
(A1)



(A2)



(B1)

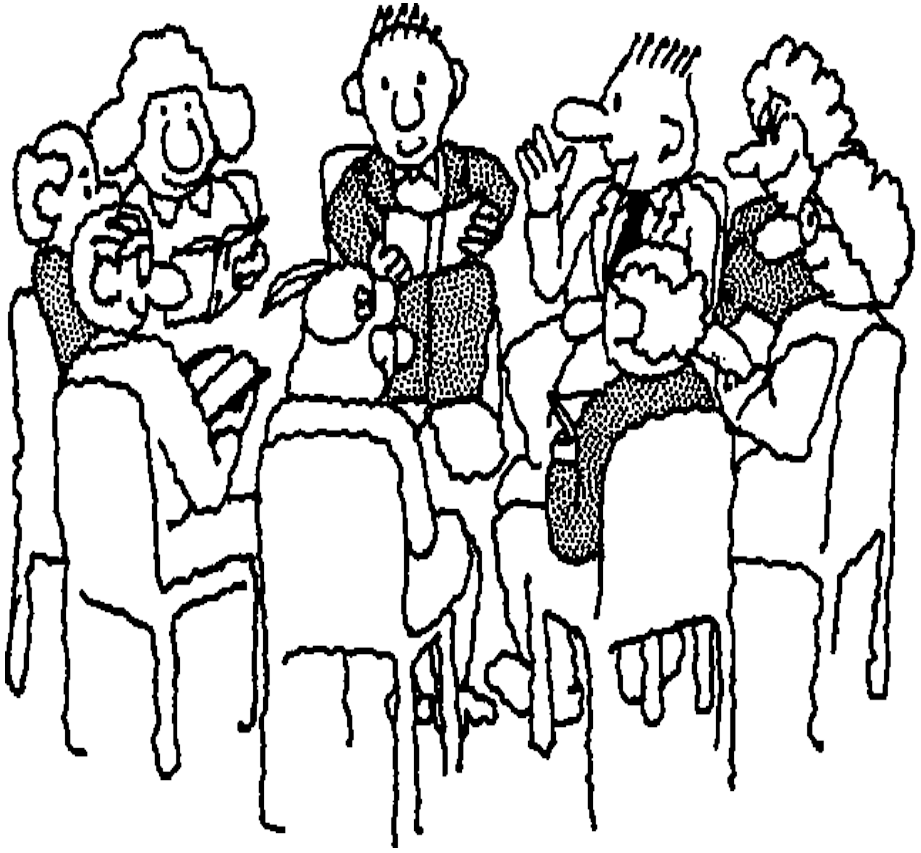


(B2)

Take home messages

- **Liver resection for metastases from a colorectal cancer is well established and it is considered the treatment of choice.**
- **Patients must be carefully selected to establish best treatment**
- **Resectability of previous unrectable patient should be the new end-point of neo-adjuvant therapy**
- **New frontiers of surgical approach available**
- **Multidisciplinary team**

The doubt is not pleasant, but certainty is ridiculous. Only fools are sure of what they say. . (Voltaire)



Resezione ecoguidata

Criteria of resectability

Towards a pan-European consensus on the treatment of patients with colorectal liver metastases

Eric Van Cutsem[a,,h], Bernard Nordlinger[b,h], Rene Adam[c], Claus-Henning Köhne[d], Carmelo Pozzo[e], Graeme Poston[f], Marc Ychou[g], Philippe Rougier[b], on behalf of European Colorectal Metastases Treatment Group[i]*

EUROPEAN JOURNAL OF CANCER 42 (2006) 2212–2221

The current ECMTG definition of resectability with curative intent is:

- **Ability of the surgeon to remove the liver metastases leaving a clear resection margin (R0)**
- **Liver remnant >/=30% of the original**
- **Absence of celiac lymph nodes**
- **Resectability desease outside of the liver**

Preoperative imaging of hepatic colorectal metastases

Consensus Statement:

1. In patients being considered for surgical therapy of hepatic colorectal metastases, a high-quality cross-sectional imaging study, either contrast-enhanced CT or MRI, should be performed to evaluate hepatic colorectal metastases before surgery. MRI, however, is inferior to CT in the evaluation of extrahepatic disease.
2. FDG-PET appears to improve patient selection and should be considered as part of preoperative evaluation of resectability.
3. Response to chemotherapy may impact the sensitivity of preoperative imaging studies at identifying all sites of disease.

