ETSU Pediatric Surgery Highlights
August 2009 – August 2010
The Fifth Year in Review

Lesli Taylor, MD
Professor and Chief of Pediatric Surgery
Department of Surgery
East Tennessee State University
10/27/10

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I have nothing to disclose.

Thirty Years of ETSU Pediatric Surgery
Even after five years, still a common question:
When will you get a second pediatric surgeon?
No plans for a second general pediatric surgeon at this time.
There are many other “pediatric surgeons” in Johnson City!

ETSU Pediatric Surgical Specialists

Jay Riley, DPM
Podiatry

Ryan Chute, DPM
Podiatry

Daniel Rush, M.D.
Vascular

ETSU Specialty Surgeons
Will see patients age 13 years and up

Daniel Haynes, M.D.
Plastics

Mary Hooks, M.D.
Breast/Oncology

Pediatric ophthalmology and oculo-plastics

Jeffrey O. Carlsen, M.D.
Plastic surgeons for kids

Dr. Charles Foley
Highland Plastic Surgery, PLLC

Dr. James Brantner

Third degree burn lower abdomen from soup

Second degree burn left arm from soup

Third degree burn lower abdomen awaiting skin graft by Dr. Foley
Trinity Hand Specialists
Board Certified Hand Surgeon
Will see infants and children
“fingertips to elbow”

Paul Gorman, M.D.

ETSU Adolescent Ob/Gyn

Martin Olsen, M.D.

Thanks to the 2006-2007
Third Year ETSU Pediatric Residents

Local Honorary Pediatric Surgeons

Rogersville

Morristown

Pennsylvania
East Tennessee State University
James H. Quillen College of Medicine
Department of Pediatrics
2006-2007 Residency Program

ETSU Third year general surgery residents

2006-2007

Brian Williams, M.D.
PCCF-3

Jason Noble, M.D.
PCCF-3

James Davis, M.D.
PCCF-3

Stinchcomb, M.D.
PCCF-3

April Lawers, M.D.
PCCF-3

Melfinda Strickland, M.D.
PCCF-3

Thanks to the 2007-2008
Third Year ETSU Pediatric Residents

JOHNSON CITY
PEDIATRICS

Now accepting new patients
Most insurances accepted
Call 794-5540
for an appointment

Dr. April Lowery
Dr. Lawery will begin seeing patients
August 2010

April Hall
Tara Mitchell
Jami Sohop

Sasha Kaluda
Thanks to the 2008-2009
Third Year ETSU Pediatric Residents
Heather Champney, M.D.
Johnson City Medical Center
Children’s Emergency Department

Eve Wadzinski, M.D.
Lydia Boateng, M.D.
Dea Waddell, M.D.

Pediatric Surgery Resident Rotations
2009-2010

July
Surgery
Thomas Chow

Pediatrics
Brittany Terry, 2

August
Thomas Chow

Sept
Thomas Chow

Oct
John Kendrick

Nov
John Kendrick

Dec
John Kendrick

Jan
Bais Osborne

Feb
Bais Osborne

March
Bais Osborne

April
Kim Bailey

May
Kim Bailey

June
Kim Bailey

Welcome to the 2010 – 2011
ETSU Pediatric Residents

Jennifer Gibson Pt-2

PL-2
Jaspal Hothi

PL-2
Eunkyung Song Pt-2

PL-2
George Abraham Pt-2

PL-2
Sandeep Chilakala, 3

PL-2
Kristin Farr, 2

PL-2
Medatrix Mbamalu, 2

PL-2
Hossam Hassan, 2

Thanks to the 2009-2010
ETSU Pediatric Residents

July
Thomas Chow

August
Thomas Chow

Sept
Thomas Chow

Oct
John Kendrick

Nov
John Kendrick

Dec
John Kendrick

Jan
Bais Osborne

Feb
Bais Osborne

March
Bais Osborne

April
Kim Bailey

May
Kim Bailey

June
Kim Bailey

Welcome to the 2010 – 2011
ETSU Pediatric Residents

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Eunkyung Song Pt-2

PL-2
George Abraham Pt-2

PL-2
Sandeep Chilakala, 3

PL-2
Kristin Farr, 2

PL-2
Medatrix Mbamalu, 2

PL-2
Hossam Hassan, 2
Pediatric Surgery Resident Rotation
2010-2011

<table>
<thead>
<tr>
<th>July</th>
<th>Surgery</th>
<th>Pediatric</th>
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<tbody>
<tr>
<td>Stacy Harms</td>
<td>Stacy Harms</td>
<td>Melissa Snyder</td>
</tr>
<tr>
<td>August</td>
<td>Doug McDonald</td>
<td>Jennifer Gibson</td>
</tr>
<tr>
<td>September</td>
<td>Pat McPherson</td>
<td>-</td>
</tr>
<tr>
<td>October</td>
<td>Pat McPherson</td>
<td>- Halloween</td>
</tr>
<tr>
<td>November</td>
<td>Dannie Williams</td>
<td>Thanksgiving</td>
</tr>
<tr>
<td>December</td>
<td>Dannie Williams</td>
<td>Christmas</td>
</tr>
<tr>
<td>January</td>
<td>Hannah Warren</td>
<td>New Year</td>
</tr>
<tr>
<td>February</td>
<td>Hannah Warren</td>
<td>-</td>
</tr>
<tr>
<td>March</td>
<td>Ryan Hall</td>
<td>Jaspal Hothi</td>
</tr>
<tr>
<td>April</td>
<td>Ryan Hall</td>
<td>George Abraham</td>
</tr>
<tr>
<td>May</td>
<td>-</td>
<td>Eunkyung Song</td>
</tr>
<tr>
<td>June</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

My service is seasonal

High Census In Spring and Summer
- Daylight savings time
- More elective surgeries
- More trauma
- General surgeons in the region who would otherwise see kids take vacation

Low Census in Fall and Winter
- Kids are in school
- No daylight savings time
- More elective surgeries
- More trauma
- Four major holidays

Which Dr. Taylor?

