Surgical Options in the Management of Cholangio-Carcinoma: Radical Surgery

MD Smith Department of Surgery, Chris Hani Baragwanath Academic Hospital The University of the Witwatersrand



Introduction

- Surgery remains the only treatment with a potential to cure
 - Rates of resection vary between 28 95%



Resected (N = 59) 5-yr survival 45% Log rank test P < 0.001

Majority of patients will receive palliative care

- Many advances in the Surgery for CCA

 survival rates remain low
 20- 40% five year survival
- The definition of radical surgery varies
 - All resectional surgery is radical
 - Recent description of the Hilar en bloc resection may be described as radical

Initial challenge is the Diagnosis





Difficult to get a preoperative tissue diagnosis

- Sclerotic tumour
- 15% of resected patients will have benign pathology

Cross sectional imaging must include an evaluation of the extent of:

- biliary involvement
- vascular involvement
- lymph node involvement
- hepatic atrophy/ hypertrophy



CT Evaluation

	Accuracy	Sensitivity		Specificity	
		AMC	MSKCC	AMC	MSKCC
Ductal extent	86%				
Portal vein invasion		89%	90%	92%	99%
Hepatic Art invasion		83%		93%	
Lymph Node status		61%		88%	

AMC: Data reported at E-AHPBA 2011 meeting: Meta-analysis of 26 studies MSKCC: Bach AM, et al. Portal vein evaluation with US: comparison to angiography combined with CT arterial portography. Radiology 1996;201:149–54.: The use of FDG-PET-CT scan in 30 patients with hilar cholangiocarcinoma (2006-2009) *Ruys et al; HPB 2011*

- Detection of primary tumour: 88% (23/26)
- Detection of LN metastases 66% (4/6)
- Detection of distal metastases 33% (2/6)
 - 0/4 peritoneal metastases
 - 2/3 liver metastases

SUV correlates with distant metastases



- Bismuth-Corlette: most commonly used
 - Superficial spread along the bile duct makes this system difficult to interpret as far as R0 resection is concerned

Тур І	Typ II	Typ Illa	Typ IIIb	Typ IV
Y	Y	Ŷ	Y	Y

- pTNM staging system (AJCC/UICC, 7th edition)
- Memorial Sloan-Kettering Cancer Center (MSKCC)
- Amsterdam staging system

Routine preoperative laparoscopy: controversial

- Between a 14 25% impact on management decisions
- Not routine but helpful in borderline cases

Preoperative Biliary Drainage

Remains controversial

- No evidence to support either approach
 - Pros:
 - Define proximal extent of the bile duct invasion
 - Improved post operative liver remnant regeneration
 - Cons:
 - Increased risk of cholangitis, haemobilia
 - Tumour seeding

I drain routinely

- Route:
 - Percutaneous for preoperative drainage

Surgical Approach

- Local resection has been abandoned
 - Associated with incomplete resections (R1) in two thirds of patients
- Next phase was the resection of segment 1 (caudate lobe) with bile duct resection
 - Limited long term survivors

Factors Associated With Improved Survival After All Resections*

Variable	Median Survival (mo)	P (Univariate)	P (Multivariate)	Hazard Ratio (95% CI)
Resection margin				
R0 (82)	42.9 (36.9, 55.0)	0.0003	0.006	0.44
R1 (24)	24.0 (12.6, 35.1)			(0.25-0.8)
Liver resection				
Yes (87)	42.9 (33.0, 53.7)	0.021	0.003	2.69
No (19)	28.8 (19.0, 39.0)			(1.41 - 5.14)
Well differentiated [†]		School Sc		
Yes (35)	55.7 (39.0, 99.0)	0.0001	0.0001	3.62
No (68)	28.8 (23.4, 37.1)			(1.91-6.87)
Papillary tumor				
Yes (25)	55.7 (41.6, NR)	0.013	0.015	2.49
No (81)	33.5 (24.4, 39.0)			(1.19-5.18)
Regional nodes (+)				
Yes (22)	27.3 (19.5, 36.9)	0.0007	0.64	0.87
No (84)	40.5 (35.1, 53.7)			(0.48-1.56)
Lobar atrophy				
Yes (33)	47.1 (30.0, 99.0)	0.08	_	_
No (73)	37.6 (27.4, 42.3)			
Portal vein involved				
Yes (31)	47.1 (30.0, 99.0)	0.07	llan, Dhanatura C	opfore Improve
No (75)	37.6 (26.9, 41.6)	Papi	Resection of Hil	lar Cholangioca