Selection of Patients for Resection of Hepatic Colorectal Metastases: Expert Consensus Statement

Chusilp Charnsangavej, MD,[1] Bryan Clary, MD,[3] Yuman Fong, MD,[4] Axel Grothey, MD,[5] Timothy M. Pawlik, MD, MPH,[2] and Michael A. Choti, MD, MBA[2]

Prognostic variables

Consensus Statement:

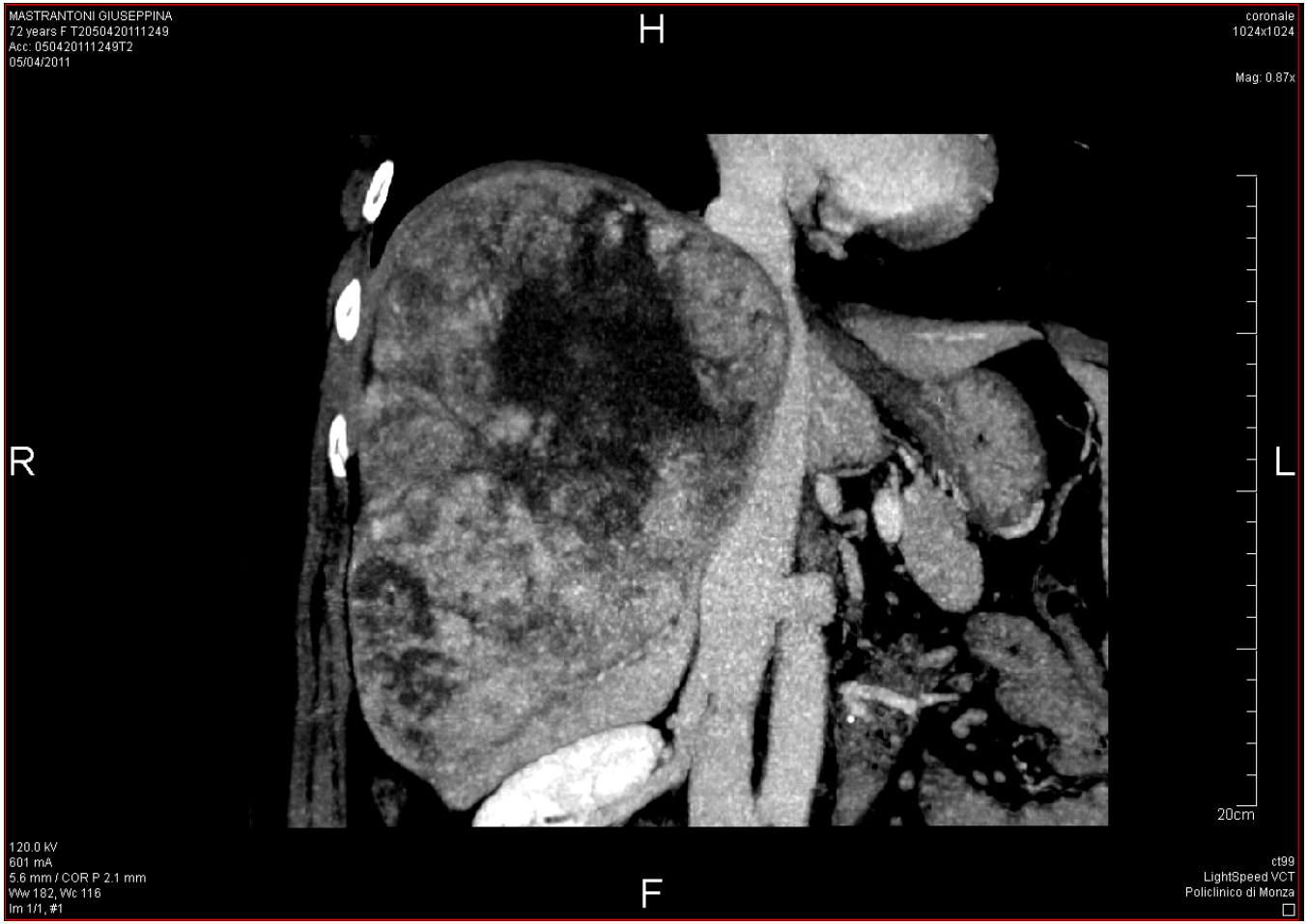
1. Clinical and pathologic factors can predict risk of recurrence and survival in patients following liver resection of hepatic colorectal metastases.
2. Clinical scoring systems based on preoperative clinical parameters have proven to be useful in predicting systemic dissemination of disease, resectability, and yield of diagnostic modalities.
3. While some molecular and biologic markers appear to correlate to prognosis, these factors must still be considered investigational as prognostic modalities.
4. Response to preoperative chemotherapy is emerging as a favorable clinical parameter that should be considered when considering hepatectomy in patients with multiple colorectal metastases.

