Evaluation and Treatment of Fecal Incontinence
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OBJECTIVES

- DEFINITION
- EPIDEMIOLOGY
- ETIOLOGY
- DIAGNOSIS
- TREATMENT
  - Non Operative
  - Operative

Fecal Incontinence

- Recurrent uncontrolled passage of fecal material for at least one month
- Varying grades of FI
- Classified into three main categories;
  - Fecal seepage
  - Passive incontinence
  - Urge incontinence

**Epidemiology**
- True incidence is likely to be higher than reported
- Estimates of 2.2% - 20.7% prevalence
- Rates of 50% in geriatric and institutionalized population
- Similar prevalence between males and females
- Annual sales of adult incontinence products is 18.6 Billion dollars


**Etiology**
- Multifactorial
- Commonly an “acquired” disorder
- Congenital disorders
- Obstetric trauma
- Adorectal procedures
- Trauma
- Neuromuscular disorders


**Factors Affecting Continence**
- Stool consistency
- Peristalsis in rectosigmoid
- Rectal capacity
- Pelvic floor musculature
- Anal sphincter complex
- Sensation of rectum and anus
EVALUATION OF FECAL INCONTINENCE

- Careful, thorough history including obstetric history in women
  - 6 mos population based study of postpartum women, reported > 1 in 4 women reported fecal incontinence within 6 months of childbirth
- Thorough physical exam
- Fecal incontinence score
- Anorectal physiology and anatomic studies


EVALUATION OF FECAL INCONTINENCE

<table>
<thead>
<tr>
<th>CCF Incontinence Scoring System</th>
<th>TYPE OF INCONTINENCE</th>
<th>FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Solid</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td></td>
<td>Liquid</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td></td>
<td>Gas</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td></td>
<td>Pads</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td></td>
<td>Lifestyle alteration</td>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>

Score system: 0 = best, 20 = worst

Guarneri, Di Colore Rectum 1993

DIAGNOSIS OF FECAL INCONTINENCE

- Defining anorectal anatomy and physiology:
  - Endoanal ultrasound
  - Anal manometry
  - Pudendal nerve terminal motor latency
  - EMG
  - Endoluminal MRI
  - Saline continence test
DIAGNOSIS OF FECAL INCONTINENCE

- Endoanal ultrasound
  - Procedure of choice
  - Painless
  - 100% sensitivity and specificity in identifying internal and external sphincter defects

Sultan AH. Br J Surg 1994

- Presence of defect alone does not always correlate with incontinence
- EAUS performed on 335 incontinent patients, 115 continent patients and 18 asymptomatic female volunteers
- 65%, 43% 22% has sphincter defects on EAUS

Karoui S. Am J Roentgenol 1999
DIAGNOSIS OF FECAL INCONTINENCE

Anal Manometry
- Simple, non invasive
- Measures anal resting pressure, anal squeeze pressure, RAIR, compliance of the rectum and sensation
- Significant variations in pressures even in “normals”

Pudendal Nerve Terminal Motor Latency
- Evaluates nerve damage to pelvic floor
- Uses a finger electrode and is relatively painless
- Measures time of stimulus of pudendal nerve to pelvic floor muscles
- Prolonged latency is interpreted as neuropathy
Treatments for Fecal Incontinence

- Non Operative
  - Biofeedback
  - “Standard Care”
  - Bowel manipulation
- Operative
  - Multiple strategies
  - Dependent on anatomical and physiological parameters
  - Reserved for more severe cases

Biofeedback

- Can be used as 1st line treatment
- Simple, cheap and without adverse physical effects
- 64% - 89% of patients have shown improvement in sensation, strength, and contraction
- Treatment success has been found to be durable

Madoff, RD. Lancet 2004

“Standard Care”

- Advice and education alone, has been shown to be as effective as biofeedback therapy
- Important component of any physiology unit
- Support and counseling is crucial to patient success

Bowel Manipulation

- Initial therapy for most patients, can be initiated while performing diagnostic workup
- Usually helpful for mild to moderate FI

Bowel Manipulation

Increase fiber intake!
- Absorbs intraluminal water and improves stool consistency
- Recommended dose is 25-30gms/day
- High fiber, psyllium products
- Gradually increase dietary fiber

Bowel Manipulation

Antidiarrheal agents
- May reduce FI symptoms
- Absorbents (kayopectate) absorb excess fluid
- Opium derivatives (loperamide, tincture of opium)
Bowel Manipulation

Enemas/Laxatives/Suppositories

- Promote more complete bowel emptying
- Can help decrease post defecatory leakage

Bowel Management Programs

- Mainly for overflow incontinence

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Bowel Manipulation

Anal Plug (ProTect) device

- For mild fecal incontinence and leakage
- Can cause local irritation

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Treatments for Fecal Incontinence

Operative

- Sphincteroplasty
- Injectable bulking agents
- Temp controlled radiofrequency energy
- Artificial Bowel Sphincter
- Sacral Nerve Stimulation
- Appendicostomy
- Stoma
Sphincter Repair

- Anatomic disruption of sphincter is most common surgically correctable cause of FI
- For highly symptomatic patients with a defined defect of the EAS
  Very painful, prolonged recovery
  Results decline with time- 24-48 months

Overlapping Anterior Sphincteroplasty

- First described by Parks in 1971, further modified by Slade et al, 1977
- Principles include:
  - preservation of scar to anchor sutures
  - Overlapping of the fibromuscular divided ends helps give bulking effect
  - Reserved for the young with significant perineal body deformity
OVERLAPPING SPHINCTER REPAIR: SHORT & LONG TERM

