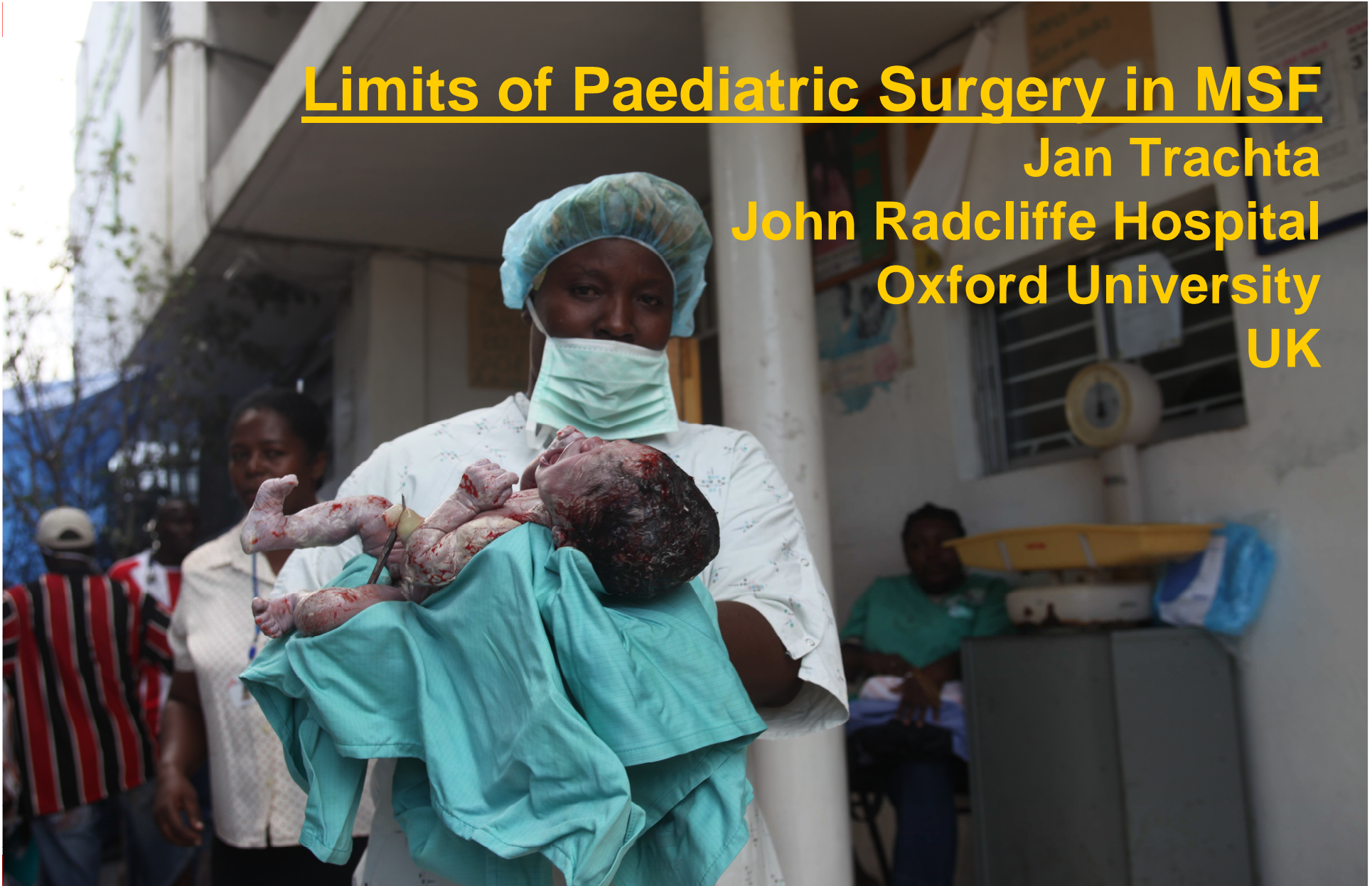


# Limits of Paediatric Surgery in MSF

**Jan Trachta**  
**John Radcliffe Hospital**  
**Oxford University**  
**UK**



# **Aim of presentation**

1. practical overview of chosen topics and tips for MSF general surgeons
2. discussion on limits of paed surgery operations

Paediatric patients:

immature neonates of 500g to...

...18 years old „kids“

# Paediatric patients

Journal of Pediatric Surgery (2010) 45, 610–618



Journal of  
Pediatric  
Surgery

[www.elsevier.com/locate/jpsurg](http://www.elsevier.com/locate/jpsurg)

## Review Articles

### Challenges of training and delivery of pediatric surgical services in Africa

Lohfa B. Chirdan<sup>a,\*</sup>, Emmanuel A. Ameh<sup>b</sup>, Francis A. Abantanga<sup>c</sup>,  
Daniel Sidler<sup>d</sup>, Essam A. Elhalaby<sup>e</sup>

<sup>a</sup>*Pediatric Surgery Unit, Department of Surgery, Jos University Teaching Hospital, Jos, PMB 2076, Jos, 930-001, Nigeria*

<sup>b</sup>*Division of Pediatric Surgery, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria*

<sup>c</sup>*Department of Surgery, Komfo Anokye Teaching Hospital, Kumasi, Ghana*

<sup>d</sup>*Department of Pediatric Surgery, Tyerberg Children's Hospital, Stellenbosch University, Cape Town, South Africa*

<sup>e</sup>*Department of Pediatric Surgery, Tanta University, Tanta, Egypt*

Received 17 October 2009; revised 7 November 2009; accepted 12 November 2009

„Africa has an estimated population of approx. 1 billion people... It is estimated that approximately 46% of the population of Africa are children 0 to 14 years of age.“

# Topics to be discussed?

- 4 most frequent paed surgical issues in MSF:

1. burns

2. trauma and osteomyelitis

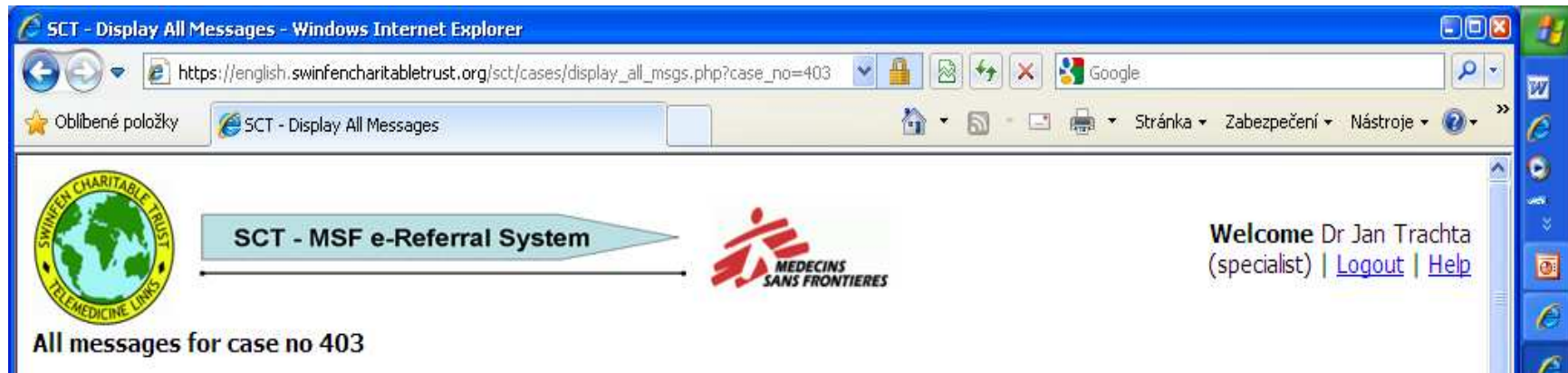
3. surgical infections (abces, typhoid fever...)