1. **extrahepatic disease**
2. **positive surgical margin**
3. **nodal metastases for primary cancer**
4. **short disease-free interval**
5. **tumor size greater than 5 cm**
6. **more than one liver metastases,**
7. **CEA over 200 ng/ml.**

Fong et al Ann Surg 1999

Selection of Patients for Resection of Hepatic Colorectal Metastases: Expert Consensus Statement

Chusilp Charnsangavej, MD,[1] Bryan Clary, MD,[3] Yuman Fong, MD,[4] Axel Grothey, MD,[5] Timothy M. Pawlik, MD, MPH,[2] and Michael A. Choti, MD, MBA[2]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Policlinico di Monza

Management of primary colorectal cancer with synchronous hepatic metastases

Consensus Statement:

1. Patients with primary colorectal tumors who present with synchronous resectable liver metastases should be considered for aggressive curative-intent therapy when appropriate.
2. Either staged or simultaneous resections of the primary tumor and liver metastases can be considered depending on the variable factors, including complexity of resections, symptoms, comorbid disease, and available surgical expertise.
3. Integration of adjuvant and/or neoadjuvant therapy in patients with resectable stage IV disease is not well defined based on the available evidence. The use and timing of these therapies should be individualized and planned as part of a multidisciplinary approach.

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Resection margin and resectability

Consensus Statement:

1. In patients undergoing liver resection for hepatic colorectal metastases, a positive surgical margin is associated with a higher local recurrence and worse overall survival and should be avoided whenever possible.
2. While a wide (> 1-cm) resection margin should remain the goal when performing a liver resection, an anticipated margin of less than 1 cm should not be used as an exclusion criterion for resection.
3. Assessment of resectability of hepatic colorectal metastases should focus on the ability to obtain a complete resection (negative margins).

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Remnant Liver Volume and extrahepatic desease

4. The feasibility of hepatic resection should also be based on three criteria related to the remaining liver following resection: (1) the ability to preserve two contiguous hepatic segments, (2) preservation of adequate vascular inflow and outflow as well as biliary drainage, and (3) the ability to preserve adequate future liver remnant (> 20% in a healthy liver).
5. The presence of extrahepatic disease should no longer be considered an absolute contraindication to hepatic resection provided the patient is carefully selected and a complete (margin-negative) resection of both intra- and extrahepatic disease is feasible.

