Chirurgische Behandlung des hypersensitiven Rektums

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Introduction

- Rectum removed...
- That means: *not correct!!*
- All the same: **hypersensitivity**
Introduction

• 32 Hits,
• 2 before 2008

The probability of patients suffering from LARS was underestimated .... Deficient awareness regarding risk factors for LARS was documented. Knowledge of therapeutic options was also limited.¹

1. Jimenez-Gomez L Low anterior resection syndrome: a survey of the members of the American Society of Colon and Rectal Surgeons (ASCRS), the Spanish Association of Surgeons (AEC), and the Spanish Society of Coloproctology (AECP). International journal of colorectal disease 2016.
Actual Situation

Abdominoperineal resection (APR) 1913

“The operation is a severe one. I do not think that it should be performed on those over 60 years of age; of 10 such cases all died. With regard to the remainder, of whom there were 36, 8 died from the effects of the operation, 4 have had recurrence, 2 died of intercurrent disease, while 22 are alive and well after periods varying from six months to six years.”

1. Miles WE. A Lecture ON THE DIAGNOSIS AND TREATMENT OF CANCER OF THE RECTUM: Delivered at the Cancer Hospital, Brompton, on January 22nd, 1913. British medical journal 1913
Actual Situation

Low anterior resection

- The concept of TME (≈ 1982)
- In Basingstoke you can only talk about rectal cancer... There is nothing else ¹

Neoadj. radiochemotherapy

- Better local control
- Up to 80% sphincter preservation ²

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¹ Personal communication Heald W („Bill“); in Basingstoke 2009
Actual Situation

LARS

- LARS Score: Dänisch 2012
- LARS Score: Deutsch/Spanisch/Schwedisch 2014
- LARS Score: English 2015

> rather **new, important** concept

> Very small, recent evidence for therapy

Pathophysiology

Up to 18% internal sphincter damage after LAR, but rather not the cause of LARS

- Increased motoric propulsions
- Missing „rectal“ brake
- Hyperirritability on stimuli
- Defect of sacral and pudendal nerves

Prevalence/risk factors

- LARS in about 70% of LAR\textsuperscript{1,2}
- In about 50% severe\textsuperscript{2}

worse/more common:

- Height of anastomosis\textsuperscript{3}
- Straight vs. „reservoir“ (effect lost after 18mths)\textsuperscript{4}
- (neo)adjuvant R(C)Tx\textsuperscript{3}
- Anastomotic leakage\textsuperscript{5}

Sakrale Neuromodulation (SNM)

- Good efficacy in fecal incontinent patients (Improvement in 77-90%\(^1,2\))
- First „Test“; only in successful test-patients: **definitive implantation**
- Mechanism of action still not completely clear\(^3\)
- Works in fecal incontinent patients up to 7 years\(^4\)

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[4] Uludağ O et al., Colorectal Dis. 2011;
SNM Test I

- C-arm radiograph
- Video “tower“ to see anus
- Foots visible...
- In local/spinal/general anaesth.
- Single shoot antibiotics
SNM Test II

Nerve-evaluation:
- „searching“ for nerves at 5-10 Volt
- Using a foramen-needle S3/4 left/right
- Reduction and positioning
- Lowest possible voltage:
  - for „Anal-Twitch“ or „sensation“
- No movement of the feet/toes
- Ideal position for SNM
Implantation of tined lead (def. elektrode)

- Bring in a trocar via a guide-wire
- Positioning of trocar
- Bring in tined lead
- Positioning using:
  - Radiological and
  - Electronical control
Durchführung Test IV

- Dissect a „pocket“
- Tunneling, bring in transparent protection
- Push/guide tinead lead in the „pocket“
- Connection to extension
Test VI

- Bring the extension to the left side of the buttocks
- Closure of the wounds
Influence of SNM on sensitivity/capacity

- There is good evidence, that
- SNM:
  - Lowers sensitivity of rectum
  - Elevates rectal volumes
  - Increases retrograde "movements" of colon
  - Decreases antegrade propulsions
  - Influences continence on an afferent/central neurological level

⇒ Might be the ideal treatment of LARS

SNM for LARS

- It helps for incontinence in LARS patients in a systematic review\(^1\) (success: 74.4%)

- It helps against the other LARS symptoms\(^2\) in 2/3 (urgency, fragmentation, soiling)

- So far:
  - Only 7 studies
  - Very low numbers (total: 43 patients)

- But it is the **only evidence** for surgical therapies of LARS\(^3\)

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Re-Do „LAR“/Stoma-Formation?

- **Jochen Lange**: Du musst alles resezieren und neu anlegen!
- **Why not?**
  - Damage has already been done!
  - Impairement of nerves will not ameliorate
  - „stronger propagations etc.“ of neorectum will persist
  - Risk of new damage and complications
- In the literature there is not one single case of LARS treated like that!