4. **intestinal obstruction**





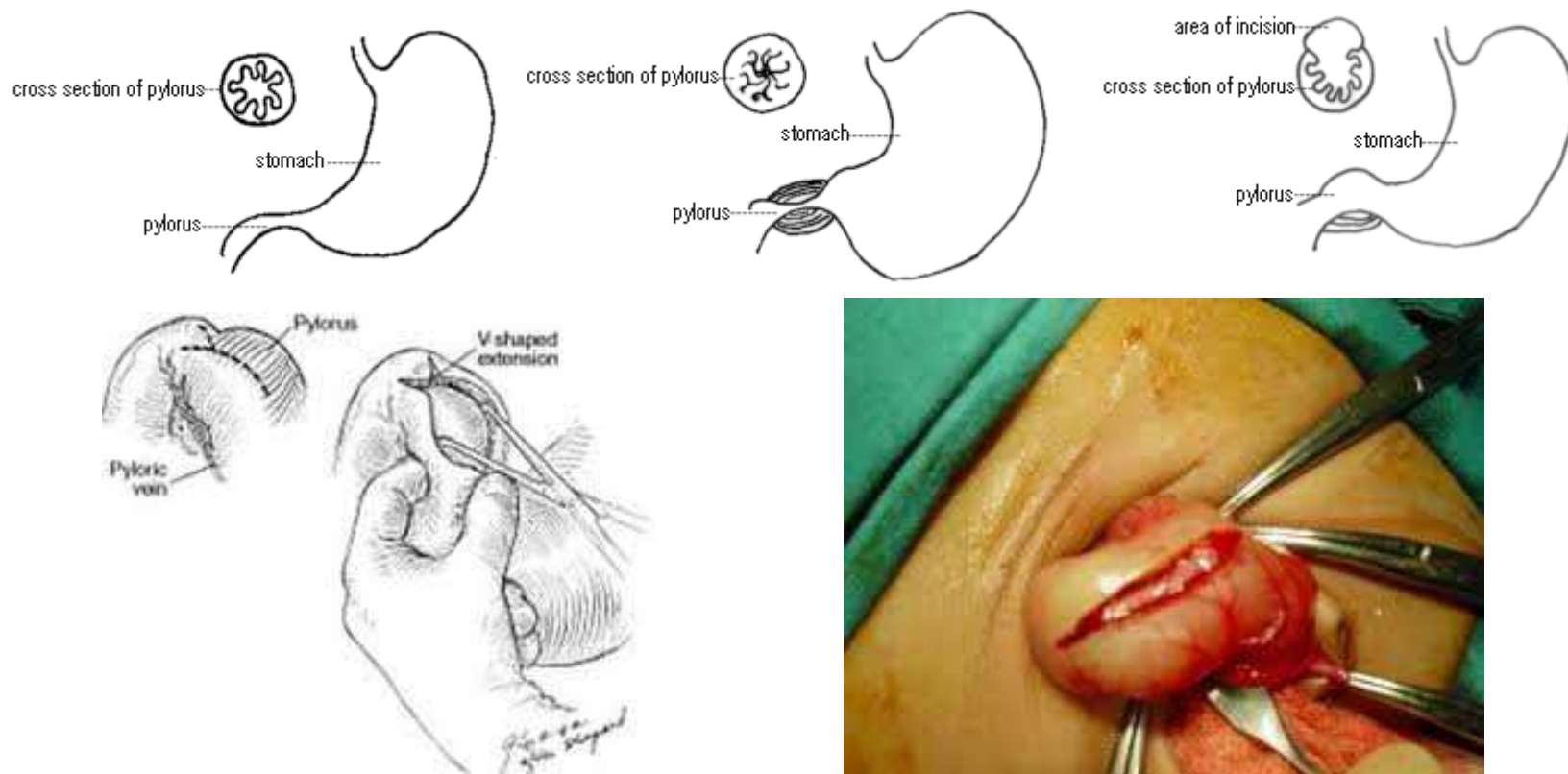
# Example from Telemedicine project



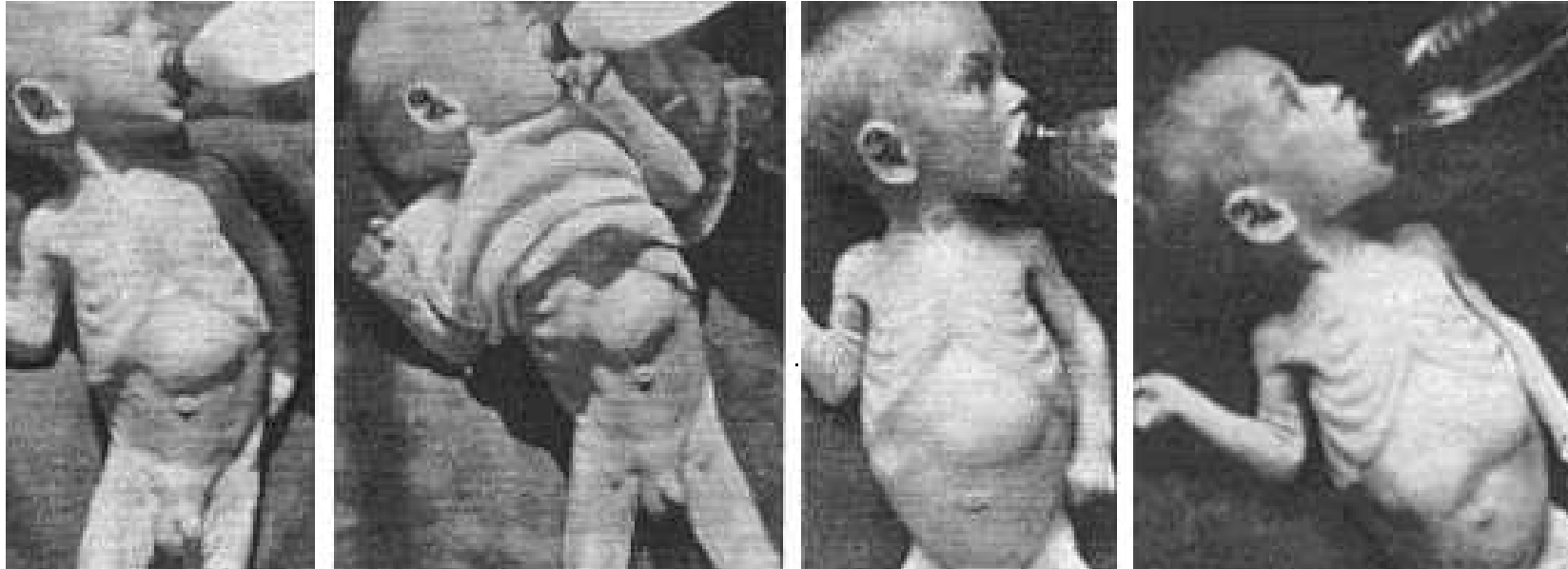
Pylorostenosis: 1 year old boy,  
malnourished, milky vomits after feeding  
since birth, referred by MSF car 6 hours to  
the capital, operated for pylorostenosis by  
local surgeon, operation didn't help,  
patient died later – what's wrong?

# Pylorostenosis

- Hypertrophy and oedema of pylorus between 2 and 8 weeks of age



# Pylorostenosis



Scotland 1933

- 75% diagnosed by palpation after NGT (pyloric tumour feels like „olive“)
- dehydration and alkalosis need massive IV fluid replacement, operation not urgent

# Paediatric surgery online

[http://www.global-help.org/publications/books/book\\_pedsurgeryafrica.html](http://www.global-help.org/publications/books/book_pedsurgeryafrica.html)

**GLOBAL HELP**  
HEALTH EDUCATION USING LOW-COST PUBLICATIONS

Providing free health-care information to developing countries and helping to make medical knowledge accessible worldwide.



[Home](#) [About](#) [Contact](#) [Links](#) [News & Events](#) [HELP Us](#) [Feedback](#)

[Publications](#)

All publications are free to download in PDF format

**Publications**

[by title](#)  
[by author](#)  
[by language](#)

**Types**

[articles](#)  
[books](#)  
[dvd libraries](#)

**Paediatric Surgery: A Comprehensive Text For Africa**

 **Paediatric Surgery: A Comprehensive Text For Africa**

Emmanuel Ameh, Stephen Bickler, Kokila Lakhoo, Benedict Nwomeh, Dan Poenaru, & Over One-Hundred-And-Fifty Contributors

800 pages, 8.5" x 11", Four-Color, English, 2010.

Available exclusively in PDF format.

ISBN-13 #978-1-60189-091-7

[Download](#)  
[Order](#)

Google™ Custom Search

Search

To see more 241

**Contents**

The full list of chapters are listed below, but can also be navigated by topics.

Paediatric Surgery in MSF



# Decision making - options

- 1. Refer – do you know where to? Role of Med Co
- 2. Operate – does your ANESTHESIST and the team agree?
- 3. Refuse to treat or let die – how?  
(Palliative care in MSF)



Paediatric Surgery in MSF

## Referrals in the field

- IDEALLY all new born defects to be referred
- Possibility of referral – should be discussed with Medical Coordinator in the Capital Team (if possible)
- If Med Co doesn't know – should you verify on your own and interduce yourself in the local hospital??

# Physiological needs

- Thermoregulation



Rutshuru 2009



Rutshuru 2011

# Thermoregulation



Switch off air conditioning!