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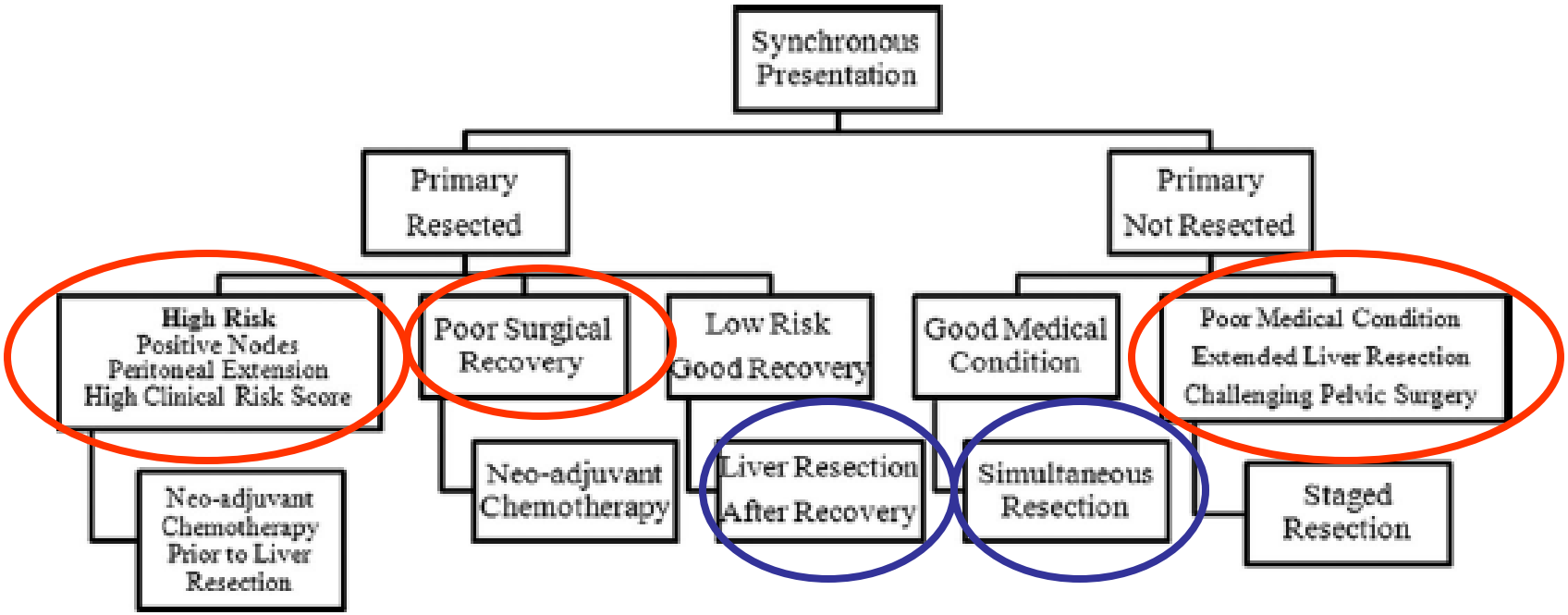
Changes in surgical approach

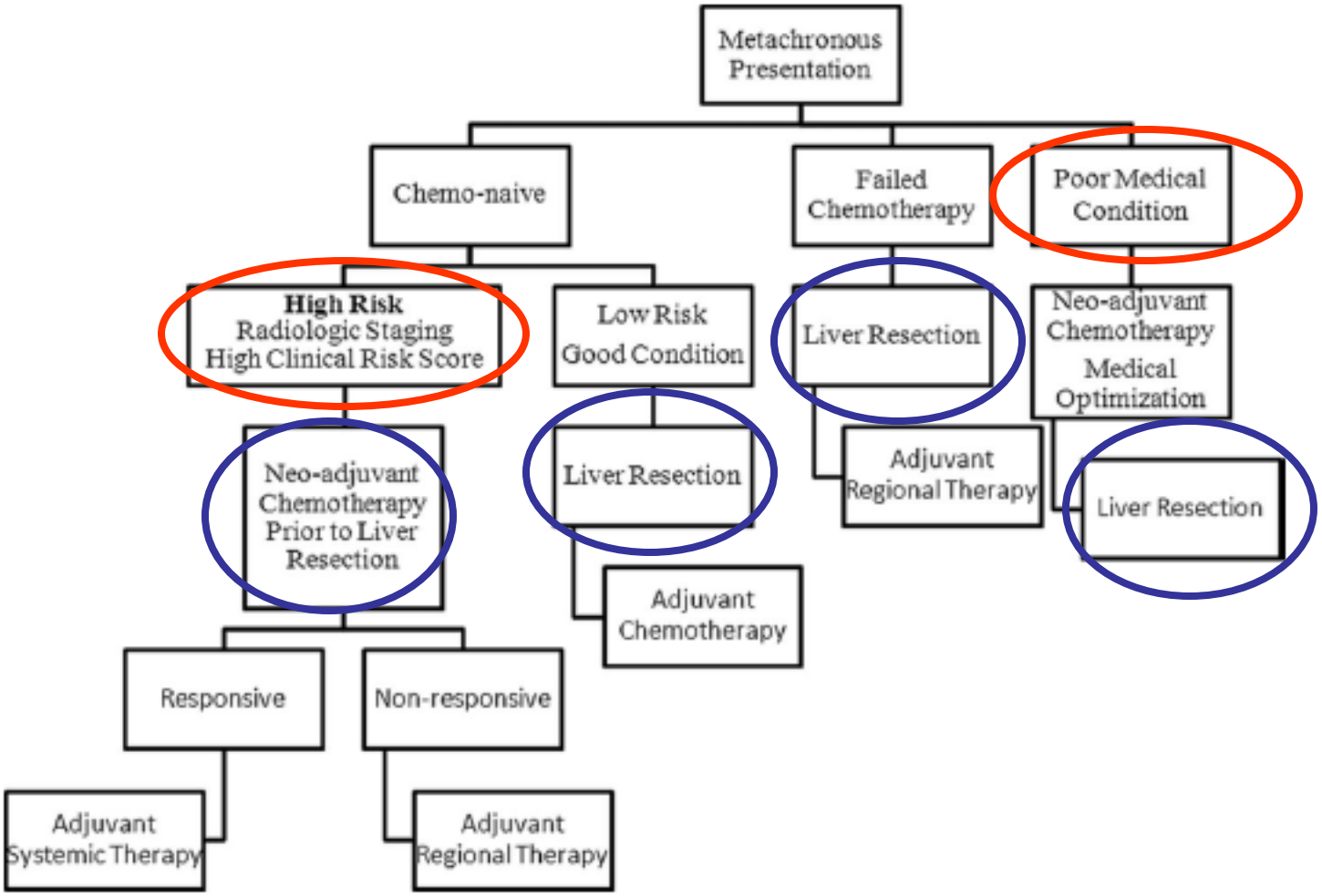
Conventional indications	Modern agressive approach
<4 metastases, unilobar	No limits, neoadjuvant CT, resection/ablation
Size <5cm	No limits
No extrahepatic disease	Lung metastases can be resected
Inadequate remnant liver	Pre-op PVE to increase liver remnant
Resection of all macroscopic disease	Combination of resection and RFA
Metachronous liver metastases	Synchronous and metachronous acceptable
Absence of hepatic pedicle node metastases	If celiac axis nodes are negative, LN dissection may improve 3-year survival