Dr. Lesli Taylor
ETSU Pediatric Surgery

Dr. Tedford Taylor
First Choice Pediatrics

Dr. Tamarro Taylor
Cancer Outreach

Dr. Lakeisha Taylor
Johnson City Urological

Dr. Grant Taylor
Adult Internal Medicine

Urgent and emergent referrals to ETSU Pediatric Surgery Service through MD Link

2005-2006 - 90
2006-2007 - 203
2007-2008 - 240
2008-2009 - 280
2009-2010 - 231
Referrals to the ETSU Pediatric Surgery Clinic

Number of new patients referred per year

- 2005-2006 - 641
- 2006-2007 - 504
- 2007-2008 - 681
- 2008-2009 - 783
- 2009-2010 -

Referrals to the ETSU Pediatric Surgery Clinic

Number of referring practitioners

- 2005-2006 - 178
- 2006-2007 - 191
- 2007-2008 - 197
- 2008-2009 - 177
- 2009-2010 -

Total surgical procedures by year

<table>
<thead>
<tr>
<th>Procedure</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tr>
<td>1  Inguinal hernia</td>
<td>75</td>
<td>79</td>
<td>90</td>
<td>82</td>
<td></td>
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<tr>
<td>2  Pyloric stenosis</td>
<td>63</td>
<td>40</td>
<td>42</td>
<td>32</td>
<td></td>
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<tr>
<td>3  Appendectomy</td>
<td>48</td>
<td>70</td>
<td>57</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>4  Circumcision</td>
<td>44</td>
<td>58</td>
<td>45</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>5  Abscess</td>
<td>27</td>
<td>58</td>
<td>148</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>6  Broviac/Port</td>
<td>26</td>
<td>49</td>
<td>38</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>7  Umbilical hernia</td>
<td>24</td>
<td>40</td>
<td>49</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

(3664)

2008-2009 Total procedures = 636

- 1. Abscess 93
- 2. Ing. hernia / hydrocele 82
- 3. Circumcision 63
- 4. Appendectomy 59
- 5. Umbilical hernia 40
- 6. Pyloric Stenosis 32
- 7. Central line 23
### 2009-2010

**Total procedures = 879**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>2009-2010</th>
<th>2008-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendectomy</td>
<td>150</td>
<td>59</td>
</tr>
<tr>
<td>Abscess</td>
<td>130</td>
<td>93</td>
</tr>
<tr>
<td>Ing. hernia/hydrocele</td>
<td>87</td>
<td>82</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Broviac/Port</td>
<td>60</td>
<td>23</td>
</tr>
<tr>
<td>Circumcision</td>
<td>60</td>
<td>63</td>
</tr>
<tr>
<td>Umbilical hernia</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>Pyloromyotomy</td>
<td>39</td>
<td>32</td>
</tr>
</tbody>
</table>

**Most Common Case**

Abscess Drainage

- 2005-2006: 27
- 2006-2007: 58
- 2007-2008: 148
- 2008-2009: 93
- 2009-2010: 130

Majority were Methcillin Resistant Staph Aureus

MRSA abscess

- 2005-2006: [Image]
MRSA abscess 2006-2007
causing left femur osteomyelitis 2007-2008

MRSA abscess 2007 - 2008
treated without drainage 2007 - 2008
MRSA abscess left pubis
2007 - 2008

MRSA pubic abscess
2008-2009

MRSA pubic abscess

MRSA abscess sequential abscess
2007-2008
MRSA abscess sequential abscess 2008 - 2009

MRSA abdominal wall abscess 2008 - 2009

MRSA abdominal wall abscess 2009 - 2010

MRSA buttock/thigh abscess 2008 - 2009
MRSA right labial abscess 2008 - 2009

MRSA left labial abscess 2009 - 2010

MRSA perineal abscess 2008 - 2009

MRSA buttock abscess 2008 - 2009
MRSA abscess of back

MRSA thigh abscess

2010

MRSA thigh abscess in a teenager

2010
MRSA abscess of left forearm in a teenager

MRSA axillary abscess
2009 - 2010
Sensative Staph Perineal abscess

MRSA abscess 2008 – 2009
old operative approach

MRSA burrows between the fat and the fascia
old operative approach

MRSA abscess in an 18 month old girl
old operative approach
MRSA abscess in an 18 month old girl
old operative approach

MRSA abscess in an 18 month old girl
old operative approach - final scar

MRSA lateral thigh abscess
drained with multiple small incisions

Patient B
MRSA lateral thigh abscess drained with multiple small incisions

MRSA burrows between the fat and the fascia new approach – multiple small incisions

MRSA chest wall abscess 2010

MRSA chest wall abscess
MRSA chest wall abscess

new approach – multiple small incisions

post-op day 10
Total pediatric surgical procedures
658 / 647 / 844 / 636 / 879
(3664)                      (456)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
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<tr>
<td>6 Venous catheter</td>
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<td>38</td>
<td>23</td>
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<tr>
<td>7 Umbilical hernia</td>
<td>24</td>
<td>40</td>
<td>49</td>
<td>40</td>
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</table>

July, 2010 Abscesses drained

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Gender</th>
<th>Location</th>
<th>Micro</th>
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</thead>
<tbody>
<tr>
<td>7/1</td>
<td>5m</td>
<td>female</td>
<td>thigh</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/3</td>
<td>10m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/3</td>
<td>4m</td>
<td>male</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/8</td>
<td>11m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/8</td>
<td>9y</td>
<td>male</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/12</td>
<td>8y</td>
<td>male</td>
<td>shin</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/14</td>
<td>2y</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/16</td>
<td>14y</td>
<td>male</td>
<td>substernal/finger/lymph</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/19</td>
<td>18m</td>
<td>female</td>
<td>thigh</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/21</td>
<td>12m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/22</td>
<td>18m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
</tbody>
</table>