Paediatric Surgery in MSF



## Blood volume and losses

- volume losses and hypovolemic shock - transpiration in feveres, vomiting, 3rd space losses and blood losses
- 80 ml/kg



2.5kg

=

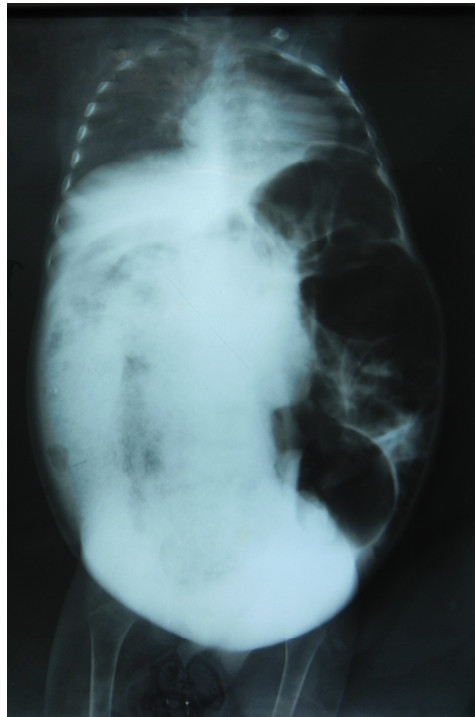


200 ml

# Physiological needs

- Dilated bowel loops?

Ventilation and space to operate!



# Physiological needs

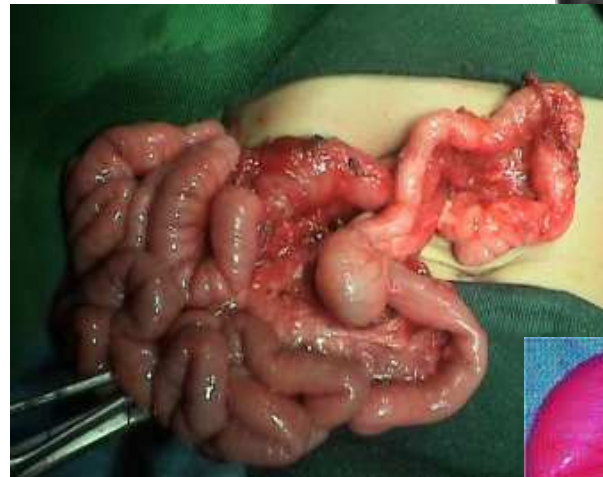
GIT decompression:



1. NGT tube of good size and aspirate
2. wash out colon if you can
3. small intestinal incision and suction

# Imaging

- X-ray of neonate and infant:  
small or large bowel loops?  
+ similar perioperatively





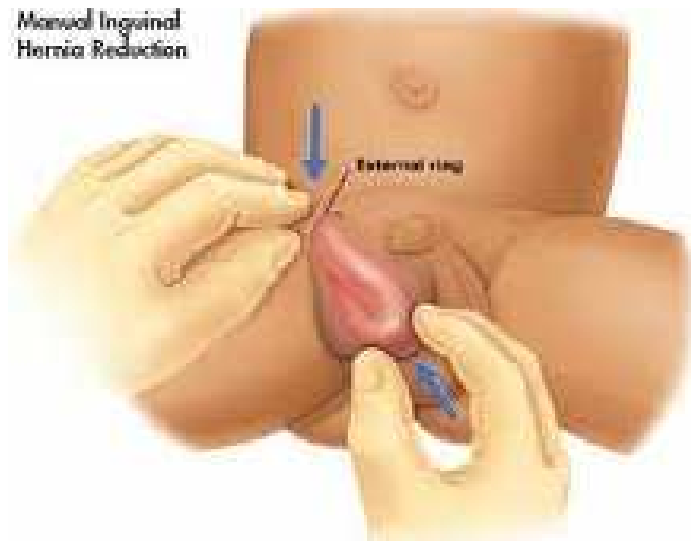
## **Patients to be operated in MSF?**

- Incarcerated hernia
  - Intussusception
  - Pylorostenosis (rare)
  - Duodenal atresia (+ other intestinal atresias)
  - Meconium ileus
  - Malrotation and volvulus
  - Hirschprung - stoma
  - ARM (imperforated anus) – stoma
- + silo for gastroschisis and omphalocele?

## **Patients to be referred (or not treated)**

- Esophageal atresia
  - Diaphragmatic hernia
  - Spina bifida
  - Bladder extrophy and cloaca
- + not diagnosed e.g. biliary atresia, choledochal cyst, malign tumours...etc.

# Incarcerated hernia in children



# Incarcerated hernia in children

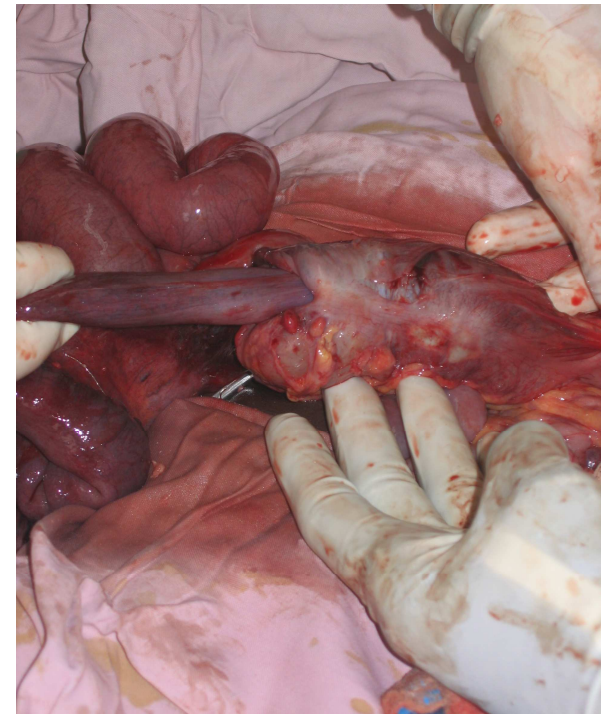
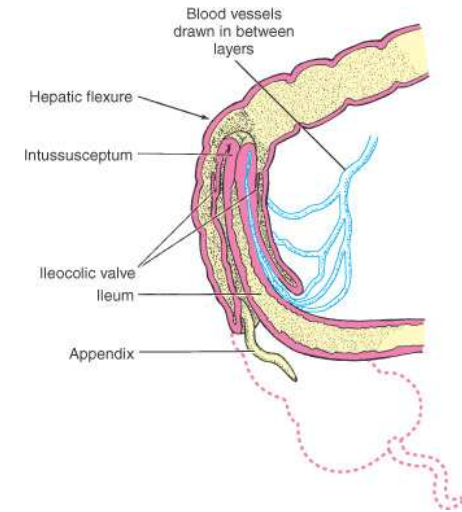
- Inguinal incision in skin fold
- In children always indirect hernia
- Rule of reduction into the abdominal cavity:  
if you can reduce the bowel back, don't resect it (unless black)
- NO Basini or another plasty of dorsal wall of inguinal canal