**Definitive stoma-formation**

- QoL after LAR and APR are the same!\(^1\)
- So that might be the ultimate solution\(^2\)

pTNS: percutaneous tibial nerve stimulation

- Percutaneous stimulation of the tibial nerve with a needle
- **Modified Stoller scheme:**
  - Time of stimulation: 30 min
  - Therapy: 1x/week for 3 months
  - Maintenance therapy: 2x/months for 6 months
  - Total time of therapy: 9 months

- **Successful** in prospective case series for fecal incontinence
- **No difference** of efficacy against sham in multicenter RCT
- More successful in **urge** than passive faecal incontinence

2. Knowles CH et al. Percutaneous tibial nerve stimulation versus sham electrical stimulation for the treatment of faecal incontinence multicentre RCT (CONFIDeNT) Lancet. 2015
pTNS, own results....

- Only urge faecal incontinent patients, very successful
- No influence rectal sensitivity/capacity

⇒ Value in LARS unclear

Lukas Marti MD1,2, Christian Galata MD2, Ulrich Beutner PhD1, Franc Hetzer MD3, Nicoletta Pipitone MD1, Katja Wolff MD1, Walter Brunner MD1, Michael Christian Sulz MD4, Jan Borovicka MD4, Christine Maurus MD1: Percutaneous tibial nerve stimulation (pTNS): Is it worthwhile and does rectal capacity or a change thereof impact its success? Under review
Magnetic sphincter

- In faecal incontinence\(^1\) (worldwide n=300):
  - Improvement in 70%
  - Explantation in 10-20% due to infection
- Implantation after R(C)Tx not allowed....
- Newly FDA approved
- We implanted 3 so far, next to come \(10^{th}\) march
- LARS:???

Possible algorithm LARS

- Multimodal conservative therapy
- Consider preventive therapy
- Not successful enough:
  ⇒ Try SNM
- If not ready for it: pTNS
- Soiling: Bulking agents inj.
- No RTx, incontinence: Magnetic spincter
- Ultima ratio: stoma...

Figure 1. Treatment algorithm. LARS = low anterior resection syndrome; QoL = quality of life.
Conclusion:

Common, QoL impacting problem
- Multistepwise approach
- Multimodal therapy

**SNM** has *some* evidence

pTNS/Bulking agent: option?
Magnetic spincter: RTx?
Stoma for hopeless cases

**LARS**
Try to prevent in the first place:
- Do as much nothing as..
- No anastomotic leakage
- Primary stoma is an option
Thank you for your attention
Results: Satisfaction, QoL, functional outcome

- **Median Satisfaction (Likert scales)**
  - no relapse: 8.5 (7 - 10)
  - relapse: 7 (6 - 8.8)  \( p = 0.038 \) (A)

- **Median Re-election of operation (Likert Scales)**
  - no relapse: 9 (8 - 10)
  - relapse: 6 (5 - 8)  \( p = 0.001 \) (A)

- **Quality of life (FIQL Score)**
  - no relapse: 3.5/3.2/3.6/3.6
  - relapse: 3.2/2.9/3.5/3.3  \( p < 0.001 \) (A)

- **Relief of ODS in 15 of 21 patients (71.4%)**

- **Mean Wexner score decreased** \( p < 0.001 \)
  - preoperative: 9.7 ± 6.7
  - postoperative: 4.4 ± 4.7