July, 2010 Abscesses drained

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Gender</th>
<th>Location</th>
<th>Micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/23</td>
<td>25m</td>
<td>male</td>
<td>thigh</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/24</td>
<td>16m</td>
<td>male</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/24</td>
<td>13.5m</td>
<td>male</td>
<td>thigh</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/25</td>
<td>8y</td>
<td>female</td>
<td>shin and lymph nodes</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/25</td>
<td>9y</td>
<td>female</td>
<td>8, various sites</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/26</td>
<td>8y</td>
<td>male</td>
<td>calf</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/26</td>
<td>12y</td>
<td>female</td>
<td>mid face</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/27</td>
<td>18m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/28</td>
<td>3y</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
<tr>
<td>7/30</td>
<td>18m</td>
<td>female</td>
<td>buttock</td>
<td>MRSA</td>
</tr>
</tbody>
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Total July cases 72
July abscesses 21 21/72 = 29%
13/21 = 62% female
11/21 = 52% buttock
Pediatric Abscesses
The ETSU Pediatric Surgery Experience
Dr. Kim Bailey

• 361 abscess drainages from September 2005 to April 2010
• 211/361 were female – 58%
• Average age is 2 yrs and 11 months old
• 76% are MRSA
• 17% are school age

Pediatric Abscesses:
The ETSU Pediatric Surgery Experience

• 10% attend daycare
• 15% are from Virginia and the rest from Tennessee
• 67% wear diapers

Pediatric Abscess by Location

MRSA lives in warm, dark places like the anus

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Buttocks</td>
<td>51%</td>
</tr>
<tr>
<td>Thigh</td>
<td>14%</td>
</tr>
<tr>
<td>Labia</td>
<td>6%</td>
</tr>
<tr>
<td>Abdominal Wall</td>
<td>5.6%</td>
</tr>
<tr>
<td>Axilla</td>
<td>3.8%</td>
</tr>
<tr>
<td>Groin</td>
<td>2.5%</td>
</tr>
<tr>
<td>Scrotum</td>
<td>1.9%</td>
</tr>
</tbody>
</table>
Number of Abscesses by month of the year

August

EARLY MRSA LOOKS LIKE A SPIDER BITE

Don't blame me for MRSA!

How to protect your pediatric surgeon

PREVENTION: Treat diaper rash aggressively

If you see a child with an abscess, make them NPO immediately.

Anesthesia requires 8 hours NPO for solids.
If the child is febrile, I will declare it an urgent case to override NPO status.
How to protect your pediatric surgeon

Abscesses or cellulitis involving joints, such as hand, elbow, knee or ankle should be referred directly to ORTHOPEDICS.

Right knee abscess not involving joint

2008 - 2009 Second Most Common Case
Inguinal Hernia / Hydrocele

- 2005-2006 - 75
- 2006-2007 - 79
- 2007-2008 - 90
- 2008-2009 - 82
- 2009-2010 - 87

Inguinal Hernia

- I request pediatricians to refer as soon as they suspect an inguinal hernia, and ask for expedited clinic appointment
- I schedule hernia repair within one week of my confirmation of the hernia to prevent incarceration
- Age and weight are no barrier to hernia repair or anesthesia
- Male 1800 grams, Female 1600 grams

Diagnostic Laparoscopy showing normal right and left internal ring
Diagnostic laparoscopy for inguinal Hernia - male

Left
Hernia Present
Right
No Hernia Present

Diagnostic laparoscopy for inguinal hernia – female
no right inguinal hernia present

Male right inguinal hernia sac

Vas and testicular vessels

Female left inguinal hernia sac

Hernia sac

Right tube and ovary
Male right hydrocele

How to protect your pediatric surgeon
Refer inguinal hernias early so they do not incarcerate.
Young male toddler was scheduled for ETSU Pediatric Surgery Clinic on Tuesday, May 30, 2006 for hernia evaluation.

On Monday, May 29, 2006, Memorial Day, his hernia incarcerated. He was flown by Wings to JCMC for management. Hernia was reduced with conscious sedation and repaired the next day and he was discharged.

How to protect your pediatric surgeon
Refer inguinal hernias early so they do not incarcerate.
Two month old male had hernia noted on 10/15/06. His appointment in my clinic was for Tuesday, 10/31/06.
On Monday, 10/30/06, the hernia incarcerated and he presented to Bristol. He was transferred to JCMC, hernia was reduced with conscious sedation at 2 am, Halloween. It was repaired a day later and he was discharged to home.

How to protect your pediatric surgeon
Refer inguinal hernias early so they do not incarcerate.
8/6/09, 13 month old boy was noted to have right inguinal bulge by mother.
In mid August, child was seen by pediatrician.
On 9/8/09, patient was to be seen in Pediatric Surgery Clinic.
On 9/6/09, hernia incarcerated and patient presented to Lakeway Regional Medical Center.
On 9/7/09, Labor Day, hernia repaired.
Pediatric Urology and Gynecology

Undescended Testicle
Testicular Torsion
Orchitis
Wilms’ Tumor

Ovarian Torsion
Ovarian Cyst
Ovarian Tumors

Left orchidopexy

Laparoscopic view of undescended intra-abdominal left testicle

Left Ovarian Torsion
2007-2008

Torsed left ovary and tube
Normal right ovary and tube
Left Ovarian Torsion
Ovary incarcerated and torsed in left inguinal hernia
2008-2009

2009-2010 Third Most Common Case
Cholecystectomy

• 2009 – 2010  71
  – 70 laparoscopic
  – 11 for gallstones (15%)