# Intussusception

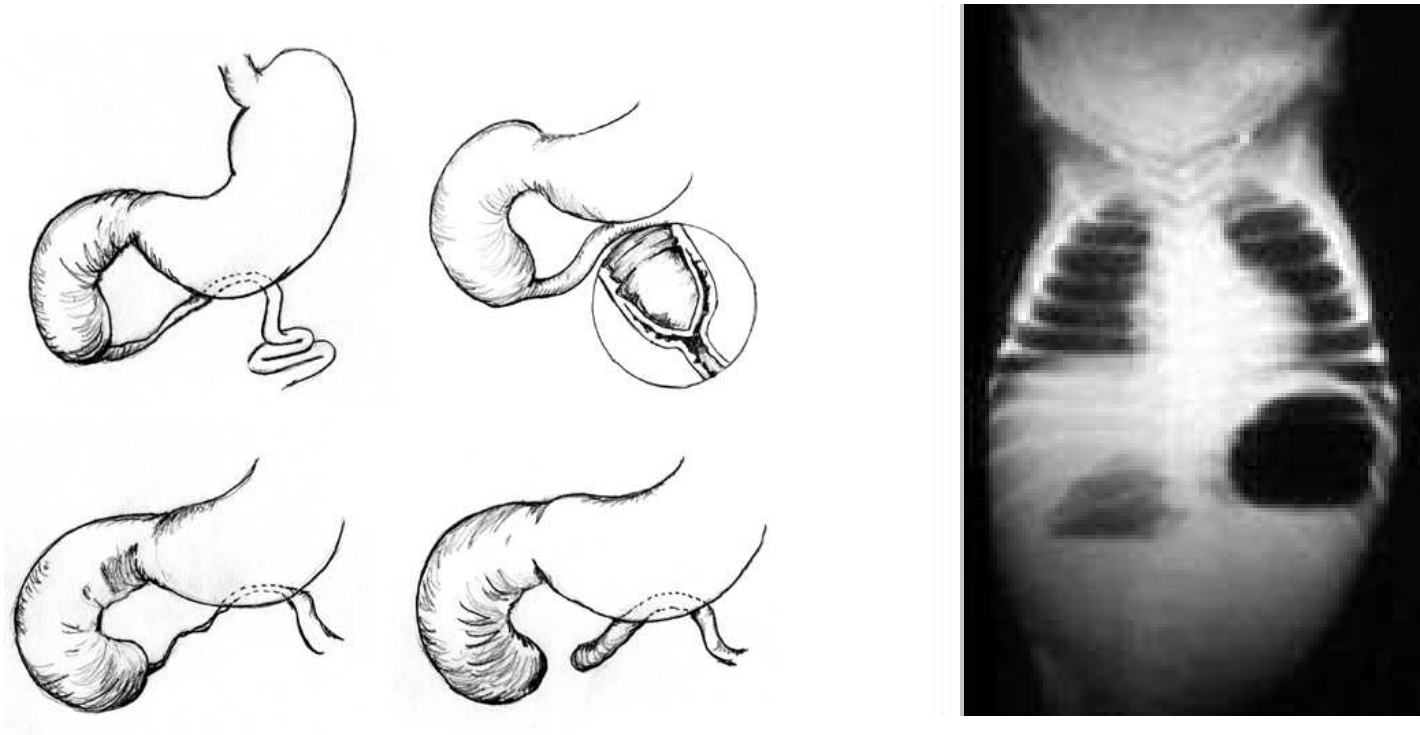


Typical age:  
1 to 2 years

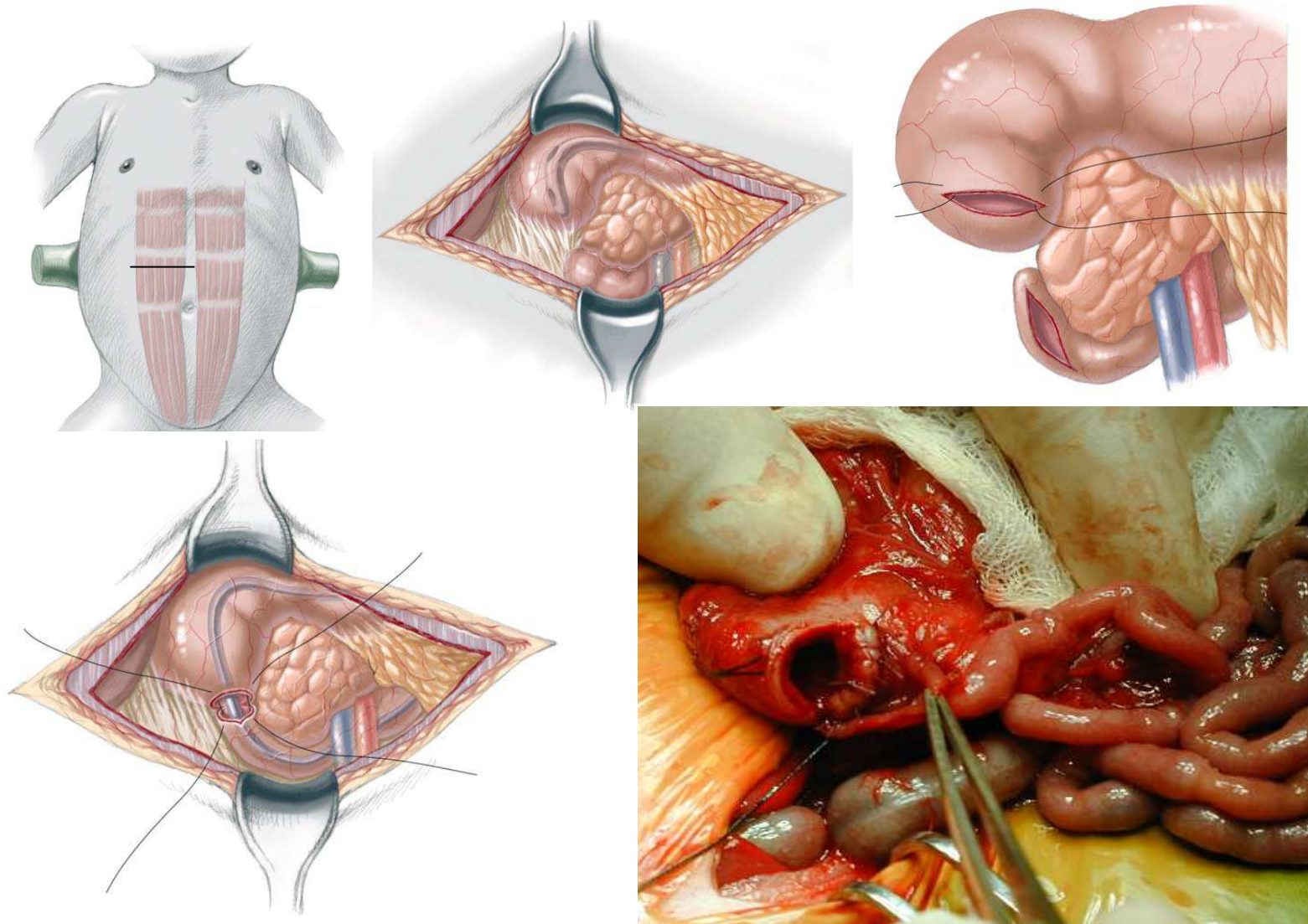


Paediatric Surgery in MSF

# Duodenal atresia



# Duodenal atresia - operation

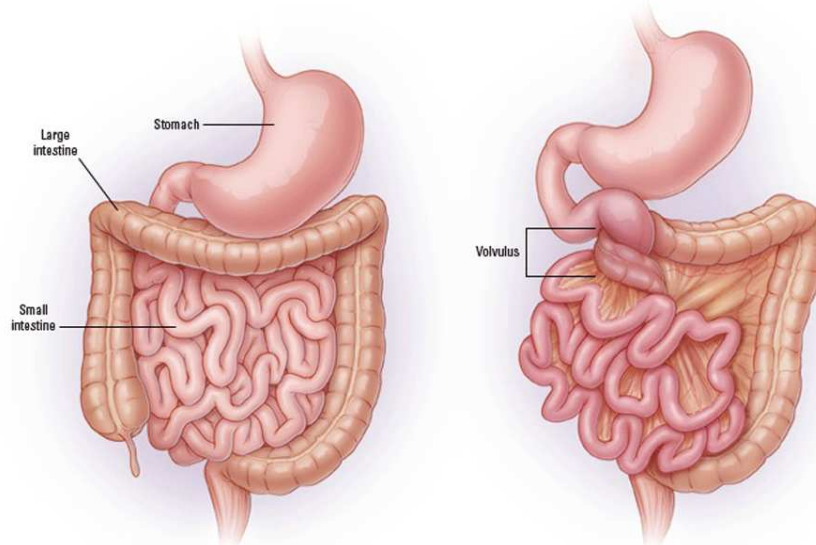


Paediatric Surgery in MSF