A) Mann – Whitney U-Test
Results: functional outcome

<table>
<thead>
<tr>
<th></th>
<th>Total (N=42)</th>
<th>No relapse (N=24)</th>
<th>Relapse (N=18)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>16 (38.1 %)</td>
<td>9 (37.5 %)</td>
<td>7 (38.9 %)</td>
<td>0.672 A</td>
</tr>
<tr>
<td>Congesting</td>
<td>16 (38.1 %)</td>
<td>8 (33.3 %)</td>
<td>8 (44.4 %)</td>
<td></td>
</tr>
<tr>
<td>Laxatives</td>
<td>10 (23.8 %)</td>
<td>7 (29.2 %)</td>
<td>3 (16.7 %)</td>
<td></td>
</tr>
<tr>
<td>Abdominal Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>38 (90.5 %)</td>
<td>21 (87.5 %)</td>
<td>17 (94.4 %)</td>
<td>0.515 B</td>
</tr>
<tr>
<td>Yes</td>
<td>4 (9.5 %)</td>
<td>3 (12.5 %)</td>
<td>1 (5.6 %)</td>
<td></td>
</tr>
<tr>
<td>Incontinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>18 (42.9 %)</td>
<td>13 (54.2 %)</td>
<td>5 (27.8 %)</td>
<td>0.101 B</td>
</tr>
<tr>
<td>Yes</td>
<td>24 (57.1 %)</td>
<td>11 (45.8 %)</td>
<td>13 (72.2 %)</td>
<td></td>
</tr>
<tr>
<td>Wexner score</td>
<td>Median (IQR)</td>
<td>6.5 (2.0-9.0)</td>
<td>5.0 (1.5-9.0)</td>
<td>0.315 C</td>
</tr>
<tr>
<td>at follow-up</td>
<td>Mean (SD)</td>
<td>6.1 (4.4)</td>
<td>5.8 (5.1)</td>
<td></td>
</tr>
<tr>
<td>Likert scales (0 to 10):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>satisfaction with</td>
<td>Median (IQR)</td>
<td>8.0 (6.2-9.0)</td>
<td>8.5 (7.0-10.0)</td>
<td>0.038 C</td>
</tr>
<tr>
<td>operation</td>
<td>Mean (SD)</td>
<td>7.7 (1.9)</td>
<td>8.3 (1.7)</td>
<td></td>
</tr>
<tr>
<td>re-election of operation</td>
<td>Median (IQR)</td>
<td>8.0 (6.0-10.0)</td>
<td>9.0 (8.0-10.0)</td>
<td>0.001 C</td>
</tr>
<tr>
<td>General</td>
<td>Median (IQR)</td>
<td>8.0 (7.2-9.0)</td>
<td>8.0 (7.0-9.0)</td>
<td>0.886 C</td>
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<tr>
<td>quality of life</td>
<td>Mean (SD)</td>
<td>8.1 (1.5)</td>
<td>8.1 (1.6)</td>
<td></td>
</tr>
<tr>
<td>FIQL scores</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>lifestyle</td>
<td>Median (IQR)</td>
<td>3.3 (3.2-3.5)</td>
<td>3.5 (3.3-3.6)</td>
<td>&lt;0.001 C</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>3.3 (0.3)</td>
<td>3.5 (0.3)</td>
<td></td>
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<tr>
<td>coping</td>
<td>Median (IQR)</td>
<td>3.1 (2.9-3.2)</td>
<td>3.2 (3.1-3.3)</td>
<td>&lt;0.001 C</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>3.1 (0.4)</td>
<td>3.2 (0.4)</td>
<td></td>
</tr>
<tr>
<td>depression</td>
<td>Median (IQR)</td>
<td>3.6 (3.5-3.7)</td>
<td>3.6 (3.6-3.7)</td>
<td>&lt;0.001 C</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>3.6 (0.2)</td>
<td>3.6 (0.2)</td>
<td></td>
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<tr>
<td>embarrassment</td>
<td>Median (IQR)</td>
<td>3.4 (3.3-3.6)</td>
<td>3.6 (3.4-3.7)</td>
<td>&lt;0.001 C</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>3.4 (0.3)</td>
<td>3.6 (0.3)</td>
<td></td>
</tr>
</tbody>
</table>

A) Monte Carlo simulated Chi-Square Test B) Mid-p test C) Mann-Whitney U-test
### Results: Postoperative incontinence, Wexner score & ODS

<table>
<thead>
<tr>
<th></th>
<th>Total (N=64)</th>
<th>No relapse (N=45)</th>
<th>Relapse (N=19)</th>
<th>P</th>
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<tbody>
<tr>
<td><strong>Incontinence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>postoperatively</td>
<td>No</td>
<td>29 (45.3 %)</td>
<td>17 (37.8 %)</td>
<td>12 (63.2 %)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>35 (54.7 %)</td>
<td>28 (62.2 %)</td>
<td>7 (36.8 %)</td>
</tr>
<tr>
<td></td>
<td>Temporary</td>
<td>9 (14.1 %)</td>
<td>9 (20.0 %)</td>
<td>0 (0.0 %)</td>
</tr>
<tr>
<td></td>
<td>Declining</td>
<td>6 (9.4 %)</td>
<td>6 (13.3 %)</td>
<td>0 (0.0 %)</td>
</tr>
<tr>
<td></td>
<td>Permanent</td>
<td>20 (31.2 %)</td>
<td>13 (28.9 %)</td>
<td>7 (36.8 %)</td>
</tr>
<tr>
<td><strong>ODS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>postoperatively</td>
<td>No</td>
<td>57 (89.1 %)</td>
<td>40 (88.9 %)</td>
<td>17 (89.5 %)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>7 (10.9 %)</td>
<td>5 (11.1 %)</td>
<td>2 (10.5 %)</td>
</tr>
<tr>
<td><strong>Wexner Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>postoperatively</td>
<td>Median (IQR)</td>
<td>3.0 (0.0-9.0)</td>
<td>5.0 (0.0-9.0)</td>
<td>0.0 (0.0-8.0)</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>4.4 (4.7)</td>
<td>4.8 (4.5)</td>
<td>3.4 (5.2)</td>
</tr>
</tbody>
</table>

A) Mid-p test  B) Monte Carlo simulated Chi-Square Test  C) Mann-Whitney U-test