Sisters with Biliary Dyskinesia

WC
• 16.5 year old female
• Abdominal pain for more than two years
• Occurs daily
• No relief with Zantac, Nexium, or Reglan
• Negative EGD

MC
• 15 year old female
• Abdominal pain for more than 8 months
• Occurs daily
• No relief with Zantac, Nexium, or Reglan
Diagnostic Data

WC
- Trial of medical therapy with no relief of symptoms
- Gallbladder ultrasound: negative
- EGD – mild gastritis
- HIDA Scan: Ejection fraction of 25%
- The patient had pain with CCK administration

MC
- Trial of medical therapy with no relief of symptoms
- Gallbladder ultrasound: negative
- HIDA Scan: Ejection fraction of 11%
- Normal EF – greater than 35%

Operative findings at time of laparoscopic cholecystectomy

WC
- Grossly normal gallbladder and appendix

MC
- Grossly normal gallbladder and appendix

Pathology

WC
- Mild chronic cholecystitis
- Normal appendix

MC
- Mild chronic cholecystitis
- Normal appendix

At post op visit, Megan reports she is able to eat breakfast without nausea and vomiting for the first time in 6 months

Biliary Disease in Children
The ETSU Pediatric Surgery Experience
Data Compiled by Dr. Kim Bailey

- 142 pediatric cholecystectomies from September, 2005 to April, 2010
- 107 of these patients had a pre-operative HIDA scan
- 104/107 had reported Ejection Fraction
- 35/142 patients had cholecystectomy for gallstones
Biliary Disease in Children
The ETSU Pediatric Surgery Experience

- Ejection Fractions ranged from 0% to 94.6% with an average of 33.9%
- Ages ranged from 6 yrs to 18 yrs old with an average of 12.4 yrs old
- 72% of the patients were female

Biliary Dyskinesia Pathology

<table>
<thead>
<tr>
<th>Final Pathology</th>
<th># of Pts (% of total)</th>
<th>Range of EF</th>
<th>Average EF</th>
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</thead>
<tbody>
<tr>
<td>Chronic Cholecystitis</td>
<td>48 (46%)</td>
<td>0 - 93%</td>
<td>34%</td>
</tr>
<tr>
<td>Mild Chronic Cholecystis</td>
<td>32 (30.8%)</td>
<td>3.6 - 86%</td>
<td>28%</td>
</tr>
<tr>
<td>Normal</td>
<td>19 (18%)</td>
<td>6.3 - 87%</td>
<td>38%</td>
</tr>
<tr>
<td>Other</td>
<td>5 (4.8%)</td>
<td>18 - 94%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Omental adhesions to gallbladder
Patient A 15 year old female
Pathology: Chronic cholecystitis

Omental adhesions to gallbladder
Patient B, 17 year old female
Pathology: Chronic cholecystitis
Omental adhesions to gallbladder
Patient C, 15 year old female
Pathology: gallstone, mild chronic cholecystitis

Omental adhesions to gallbladder
Patient D, 9 year old female
Pathology: Chronic Cholecystitis

Omental adhesions to gallbladder
Patient E, 14 year old female
Pathology: Mild chronic cholecystitis

Gallstones
21 year old male with severe developmental delay, 15 kg
2009-2010 Fourth Most Common Case Appendectomy for appendicitis

- 2005-2006 - 48
- 2006-2007 - 70
- 2007-2008 - 53
- 2008-2009 - 59
- 2009-2010 - 60
  - Laparoscopic = 51
  - Open = 9
  - Ruptured = 15 (25%)
  - Youngest: 17 months old

What do I do to prevent appendicitis? Incidental appendectomy

Now doing laparoscopic appendectomy *routinely* with laparoscopic cholecystectomy
Always done with Ladd’s procedure for malrotation and midgut volvulus
Almost always done with intussusception
Frequently done with right Wilms’ tumor, right ovarian cyst, other abdominal surgeries

“You’re right. If we remove the appendix without rearranging the other organs, his Feng Shui will be shot.”

“You had it removed? Didn’t you know that the human soul resides in the appendix?”
“Remember when I put you on that waiting list for a new appendix? Well, funny story about that...”

**How to protect your pediatric surgeon Appendicitis**

- Pediatricians should instruct parents in the early symptoms and signs of appendicitis
- I do not mind seeing constipation and gastroenteritis if I can prevent ruptured appendicitis by encouraging early referrals. It provides a great opportunity for counseling for future appendicitis!
- Obtaining a CT before referral to me increases radiation exposure and may delay timely appendectomy.

---

**CT scan can diagnose appendicitis, but it is not necessary!**

- Time delay - vomiting of contrast and need for more contrast
- Error in diagnosis
- Done too early and child sent home, only to present late
- Full stomach of contrast at time of anesthesia increases risk of aspiration, especially if ileus from peritonitis
- Radiation cannot be taken back
You can decrease CT scan use by treating constipation aggressively. Sigmoid colon constipation presenting as right lower quadrant pain prompting CT scan at outside hospital to rule out appendicitis.

We use more CT scans now because kids aren’t as thin as they used to be.