# Malrotation and volvulus

- Uncomplete physiological rotation of intestine around 10th week of gestation



Paediatric Surgery in MSF

# Gastroschisis + omphalocele (exomphalos)

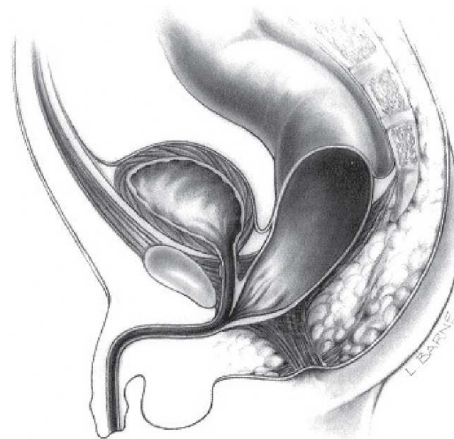
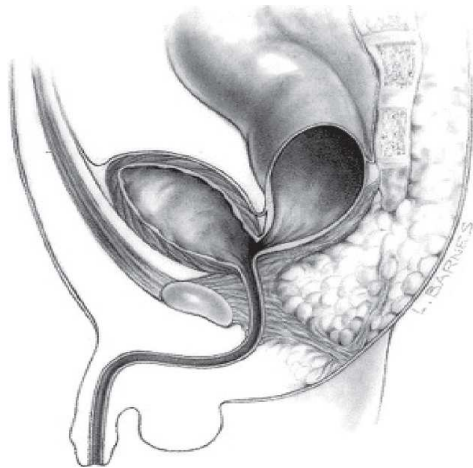
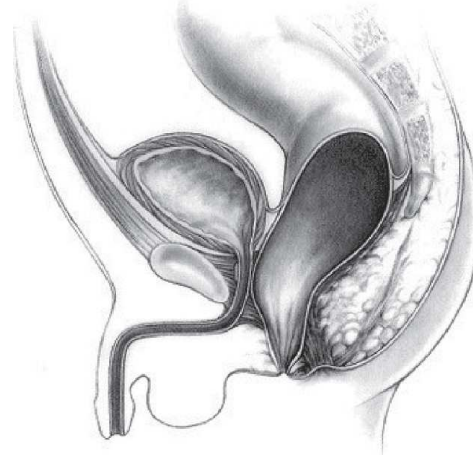
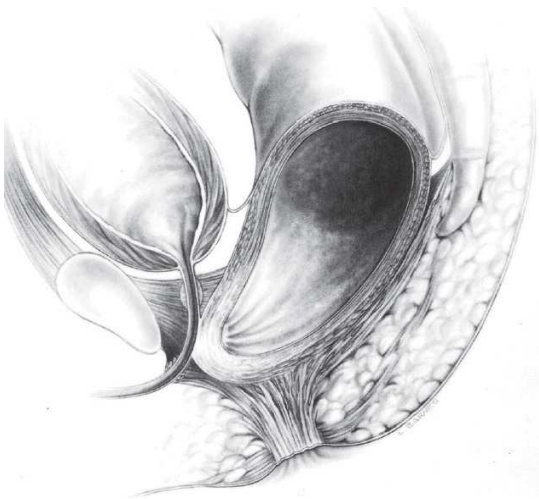
Defect of abdominal wall