Algorithm of treatment synchronous CRC metastases



The Cancer Journal • Volume 16, Number 2, March/April 2010

Algorithm of treatment metachronous CRC metastases



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Tumor ablation

Hepatectomy is Superior to Thermal Ablation for Patients with a Solitary Colorectal Liver Metastasis

Suzanne Claire Schiffman · Matthew Bower · Russell E. Brown · Robert C. G. Martin · Kelly M. McMasters · Charles R. Scoggins

J Gastrointest Surg (2010) 14:1881–1887

Retrospective review

- **140 Consecutive patients with a solitary colorectal metastasis to the liver from March, 1995 to May, 2009**
- **Criteria of resectability: tumor-free margin and preserving adequate hepatic volume remnant.**
- **Patients with extrahepatic metastases were excluded**
- **Patients with prohibitive medical co-morbidities were not resected**
- **All of the ablations were performed surgically**

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	Ablation	Hepatic Resection	*p* value
Gender	53.3% male	50.5% male	0.632
Age	62.1 years	60.6 years	0.992
Preoperative chemotherapy	60.00%	57.90%	0.702
Liver tumor size	3.9 cm	5.6 cm	0.004
CRC tumor nodal status (N1)	53.30%	62.10%	0.368
CRC tumor depth			0.11
T1	0	2	
T2	2	9	
T3	38	73	
T4	3	9	
Unknown	2	2	
Metastatic diagnosis (synchronous)	42.20%	48.10%	0.627

The resection rate after chemotherapy

Rescue Surgery for Unresectable Colorectal Liver Metastases Downstaged by Chemotherapy

A Model to Predict Long-term Survival

René Adam, MD, PhD, Valérie Delvart, Gérard Pascal, MD, Adrian Valeanu, MD, Denis Castaing, MD, Daniel Azoulay, MD, PhD, Sylvie Giacchetti, MD, Bernard Paule, MD, PhD, Francis Kunstlinger, MD, Odile Ghémard, MD, Francis Levi, MD, PhD, and Henri Bismuth, MD, FACS Hon

(*Ann Surg* 2004;240: 644–658)

- **A consecutive series of 1439 patients with CRLM managed in a single institution during an 11-year period (1988–1999)**
- **1104 (77%) initially unresectable (NR) patients were treated by chemotherapy**
- **Chemotherapy mainly consisted of 5-fluorouracil and leucovorin combined to oxaliplatin (70%), irinotecan (7%), or both (4%) given as chronomodulated infusion (87%).**
- **Among 1104 NR patients, 138 "good responders" (12.5%) underwent secondary hepatic resection**
- **Operative mortality within 2 months was 0.7%, and postoperative morbidity was 28%.**
- **Survival was 33% and 23% at 5 and 10 years with a disease-free survival of 22% and 17%, respectively.**