Right hydronephrosis mistaken as appendicitis.
Omental torsion mimicking appendicitis managed non-operatively

Appendicitis and Gallbladder

Normal Appendix

Early Appendicitis
Unruptured Appendicitis

Nasty but unruptured appendicitis
Nasty but unruptured appendicitis

Gangrenous but unruptured appendicitis

Gangrenous but unruptured appendicitis

Gangrenous but unruptured appendicitis
Gangrenous but unruptured appendicitis

Ruptured appendicitis

Ruptured appendicitis with extruded fecalith

Unruptured appendix with fecalith Patient F
Unruptured appendix with fecalith
Patient F

Unruptured appendix with fecalith
Patient F

Unruptured appendix with fecalith
Patient F

Ruptured appendix and fecalith
Patient G, 15 year old male
Appendix with multiple fecaliths

Left sided appendicitis in a 7 year old boy

Left sided appendicitis in a 7 year old boy
Carcinoid of the appendix tip in an 8 year old girl

2009-2010 Fourth Most Common Case
Placement, Removal, Repair
Broviacs and Ports
2005-2006 - 26
2006-2007 - 49
2007-2008 - 38
2008-2009 - 32
2009-2010 - 60

2009-2010 Fourth Most Common Case
Circumcision
2005-2006 - 44
2006-2007 - 58
2007-2008 - 45
2008-2009 - 63
2009-2010 - 60 includes 13 revisions

No ETSU pediatric urologist
I do not do clinic circumcision. If infant not circumcised in first few weeks of life, I prefer to wait until they are 6 months old to do under general anesthesia after co-morbidities are recognized.

Severe phimosis causing urinary tract infections in 14 month old
2009-2010 Fifth Most Common Case
Umbilical Hernia

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2006</td>
<td>24</td>
</tr>
<tr>
<td>2006-2007</td>
<td>40</td>
</tr>
<tr>
<td>2007-2008</td>
<td>49</td>
</tr>
<tr>
<td>2008-2009</td>
<td>40</td>
</tr>
<tr>
<td>2009-2010</td>
<td>44</td>
</tr>
</tbody>
</table>

**Umbilical Hernia**

- Simple
- Giant
- Infant with symptoms with disproportion between fascial defect and skin proboscis
  - If *simple*, wait until age three to five years for spontaneous closure. Little risk of incarceration.
  - If *giant*, repair at any age for social reasons, for example, other children pulling on it.
  - Infant with symptoms should be repaired immediately to avoid incarceration and decrease parent and infant distress.

Infant with symptomatic umbilical hernia with large skin proboscis and small fascial defect
Epigastric hernia
Surgery is recommended at presentation
18 repairs performed in 2009-2010

Diastasis recti – normal variant
No surgery is needed

2009-2010 Sixth Most Common Case
Pyloric stenosis

- 2005-2006 - 63
- 2006-2007 - 40
- 2007-2008 - 42
- 2008-2009 - 32
- 2009-2010 - 39

Pyloric Stenosis Work-up
• Always obtain ultrasound as pylorus is less palpable now than in the past for the following reasons:
  – Infants are referred earlier, sometimes with normal electrolytes
  – Pylorus is under the liver
  – Pylorus is smaller and baby has lost less weight than in the past
  – Ultrasound is accurate, non-invasive, requires no radiation, and is inexpensive and ubiquitous
Pyloric Stenosis

Do not wait for next clinic appointment to refer.

Pediatrician should refer to me directly by beeper or call MD-Link at 952-3720.

I admit the baby as soon as I know about it to prevent further depletion of volume and electrolytes.
I admit if ultrasound measurements are borderline. I repeat the ultrasound the next day and most become diagnostic.

---

Real patient abnormal electrolytes:
Hyperkalemic hypochloremic metabolic alkalosis

- Sodium 128 (135-145)
- Potassium 3 (3.5-5)
- Chloride 69 (100-108)
- Bicarbonate 41 (24-30)
- BUN 25 (4-19)
- Creatinine 0.6 (0.2-1)

---

Pyloric Stenosis

I am currently doing open pyloromyotomy rather than laparoscopic pyloromyotomy.

- Large liver, small abdomen in infants
- I am training general surgery residents, not pediatric surgery fellows
- Still learning what technical and anesthetic support I have for laparoscopy in infants

---

Age Range Accepted to ETSU Pediatric Surgery Service

**Pediatric general surgery**
- Prenatal consultation
- Premature to 21 years (CF, CP, Sickle cell)
- Older patients with special needs

**Trauma**
- Pediatric trauma patients younger than 16 years come to Pediatric Surgery service.
- Patients 16-18 years go to the adult trauma service and are admitted to the pediatric floor or PICU.
Summary of Urgent Cases

Approximately 50% of cases are completed within 24 hours of presentation:
- Abscess
- Appendicitis
- Pyloric stenosis
- Esophageal coin
- Trauma laceration
- Trauma laparotomy for bowel perforation
- Incarcerated hernia
- Gastroschisis
- Testicular torsion

Child Abuse
2005-2006
*Shaken Baby*

4 shaken babies in my practice for gastrostomy care

Most common cause of shaking is infant crying

Child Abuse
2006-2007

- 8 month old boy in care of stepfather of 4 months
- “Right thigh caught in crib slats, now tender”
Eight month old boy, “right thigh caught in crib slats”

Child Abuse 2006-2007

- 8 month old boy with “right thigh caught in crib slats”
  - Multiple old bruises on forehead
  - Old circular burns on sole of right foot

- Mother admits she was thrown against a wall by her husband of four months

Child Abuse 2007-2008
Inflicted head trauma
**Child Abuse 2007-2008**

Instruct parents to keep coins in their pockets and supervise their children to prevent foreign body ingestion

- Typical time of coin ingestion – 9 pm
- Typical time of arrival to JCMC – 1 am
- Foley catheter extraction technique for high esophageal coin under general anesthesia soon after arrival
- If the coin or object is in the stomach, call Dr. Abdel.
- If the coin is in the small bowel or colon, I will follow the patient to assure safe passage.

**Child Abuse 2008-2009 2009-2010**

- No new child abuse cases with surgical issues.

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**Foley Catheter Extraction of Esophageal Coin with Fluoroscopy**
2005-2006 Foreign Body
Five month-old fed metal bolt by sibling

2006-2007 Ingested foreign body

Will it pass?

Sharp ends become coated with stool
Intestinal foreign body in 17 month old 2008-2009

Possible Intussusception 2007-2008

Will it pass?