# **ARM – AnoRectal Malformation („Imperforated anus“)**

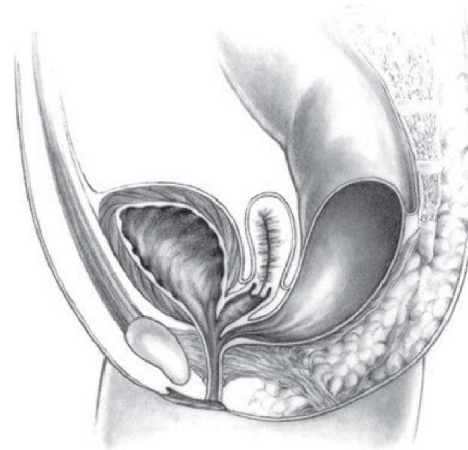
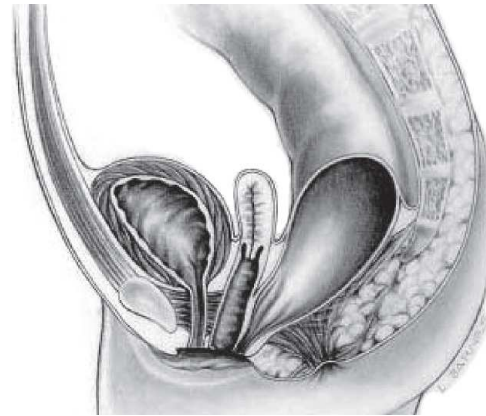
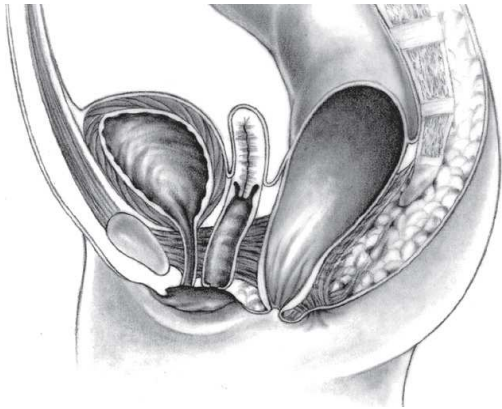
- Abnormal / none rectal opening
- The most common cause of intestinal obstruction in neonates (1 in 4000 births)
- $\frac{3}{4}$  present after birth (some after puberty)
- 60% of ARM patients have another anomaly (urinary tract, vertebral, GIT, cardiac, neuro)
- Traditionally classified as „low“ and „high“

# ARM - boys





# ARM – girls



Paediatric Surgery in MSF

## ARM examination

- Boys – prominent midline groove + anal dimple = less severe defect (perineal fistula, rectourethral fistula, no fistula)



