Small bowel and Multivisceral Transplantation

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Intestinal Transplants Performed

Number of Transplants

Year of Transplant

1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011

Intestinal Transplants Performed

Children  Adults

Intestinal Transplant Registry Report © 2013
Active Centres

N=47
Regional Intestine Transplant Case Volumes

Number of Transplants Performed

- North America
- Europe
- South America
- Asia+Australia

- 1985-1995
- 1995-2001
- 2002-2005
- 2006-2012
## Current UK centres for small bowel transplantation

<table>
<thead>
<tr>
<th>Centre</th>
<th>Year (Established)</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford</td>
<td>2008</td>
<td>22</td>
</tr>
<tr>
<td>Birmingham</td>
<td>1993</td>
<td>94</td>
</tr>
<tr>
<td>King’s London</td>
<td>2009</td>
<td>15</td>
</tr>
</tbody>
</table>
Which organs do we transplant?
Isolated small intestine
Modified multivisceral (MMVT)
Multivisceral (MVT)
Grafts including the intestine

- Small bowel
- Liver / Small bowel
- Multivisceral
Grafts including the intestine

Small bowel

Liver / Small bowel

Modified multivisceral

Multivisceral
34 yrs Male

Age at assessment: 31 years

Referred from: St. Mark’s IFU
34 yrs Male

Age 13 yrs (1987) : Crohn’s Disease

Teenage years :

• Stricturing disease: multiple surgery (stricturoplasty and resections)

• Perianal abscess and fistulation : Seton

• Steroids / poor nutrition / disease activity: Delayed Puberty, growth
34 yrs Male

• University years and his 20's

• Intestinal failure - strictures
  short bowel and obstruction
  established on HPN

• Cirrhosis: PN - portal hypertension

• GI haemorrhages x2: - gastric varices
  jejunal ulcer bleed

• Line infections: - metastatic muscle and bone infection
  sepsis and renal failure/ITU
34 yrs Male

Early 30’s

High Intestinal Obstruction

- NG aspirate 6 L / day
- PN 4.5L + 1 - 4 L N/s (prn)
34 yrs Male

Assessment for transplantation (age 31yrs)

Cambridge March 05

1. Small Intestine:
   Intestinal failure:
   - Short bowel
   - Strictured / obstructed

2. Large intestine: Widespread CD

3. Cirrhosis: PN
34 yrs Male

Central venous access:

Neck Veins : Intact
Femoral V’s : Intact
National Adult Intestinal Transplantation Forum (NASIT)

Founded (2005) by Cambridge [SJ Middleton] and St Mark’s [S Gabe]
Led by: Cambridge, Oxford, St Mark’s, Hope

• Convenes monthly
• All potential transplants are formally presented
• Open invitation to discuss patients for potential referral
• Multidisciplinary
• NHS England HSC and UKT requirement

• Recently combined with the (Manchester) bowel lengthening programme
Conclusions of Assessment:

**NASIT View**

1. Liver transplantation required in 2-3 years.

2. Surgery to resolve obstructed small intestine:
   - Hazardous: portal hypertension.
   - Reduce feasibility of transplant surgery.

3. Combined small intestine and liver transplantation considered best option.
• How do your results compare with other centres?
## Transplantation procedures in Cambridge

<table>
<thead>
<tr>
<th>Type of transplant</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small bowel</td>
<td>16</td>
<td>(27%)</td>
</tr>
<tr>
<td>of which + simultaneous kidney</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Modified multivisceral</td>
<td>9</td>
<td>(15%)</td>
</tr>
<tr>
<td>of which + simultaneous kidney</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Multivisceral</td>
<td>35</td>
<td>(58%)</td>
</tr>
<tr>
<td>of which + simultaneous kidney</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
Adult Intestinal Transplantation Cambridge 2003 – 2015

Conditions leading to transplantation

- Surgical complication
- Radiation enteritis
- Volvulus
- Gastrochisis
- Dysmotility
- Desmoid
- Superior mesenteric artery thrombosis
- Porto-mesenteric thrombosis

23% Crohn's
Patient Survival

International registry

Cambridge UK

Survival %

Time (months)

SBT 83%

MMVT 65%

MVT 33%
• Will my quality of life go back to normal after txp?
SF-36 scores

• Paired data available for 11 patients

• 1/2 improve
• 1/3rd worsen
• Static in remainder
SF-36 scores

- Paired data available for 11 patients
  - 1/2 improve
  - 1/3rd worsen
  - Static in remainder

Individual function scores
- Best improvement
- General health
- Physical functioning
- Social functioning
SF-36 scores

- Paired data available for 11 patients
  - 1/2 improve
  - 1/3rd worsen
  - Static in remainder

Individual function scores
- Best improvement
- General health
- Physical functioning
- Social functioning

Least improvement
- Energy/fatigue
- Physical function-role
- Pain
Performance status

Listing: Post-transplant
n= 15
10 increase
5 decrease
Listing: Post-transplant
N=16

8 increase score
4 static
4 reduce
(incl dead patients)
Will I be able to eat normally after the transplant?
Nutrition after intestinal transplantation in Cambridge UK

- Oral nutrition only: 90%
- Enteral supplementation: 5%
- Parenteral support: 5%
Functional Status
(Patients Transplanted 2008 – 2012 who have survived at least 6 months)

Freedom from PN

- Adults
- Children

- Full Function
- IV Fluids
- No Function
34 yrs Male

- Patient declined offer of transplantation
- Given supportive care
- Treated for depression
- 2005-2007: Gradual deterioration in liver function - Bilirubin climbed from 14 to 250
34 yrs Male

Consented to transplantation:

April 2008

Intestine, liver, stomach, pancreas
The small intestinal graft on reperfusion
34 yrs Male : Multivisceral txp in 2008

Current status
7 years out :

- Well
- Living independently
- Socialising very well
- No depression
- Self employed

- Eating normally
- Excellent QOL

What price a life returned?
One ready for hope to be spurred,
Disease and depression cloud the view,
Not knowing what to do,
With guidance, decision made to carry on and fight,
One I know now that was right,
So, what price a life returned?
Unpayable, but hopefully earned.
Thank you.
Indications

Who to refer

- Loss of access
- Infection
- Liver disease
- Desmoids
- Tumours
- Ischaemia
- Liver transplantation indicated
- Bleeding from portal hypertension

When to refer
Indications

Who to refer

- Loss of access
- Infection
- Liver disease
- Desmoids
- Tumours
- Ischaemia
- Porto-mesenteric thrombosis

When to refer

- Risks of delay
- Liver salvage
- Venous access
- NASIT forum

Indications:

- PN related
  - Loss of access
  - Infection
  - Liver disease

- Extensive visceral resection
  - Desmoids
  - Tumours
  - Ischaemia

- Porto-mesenteric thrombosis
  - Liver transplantation indicated
  - Bleeding from portal hypertension
Can Intestinal transplantation replace PN as primary tx for IF?
Summary

- Patient survival much improved (well performing centres)
- Graft long term function also good
- Patient performance status variable
- Patient quality of life variable
Questions ?