Band aid fecalith causing small bowel obstruction and mimicking intussusception on CT scan

Gastric Bezoar and small bowel obstruction Cloth, Hair, Toys
Gastric Trichobezoar in an 8 year old girl

Gastric acid does not dissolve hair

How to protect your pediatric surgeon from after-hours visits for gastrostomy

GASTROSTOMY VIDEO

Success in the second, third and fourth and fifth years.

Significant decrease in after-hours phone calls and emergency room visits for dislodged feeding gastrostomy appliances and granulation tissue.

Goal for sixth year:

Zero emergency room visits for gastrostomy problems.
**Gastrostomy Teaching Video now available as DVD**
Gastrostomy Teaching Video is mandatory viewing while residents are on the service.

20 new gastrostomies created in 2009-2010

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**New Pediatric Emergency Department**
Opened August 6, 2008

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**Dr. Sandra Castro**
Children’s Emergency Department

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**Jason and Michelle Witten**
S.C.O.R.E Foundation
$200,000 donation for Pediatric Emergency Services
How to Protect your Pediatric Surgeon
INJURY PREVENTION!

- Seat belts
- Prevention of driveway backup injuries
- ATV injuries
- Lawn Mowers
- Bicycles
- Dog bites

Child safety seat law turns 30
Jan 1, 2008

Tennessee was the first state to enact a law making it mandatory for children to be restrained in a safety seat.

Seat belts save lives
Thursday, March 16, 2006

A 4-year-old passenger in the back seat of the Cavalier, Angel Groome, of Morristown, was flown to JFKC via LifeNet Air Rescue. She remained in serious condition Wednesday evening.

Five injured in head-on crash south of Rogersville

Bilateral tibia-fibula fractures

Seat belts save lives

Three adult deaths. Child improperly restrained, but minimal injuries.
Seat belts save lives

Lap Belt Only Injuries
Mother’s Day, 2006

Mesenteric injury of bowel and severe forehead laceration

Facial injuries despite seat belt

- Upper front teeth knocked out
- Through and through laceration of lower lip

Scalp degloving injury despite seat belt
No seat belt
facial lacerations

Severe head injury despite restraint
Child restrained in back passenger seat
Car T-boned on his side by drunk driver in a truck
Car thrown 15 feet into the air
Severe shear injury to brain and facial lacerations
Unable to eat or talk, sent for inpatient rehab

Aortic injury in girl with only lap belt restraint
• 10 year old female, back seat passenger in head-on motor vehicle crash, restrained with lap belt only, complained of abdominal pain on initial evaluation at an outside facility.
• Transferred following finding of small splenic and hepatic lacerations on CT scan.

Severe head injury despite restraint
08/28/07 - smiling, still not talking

07/06/07
07/29/07
Aortic Injury in girl with only lap belt restraint

**Initial Trauma Evaluation**

- HR 60, BP 88/40
- Complained of abdominal pain and low back pain
- Alert and oriented with GCS 15
- Abdominal exam notable for tenderness to palpation in right and left upper quadrants with contusion to the right of the umbilicus
- Tenderness and bruising over low T-spine area
- Sensation intact, 5/5 strength all extremities
- Weakly palpable femoral pulses

**Initial Trauma Imaging**

- CT abdomen: hemo-peritoneum with small splenic and liver lacerations, no free air
- T-12 flexion-distraction Chance fracture
- Bilateral lower rib fractures
- Initial hemoglobin 9.3

**Hospital Course**

- Initial brief episode of hypotension in ER treated with crystalloid and one unit PRBC’s with resolution of hypotension and increase in urine output
- Transferred to PICU and evaluated by neurosurgery
- Next morning, began having increasing abdominal pain, distention, tachycardia to 130 beats per minute
- Hemoglobin decreased to 8.8
Aortic injury in girl with only lap belt restraint

Hospital Course

- Review of CT showed a large amount of intra-peritoneal blood as well as disruption of the infra-renal aorta below the level of the T-spine fracture
- Dr. Daniel Rush, ETSU Vascular Surgery was consulted and patient was taken emergently for exploratory laparotomy
Aortic injury in girl with only lap belt restraint

Operative Findings

• Hemo-peritoneum
• Crush injury to aorta with transection through intima and media with intact adventitia, 2 inches below renal arteries
• Injury to superior mesenteric vein and artery
• Devascularized mid transverse and mid descending colon
• Deserosalized proximal jejunum and duodenum at level of the Ligament of Treitz

Intra-operative Procedures

• Primary repair of aortic disruption
• Primary repair SMV and SMA injuries
• Partial colectomy with transverse colostomy
• Operative repair T-12 fracture on hospital day #4

Subsequent Course

• Colostomy reversal 3 months after initial surgery
• Follow up with repeat lower extremity arterial duplexes with complete resolution of initial mild arterial insufficiency
How to protect your pediatric surgeon
Prevent motor vehicle crash injuries!

• Instruct 8 and 9 year old children to always be in a booster seat or wear the lap and shoulder belt, not just the lap belt.

