Liver Transplantation: Salvage Surgery

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“It is impossible to be a competent surgeon without using higher-order cognitive skills”

Spencer et al Bulletin of the American College of Surgery, 64, 9-12 1978.
‘I spent a lot of money on booze, birds and fast cars. The rest I just squandered…’
### Indication for Liver Transplantation
New Zealand Liver Transplant Unit, Auckland City Hospital

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cases (Percentage)</th>
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<tbody>
<tr>
<td>Hepatitis C</td>
<td>117 (23.1%)</td>
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<tr>
<td>Hepatitis B</td>
<td>91 (18.0%)</td>
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<tr>
<td>Extra Hepatic Biliary Atresia</td>
<td>43 (8.5%)</td>
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<tr>
<td>Non-alcoholic Steatohepatitis (NASH)</td>
<td>38 (7.5%)</td>
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<tr>
<td>Primary Sclerosing Cholangitis</td>
<td>35 (6.9%)</td>
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<tr>
<td>Alcoholic liver disease</td>
<td>32 (6.3%)</td>
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<tr>
<td>Non A Non B Hepatitis (NANB)</td>
<td>21 (4.2%)</td>
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<tr>
<td>Auto Immune Hepatitis (AIH)</td>
<td>15 (3.0%)</td>
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<tr>
<td>Hepatitis B + C + Others</td>
<td>13 (2.6%)</td>
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<tr>
<td>Primary Biliary Cirrhosis (PBC)</td>
<td>12 (2.4%)</td>
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<tr>
<td>Cryptogenic Cirrhosis</td>
<td>10 (2.0%)</td>
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<tr>
<td>Other</td>
<td>79 (15.6%)</td>
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</tbody>
</table>
Increasing Burden of Disease
Incidence of Liver Cancer at Auckland City Hospital

New HCC Referrals

<table>
<thead>
<tr>
<th>Year</th>
<th>Referrals</th>
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<tbody>
<tr>
<td>1991</td>
<td>7</td>
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<td>15</td>
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<td>2010</td>
<td>143</td>
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<td>2011</td>
<td>155</td>
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<tr>
<td>2012</td>
<td>169</td>
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<tr>
<td>2013</td>
<td>190</td>
</tr>
</tbody>
</table>

Jan-Nov 2013
Changing Aetiology of HCC in NZ
NZLTU 1991-2013 (n=1410)
Survival of Hepatocellular Carcinoma
Transplantation offers greatest chance of long-term survival

New Zealand Liver Transplant Unit
Organ Donation

• Deceased Donor
  - Multi-organ
  - After brain death (DBD)
  - After cardiac death (DCD)

• Living donor
  - Single organ (kidney, liver)
  - Risk to donor
Cause of donor deaths
New Zealand 1993-1999 (n=267)

- CVA: 51%
- Road trauma: 29%
- Other neuro trauma: 13%
- Other: 6%
- Cerebral tumour: 1%

The liver gap is still too large

Liver waiting list

Deceased donor transplants

Waitlist deaths

OPTN/SRTR annual report 2007
Obesity pandemic: fewer organs

New Zealand 26.5%

Japan (3.4%) and Korea (3.8%)
Consequences?

International Donor Statistics 2007

Donors PMP


Source: IRODaT (International Registry of Organ Donation and Transplantation)
Deceased Organ Donors 2000 – May 2011

Deceased Organ Donors: 2000 – May 2011

2011 YTD outcome 141
2010 actual outcome 309
2009 actual outcome 247
2000-08 baseline 205

Source: Australia and New Zealand Organ Donor (ANZOD) Registry 2011 Report
Successful Liver Transplantation from a Living Donor to Her Son


Figure 1. Operative Procedure in the Donor.

Figure 2. Operative Procedure in the Recipient.
Adult-to-adult live donor liver transplant
Donor liver pre- and post-transplant

Donor pre-operative

Recipient post-transplant
Adult-to-adult live donor liver transplantation
Split Liver Transplantation

Right lobe

Adult

Left lateral segment

Child

Right lobe

Adult
Is it worth all the effort?
Outcome of liver transplantation

Patient survival (%) vs. Months

- 1968-79
- 1980-90
- 1990-95
- 1995-2000

NZLTU (1998-2006)

Kings College
Outcome (n=407)

- employed: 40%
- children: 12%
- retired: 12%
- convalescing: 12%
- unemployed: 11%
- died: 15%
- homemaker: 3%
- study: 1%
- other: 1%
Immunosuppression: The balancing act
Infectious complications

- Bacterial, viral, fungal, parasitic
- Greatest risk early post-transplant
- Life-long susceptibility
- ‘Opportunistic’ organisms

- Prophylaxis, early diagnosis and improved treatments have reduced morbidity and mortality from infectious complications
Chronic renal failure after non-renal organ transplantation

Are we there yet?

- Improved anti-viral therapy (HCV, HBV)
- Immunisation (HBV)
- Cell transplants (islets, hepatocytes)
- Donor specific tolerance
- Overcoming donor shortage
  - Reducing the need for transplantation
  - Technical innovations
  - Xenotransplantation
  - Increasing donor numbers