The resection rate after chemotherapy

Neoadjuvant treatment of unresectable colorectal liver metastases: correlation between tumour response and resection rates

G. Folprecht[1], A. Grothey[2], S. Alberts[2], H.-R. Raab[3] & C.-H. Köhne[3]*

Annals of Oncology 16: 1311–1319, 2005

- A retrospective analysis of objective response rates and rates of resection for patients with initially unresectable liver metastases
- the resection rate in selected patients (liver-only metastases) following preoperative, 'neoadjuvant', chemotherapy ranged from 24% to 54% compared with 1% to 26% in non-selected patients.
- strong correlation between the response rate (RR) to chemotherapy and the resection rate for liver metastases. This correlation was stronger (0.96; $p = 0.002$) in selected patients, with isolated, liver-only metastases, than in non-selected patients (0.74; $p < 0.001$).

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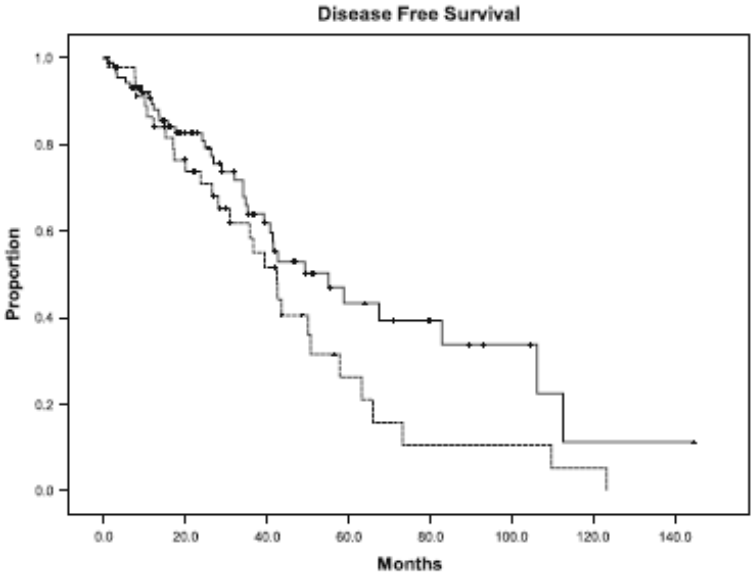
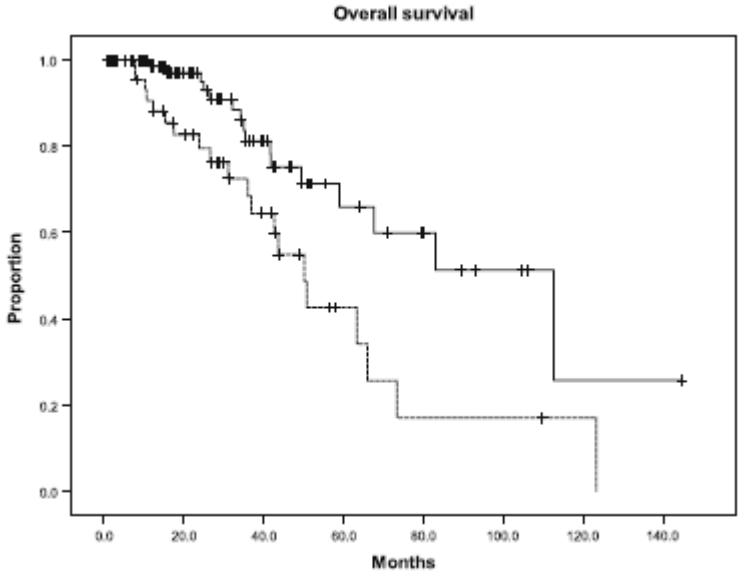


Kaplan–Meier curves depicting disease-free survival for patients undergoing hepatic resection compared to thermal ablation (P=0.073). Solid line, hepatic resection; dotted line, thermal ablation