William R. Jarnagin, MD, FACS,* Wilbur Bowne, MD,* David S. Klimstra, MD,‡ Leah Ben-Porat,† Kevin Roggin, MD,* Karina Cymes, MD,‡ Yuman Fong, MD, FACS,* Ronald P. DeMatteo, MD, FACS,* Michael D'Angelica, MD,* Jonathan Koea, MD,* and Leslie H. Blumgart, MD, FRCS, FACS*

Rationale for radical resections

- Local factors
 - Tumour type
 - Depth of invasion
 - Infiltration of serosa and adjacent organs
 - Perineural and lymph invasion (up to 2cm from tumour)
- Metastatic disease (occurs late)
- Lymph node involvement

Lymph node outcomes



Survival according to nodal status in 110 patients with hilar cholangiocarcinoma who underwent resection with regional and paraaorticlymphadenectomy (all deaths included). Group 1, patients without lymph node metastasis; group 2, patients with regional lymph node metastasis; group 3, patients with paraaortic node metastasis. *, by log-rank test 01

Generally accepted that a major liver resection is required

- Avoids positive proximal bile duct margins

- This approach gives curative resection rates of up to 70%
- Recurrence rates in the liver hilum remain high even with improved 5 year survival rates of 20 – 40%

hilar CCC; what resection



COMPREHENSIVE CANCER CENTER VIENNA

Authors	Published Year	Resections (n)	Resectability (%)	Negative Margin (%)	Liver Resection (%)	Morbidity (%)	Mortality (%)	5-yr Survival Rate (%)
Hadjis NS et al	1990	27	NA	56	60	NA	7	22
Nimura et al	1990	55	83	84	98	41	6	41*
Nakeeb et al	1996	109	56	26	14	47	4	(11)
Su et al	1996	49	28 🗲	49	57	47	10	15
Klempnauer et al	1997	151	45	77	77	NA	10	28
Miyazaki et al	1998	76	NA	71	86	33	13	26
Burke et al	1998	30	43	83	73	NA	6	45
Neuhaus et al	1999	80	NA	61	85	55	8	22
Kosuge et al	1999	65	73	52	80	37	9	33
Launois et al	2000	131	35	NA	37	NA	19 🗲	NA
Gerhards et al	2000	112	NA	14 🗲	29	65	18	NA
Nimura et al	2000	142	80	61	90	49	9	26*
Todoroki et al	2000	101	89	14 🗲	58	14 🗲	4	28
Jarnagin et al	2001	80	50	78	78	64	10	26
Kawarada et al	2002	65	89	64	75	28	2.3	26
Capussotti et at	2002	36	NA	89	83	47	3	27
Kawasaki et al	2003	79	75	68	87	14	1.3	22
Seyama et at	2003	87	94	64	67	43	0	(40)
Rea et al	2004	46	NA	80	100	52	9	26
Kondo et al	2004	40	95 ←	95 🗲	65	48	0	NA
Uitsma et al	2004	42	NA	65	100	76 🗲	12	19
Hemming et al	2005	53	50	80	98	40	9	35
Jarnagin et al	2005	106	70	77	82	62	8	NA
Dinant et al	2006	99	NA	31	38	66	15	27
Ito et al	2008	38	55	63	53	32	0 🗲	33

E-AHPBA Cape Town 2011

F. Ito, Ann Surg 2009

Hilar en bloc resection



Right Trisectionectomy and en bloc portal vein resection – "no touch" technique

Oncological Superiority of Hilar En Bloc Resection for the Treatment of Hilar Cholangiocarcinoma UP Ann Surg Oncol (2012) 19:1602–1608 a) Overall survival after curative resection (R0) of hilar cholangiocarcinoma during the study period according to the type of surgical procedure. B) Survival of the study cohort according to the two study groups



Ann Surg Oncol (2012) 19:1602–1608



Sano. Ann Surg 2006

Conclusion

- Preoperative workup essential
 - imaging, drainage
- When diagnosis adequately confirmed
 - prepare for major hepatectomy
 - PVE dependent upon FRL
- Procedure in specialized hands
 reduction of overall M&M
- Improvement of postoperative oncological care