- 3 month follow-up:
  - 55.5% excellent
  - 18.5% good
  - 16.9% fair
  - 9.2% poor

- 80 month follow-up:
  - 26.8% excellent
  - 21.4% good
  - 12.5% fair
  - 39.3% poor

CCF/FI score:
- Improved from 17.8 preop to 3.6 three month postop
- Results deteriorated to score of 6.3 after 80 months
\( p<0.001 \)

Barisic, Int J Colorectal Dis, 2006

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Injectable Bulking Agents

- Used initially in field of urology for urinary incontinence
- Can be performed at an ambulatory center on an outpatient basis
- Internal anal sphincter should be mainly intact
- Injectable silicone biomaterial has been the most studied

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Conclusions: Injectables

- Simple
- Office Based
- Ambulatory
- Moderate to severe incontinence
- Good short term outcome
- Minimal complications
- Long term safety and efficacy are lacking.
SECCA

- Temperature controlled radiofrequency energy – delivered to anal canal
- Similar to STRETTA procedure used for GERD
- Electrodes deliver energy deep to muscularis mucosa, which causes tissue fibrosis and scarring
Radiofrequency

One year follow-up
- CCF Incontinence score improved (13.5 to 5; p<0.001)
- All FIQOL parameters improved (p<0.05)
  - Life style
  - Coping
  - Depression
  - Embarrassment
- Use of pads eliminated in 5 of 7 patients

Takahashi et al, DCR, 2002

Artificial Bowel Sphincter

- First used in 1973 for urinary incontinence by Scott
- 1987 converted for treatment of severe fecal incontinence
- Major indication is end-stage fecal incontinence or after surgical excision of anal sphincters
- Patient selection is crucial
Implantation of ABS

- One or two perianal incisions are used to create tunnel around anus
- Another incision is made over the pubis, extraperitoneally, the pressure-regulating balloon is inserted in the space of Retzius
- The control pump is inserted subcutaneously (scrotum/labia)

Artificial Bowel Sphincter (ABS)

ABS: Safety and efficacy

- Functioning sphincter: improved QOL and anal continence
- FI (scale, 1-120) scores improved
  - from 105 to 51 (63 patients at 6 months)
  - from 105 to 48 (55 patients at 12 months)
- Successful outcome in 85% with functioning device

Conclusion:
- High morbidity and need for revisional surgery
- Improve FI and QOL in patients with severe FI

Wong et al, DCR, 2002
Sacral Nerve Stimulation

- Also originally used for urology and urinary continence
- Results showed improvement in both urinary and fecal continence
- Matzel et al, first reported improvement in fecal incontinence in 1995
- Technique uses low-level electrical stimulation of the sacral nerves
- Benefit of being a minimally invasive procedure

Sacral Nerve Stimulation (SNS)

- Motor innervation of levator ani and puborectalis is through direct branches of sacral plexus (S2-S4 roots)
- Inferior rectal nerve innervates external sphincter, a branch of the pudendal nerve
- Continence mechanism receives dual innervation and is enhanced with the electrical stimulation

Sacral Nerve Stimulation (SNS)

Indications:
- Failed medical therapy
- Previous sphincter repair or sphincter defect is not a contraindication
Surgical Technique

- All stages done under local anesthesia
- Procedure involves 3 stages:
  - Percutaneous nerve evaluation with a foramen needle. Tined lead electrode placed via Seldinger technique with external pulse generator
  - Screening phase, 14 days
  - Implantation of internal pulse generator

Sacral Nerve Stimulation (SNS)
SACRAL NERVE STIMULATION
LARGEST SINGLE CENTER SERIES

- Patients - 75
- Mean age - 52
- Median duration of FI – 5 years (1-66)
- Temporary electrodes
  - not placed in 2 patients
  - Improved continence in 62%
- After placement of permanent electrodes – improvement sustained
- At 1 year, success rate of 76% for improved continence

Uluğad, DCR 2004

SACRAL NERVE STIMULATION
REVIEW

- 14 studies reviewed (188 patients) in whom permanent stimulators placed
- Numerous indications:
  - Previous anorectal surgery
  - Cauda equina syndrome
  - Scleroderma
  - Idiopathic
  - Obstetric trauma
  - Trauma
  - Spinal cord lesion
  - Meningomyelocele
  - Multiple sclerosis

Matzel, DCR 2004
SACRAL NERVE STIMULATION REVIEW

- Most patients experienced improvement by 75%
- Effects were consistent up to 99 months
- Improvements in:
  - Incontinence
  - Ability to postpone defecation
  - Ability to empty rectum
- Complication rate 0-50%
  - Pain at site of generator, electrode dislodgement, infection, loss of effect, deterioration of function

Matzel, DCR 2004

Other Treatment Options

Appendicostomy/ MACE
- Described in 1990
- Continent stoma formed by implanting tip of appendix into cecum
- Creates one way valve
- Patient can introduce antegrade enemas via appendicostomy

Other Treatment Options

MACE
- Safe and useful
- Commonly performed in pediatric population, neurologic disorders, spinal cord injury
- Can be performed laparoscopically
- Most common complication is stenosis
Other Treatment Options

Intestinal Stoma
- Last resort for end stage FI
- Allows patient to resume normal activities
- Survey performed on patients with permanent stomas found
  - 83% had significant improvement restriction from incontinence
  - 84% would choose to do it again

Norton, C. Dis Colon Rectum 2005
Conclusions

- Stigmata surrounding fecal incontinence causes underreporting of disorder
- Causes of FI are multifactorial, although obstetric trauma is a primary cause
- Many treatments available
- Current management strategies are changing with new technology on the horizon

Questions

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