If only all parents would consider their children to be precious irreplaceable cargo

TENNESSEE CHILD PASSENGER SAFETY LAW
(TCA 55-9-662) SUMMARY • Effective July 1, 2005

<table>
<thead>
<tr>
<th>Child's Age/ Weight/ Height</th>
<th>Type of Seat</th>
<th>Location of Seat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants Less than 1 year old or less than 20 lbs.</td>
<td>Rear facing*</td>
<td>Rear seat if available</td>
</tr>
<tr>
<td>Toddlers 1 yr. through 3 yrs. and greater than 20 lbs.</td>
<td>Forward facing*</td>
<td>Rear seat if available</td>
</tr>
<tr>
<td>Young Children 4 yrs. through 8 yrs. and less than 4'/7&quot; tall</td>
<td>Rear Positioning Booster Seat*</td>
<td>Rear seat if available</td>
</tr>
<tr>
<td>Older Children 9 yrs. through 12 yrs. or 4'/7&quot; or taller</td>
<td>Seat belt system*</td>
<td>Rear seat recommended</td>
</tr>
<tr>
<td>Adolescents 13 through 17 yrs.</td>
<td>Must be belted*</td>
<td></td>
</tr>
</tbody>
</table>

Driveway Injuries 2006

Saturday, July 1, 2006

BRIEFLY/POLICE

Toddler stuck by Jeep in driveway of home

ELIZABETHTOWN — A 3-year-old child was hit by a Jeep while he was standing in a driveway at a residence on Thursday evening. The child was taken to Kentucky Children's Hospital and was pronounced dead at 11:55 a.m. on Saturday. The child's parents were in the driveway when the accident occurred. They said the child had run down the street when it was being pushed. The parents said they had the Jeep's right rear tire run over the child when it was being turned. The parents said they did not know the child had been struck anywhere else.

Saturday, Sept. 30, 2006

1-year-old girl killed in driveway accident

ROAN MOUNTAIN — A baby who had just turned 1 year old Sept. 4 was run over by a car in the driveway of her home on Saturday at 4:30 p.m. She was pronounced dead at Johnson City Medical Center a short time after the accident.

The Tennessee Highway Patrol reported that in the accident, a 23-year-old woman was driving a vehicle and struck the baby girl. She was taken to Johnson City Medical Center with injuries.
Driveway Injuries 2006 - 2007

- Right clavicle fracture
- Right tension pneumothorax
- Right lung contusion
- Right liver laceration
- Right kidney contusion

Caryville, Tennessee

October 19, 2002
Driveway back up death of Cameron

February 28, 2008
Cameron Gulbransen Kids
Transportation Safety Act
ATV injuries

- Burns
- Fractures
- Abdominal organ injury
- Penetrating abdominal injury
- Closed head injuries

Burn to hands from ATV tailpipe

Burn to hands from ATV tailpipe

Burn to hands from ATV tailpipe

Burn to hands from ATV tailpipe
Burn to hands from ATV tailpipe

Orbital fracture after ATV crash

Femur fracture

Liver laceration from ATV handlebar
Girl recovering after losing part of foot in lawn mower accident

By Patrice Dreiner
AJH News Service

A 3-year-old girl, Raena Stephens, 4, was recovering Tuesday from a lawn mower injury that claimed a part of her right foot.

Raena's father, Robert, 36, said his daughter's leg was elevated over a small grass berm near her family's home in the 1400 block of North Pacific Avenue in Johnson City. She was not wearing protective clothing.

Raena's mother, Traci, 34, said she was outside when she heard Raena scream and ran to find her daughter in the mower. She said she saw Raena's foot lying in the mower. She ran into the yard and took the mower away from the child. She then took Raena to the hospital.

Raena was then airlifted to East Alabama Medical Center in Opelika, then flown to Children's Hospital of Philadelphia, where doctors performed surgery to remove the injured part of her foot.

Raena's father said he was surprised to hear that his daughter had survived.

"I was really surprised," he said. "I thought she was going to lose her foot."
At what age should a child ride a two wheel bike without training wheels?

Severe duodenal injury from bike handlebar August, 2009

- 3.5 year old boy was riding two wheel bike with training wheels.
- Training wheels removed by mother.
- Child falls on handlebars and suffers severe duodenal laceration requiring surgery and lengthy hospitalization.
Dog Bite – Summer 2005
Rottweiler

10-year-old suffers severe injuries in attack by dogs

Surgery required after Rottweilers savagely bit off much of his body.

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Dog Bite – Summer 2006

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Dog Bite – Summer 2007
Dachshund

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Dog Bite - Summer 2008
Pit Bull
Dog Bite - Summer 2008

Dog Bite
2008-2009-2010-2011

Dog bites to the face now managed by Dr. Charles Foley and Dr. James Brantner, plastic surgeons who cover the emergency room.

Thanks for your support!
And thanks to the 2005-2006 ETSU Third year general surgery residents

Thanks to the 2006-2007 ETSU Third year general surgery residents
Thanks to the 2007-2008
ETSU Third year general surgery residents

Thanks to the 2008-2009
ETSU Third year general surgery residents

Thanks to the 2009-2010
ETSU Third year general surgery residents

ETSU Pediatric Surgery
The SIXTH Year
Welcome to the 2010-2011 ETSU third year general surgery residents

Dr. Patricia Moynihan
Women in Academic Surgery Lectureship
Friday, September 17, 2010

ETSU Pediatric Surgeon
8/1/91 – 6/30/04

Patricia C. Moynihan, M.D.
Women in Academic Surgery Lectureship
Friday, September 17, 2010

First Moynihan Visiting Professor
Dr. Marleta Reynolds
Chief, Pediatric Surgery
Children’s Memorial Hospital
Northwestern University, Chicago, IL
Groundbreaking for the Niswonger Children’s Hospital
May, 2007

A dream, a sign, and a hole in the ground

Niswonger Children’s Hospital
August, 2008
Niswonger Children’s Hospital
Open March 2, 2009

Experienced pediatric nurses and support staff make our children’s hospital great

ETSU Pediatric Surgery Clinic
2010-2011

Monday 1 - 4 pm
New patients
School age children, teenagers

Tuesday 8 – 12 noon
New patients
Infants and toddlers

Wednesday 8 – 12 noon
Post-operative and return patients
Infants and toddlers

Pediatric Surgery OR Days
2010-2011

Monday – Niswonger OR 2
Infants and toddlers

Thursday – Niswonger OR 2
Inpatients

Friday – Niswonger OR 2
School age children
Parents who need the weekend off

Nights and weekends – Main operating room
Niswonger Operating Rooms
Opened May, 2009
Niswonger dedicated combined pre-op and post-op area for children

Niswonger Operating Rooms
Opened May, 2009
Niswonger One donated by Merrill Lynch
Niswonger Two donated by the Grindstaffs

Katrina Prendergast
started on Pediatric Surgery April, 2006
over 34 years operating room experience
The Bigger Picture
Tennessee injury ranking in national comparisons
How do we measure up?