Kaplan–Meier curves depicting overall survival for patients undergoing hepatic resection compared to thermal ablation (P=0.005). Solid line, hepatic resection; dotted line, thermal ablation

- **Possibly Resectable**

- **Advanced**
- **Surgery**

- PV Embolization
- Two-stage hepatectomy
- > 1 HV involved
- Intraoperative ablation

Tumor ablation

- Many investigators are starting to advocate laparoscopic or percutaneous ablation for those patients with medical contraindications to open resection, or for those otherwise requiring a major resection for small deep lesions

- The areas where ablation has clearly improved outcome for patients with hepatic colorectal metastases are for recurrent tumors and for patients with bilateral tumors

- Tumor ablation is also increasingly used in combination with resection.

Desease free Sopravvivenza

TABLE 4. Sites of Recurrences After Liver Resection

	Liver	Lung	Abdomen/ Pelvis	Anastomosis	Bone	Brain	Other
Total n	206	189	170	14	61	37	54
Percentage of patients	75	68	62	5	22	13	20
Percentage of all recurrences	28	26	23	2	8	5	7

Series of 275 patients subjected to hepatectomy with curative intent for colorectal metastases followed until death with recurrence documented up to 5 recurrences. These data are the cumulative recurrence by site. Data indicate that 206 patients (75%) eventually recur within the liver.

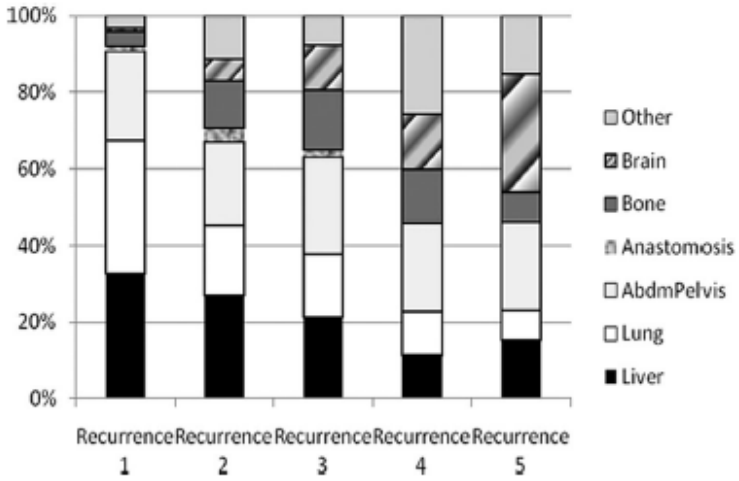


FIGURE 5. Patterns of recurrence after resection of hepatic colorectal metastases. Data from 275 patients followed until death. Cumulative data in Table 4.

Colorectal Cancer (CRC) metastases the neo-adjuvant chemotherapy

- **Patients with resectable metastases**
- **Benefits:**

  a) assessment of tumor responsiveness to chemotherapy

  b) elimination of occult micrometastatic disease elsewhere in the body

  c) avoiding any local treatments that otherwise would not have been beneficial if widespread disease develops on therapy.
- **Disadvantages:**

  a) potential drawbacks could include missing a “window” of opportunity for surgical resection if progressive disease develops

  b) chemotherapy-related organ toxicity

  c) higher perioperative morbidity

  d) difficulties for resection if a complete response (CR) is achieved.

New staging

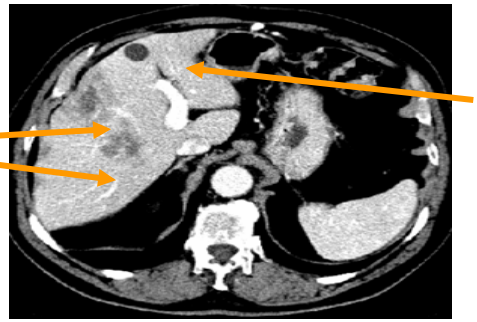
- distinguish clearly between patients with a chance of cure and those for whom only palliative treatment is possible

- stratification of patients from the outset in terms of their potential resectability and use this to direct their therapeutic management

Actual surgical approach

Stage IV colorectal cancer (liver only)

Non-Resectable	Possibly Resectable	Resectable	Easy Resectable
Too many M+ too little liver	Advanced Surgery	Conventional Surgery	Conventional Surgery



2 Hepatic veins involved

Small remnant liver

High degree of steatosis post-chemo therapy