Data from National Highway Transportation Safety Administration

State ranks among worst in teen car deaths

Columbia for lowest number of driver deaths among drivers aged 16-19, according to data from the National Highway Transportation Safety Administration. Studies show that strongly restricting teen driving privileges leads to a 25 percent drop in teen driving death rates because stringent laws protect teen drivers from their own deadly mistakes.
Data from Allstate Insurance Company
2000-2006

Consumer Product Safety Commission
2002-2005

UPSTATE/ TENNESSEE
ATV accidents prevalent in state

According to the Consumer Product Safety Commission, 2,252 people were killed in ATV accidents in the United States between 2002 and 2005. The sixtiest highest number of fatalities, 33, were reported in Tennessee.

ATV Accident Prevention

Tennessee Ranks in Top 10 for Reported Deaths

By Michael Sanders

The statistic is no doubt disquieting—according to the Tennessee Hospital Association, 20% of the state's hospitals reported receiving at least one ATV-related injury or death. ATV accidents are the most common cause of hospitalization in Tennessee, and for 20% of all reported injuries, ATV usage was a factor. ATV-related injuries are considered severe, and the number of cases continues to rise.

ATV wreck prevention

Local death from ATV wreck - 2006

Four-wheeler wreck kills grandmother who had grandchildren, 3, 5 on board

By Jeff Bowers

LUCILLE HILL, 66, was driving her ATV near the Knoxville Outfitters store when she lost control and crashed into a tree. She was pronounced dead at the scene. The children, ages 3 and 5, were only slightly injured. Their father, Mike Hill, said they were out for a ride when the accident occurred. Mike Hill said he was driving behind the ATV, and the children were riding in the back. The accident was caused by a loss of control of the ATV.
Local ATV death
In Memoriam  Brandon Scalf
10/08/92 – 12/03/06

14-year-old boy killed when ATV lands on him

Hampden – A 14-year-old boy was killed Sunday afternoon in an all-terrain vehicle accident.

Larry Pointer, Hampden’s assistant police chief, said the crash occurred about 3:30 p.m. on Wadesfield Road. Scalf was transported to Memorial Hospital in Ticonderoga where he was pronounced dead.

A witness to the accident said Scalf was riding the vehicle with him until the boy asked to take it by himself. He said the victim, a male student at the school, was struck by the vehicle and thrown into a pine grove.

Organized by the state Department of Environmental Conservation, the ATV registration program began in 2001. This year’s deadline for registration is Nov. 1 and new laws will require riders to wear helmets and have passes valid on the vehicle.

In Memoriam  Ryan Casey
April 18, 2010

6 year old – no helmet – middle ATV passenger
Open skull fracture/severe lethal head injury

Organs donated:
Heart – 8 year old boy
Liver – 5 year old girl with biliary atresia
Left kidney – 16 year old girl
Local dirt bike deaths
July, 2009
Were they wearing helmets?

By JOSI SMITH
Anchor / WRT
Published: July 13, 2009

Two Johnson County, Tennessee boys died Sunday afternoon when the dirt bike they were riding crossed into the path of an oncoming Jeep.

Anthony Church, age 12, was driving a dirt bike on Slabtown Road around 4:30 p.m. Sunday with a passenger, Joseph Forbis, age 13, when they crossed onto Highway 77 into the path of an oncoming Jeep, according to a Tennessee Highway Patrol report.

No charges were filed in the crash.

American College of Surgeons
Statement on ATVs

October, 2008

ATV’s: “All-terrain victims”

November, 2008
1997
SPECT scan of cerebral blood flow and metabolism

Helmets are the law!
Bicycle Helmets 2000
Did you know that every year bike-related crashes kill 900 people and send more than 500,000 people to hospital emergency rooms? Wearing a bike helmet can reduce the risk of head injury by 85 percent. It can save your life . . . or that of a loved one.

In 2002, over 268,900 pediatric bicycle-related injuries required evaluations in emergency departments. Head injury is the most important determinant of permanent disability and accounts for more than 60% of bicycle-related deaths, more than 2/3 of bicycle-related hospital admissions, and about 1/3 of hospital emergency room visits for bicycling injuries.

In 2000, the Tennessee legislature passed a law (TCA Title 55, Chapter 52, Section 103-106) making it mandatory for all children under 16 years of age to wear bicycle helmets while riding on all public roads in Tennessee.

Helmet proposals for kids, adults on ATVs advance
March 22, 2007

Some companies encourage us to endanger our children
Some companies encourage us to protect our children. Kids need head protection for all kinds of sports.

You are never too young to start wearing a helmet!
“I liked recess a lot better before the helmets.”

An infant with low imperforate anus who had a rough start in life

- Born Aug 19, 2005 to bipolar mother, father left early on
- Low imperforate anus
- Perineal wound infection after local repair
- Diverting colostomy and closure
- Adopted by maternal grandparents

An infant with low imperforate anus who had a rough start in life

A rough start, but already a beauty queen! August 3, 2006
Watch me grow!
April 30, 2007

Watch me grow!
March 18, 2008

Watch me grow!
December 8, 2009

Watch me grow!
August 4, 2010
Thanks

- Operating room nurses for operative photographs
- NICU nurses for newborn photos
- Sheila Lyons – computer technical support
- Eric Taylor – Pediatric Radiology

If I haven’t put you to sleep, I would be happy to take questions.