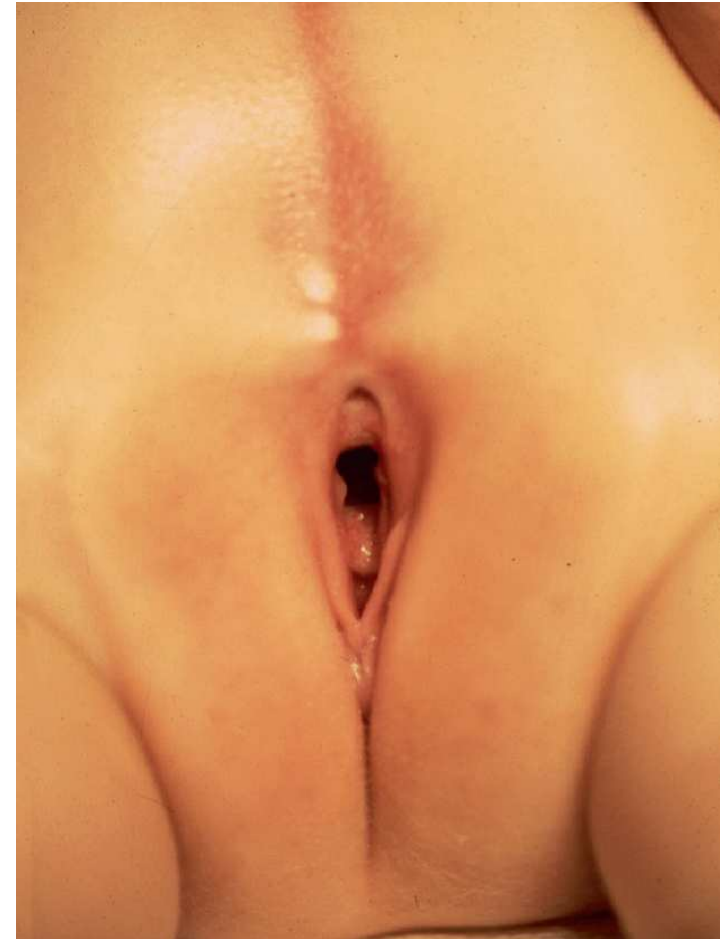
## ARM examination

- Gauze on the tip of penis to prove meconium in the urine





# ARM examination



Paediatric Surgery in MSF

# ARM investigations



## **ARM treatment**

- Low: immediate definitive operation (Indian and African surgeons yes - MSF? )
- High:
  1. diverting colostomy after birth
  2. pull-through procedure in 3 to 6 months  
(PSARP – posterior sagittal anorectoplasty)
  3. colostomy closure 3 to 6 months later

## Low ARM

- Fistula dilatation
- Cut back



**Hegar dilators**





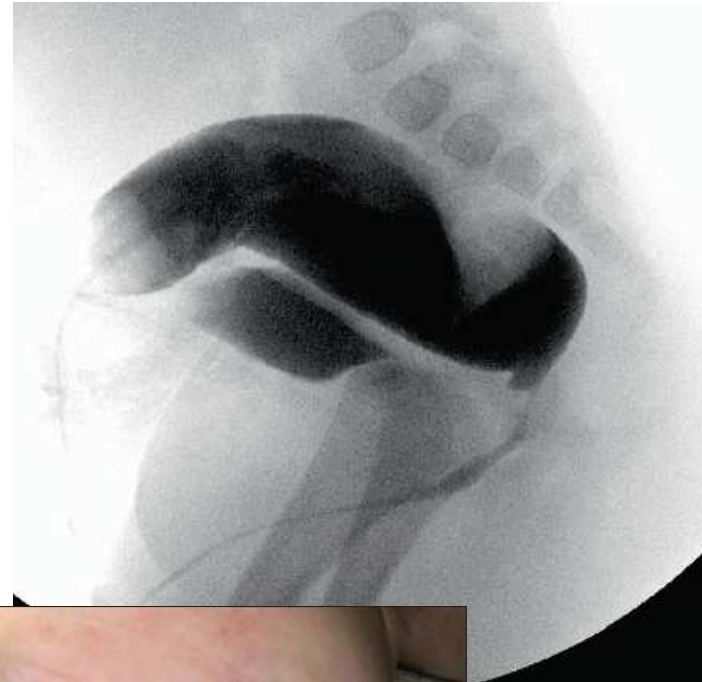
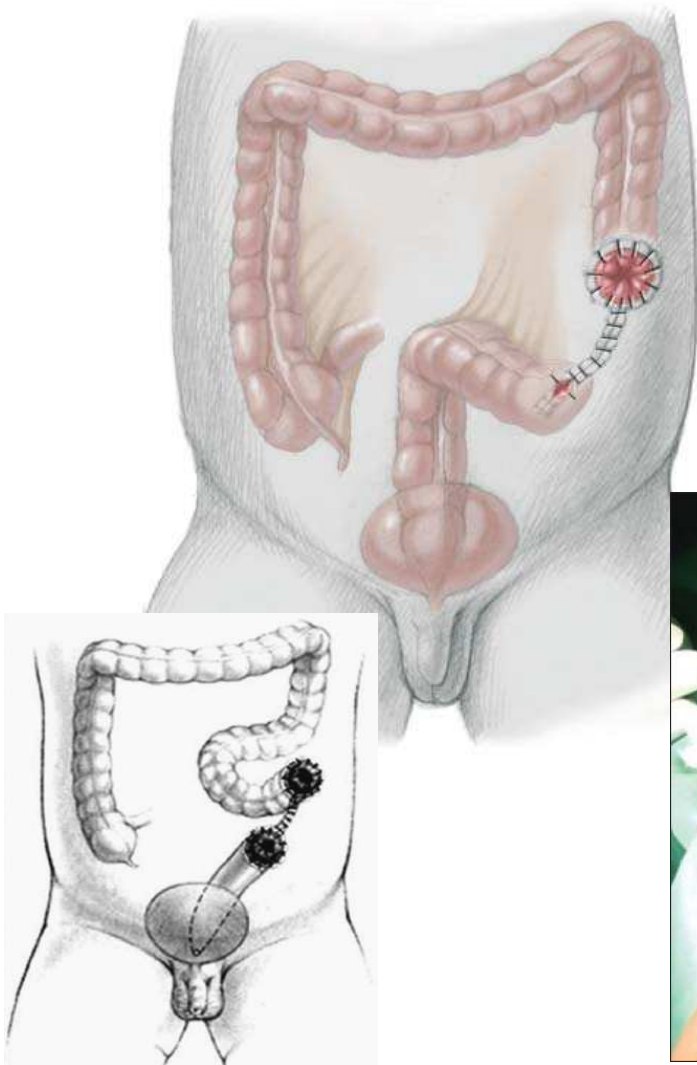
# ARM colostomy

- Where do you perform your colostomy?
  1. transverse colostomy
  2. sigmoid colostomy
- What type of colostomy?
  1. Loop colostomy
  2. Double barrel colostomy
  3. End colostomy and Hartman pouch
  4. Divided colostomy with skin bridge



# ARM colostomy

Ideal colostomy



# Colostomy

- Complications of ileo and colostomies up to 75%, revision rate up to 15%

(Paediatric Surgery for Africa, Global Help, 2009, 429-433)

Perioperatively – small bowel mistaken for large (if not sure – stick a rectal tube in), stoma losses (need replacement 1:1ml)

Postoperatively – dermatitis (no stoma nurse, no bags, just rags – zinc oxid paste); prolaps, stricture, retraction, ulceration...

# ARM complications

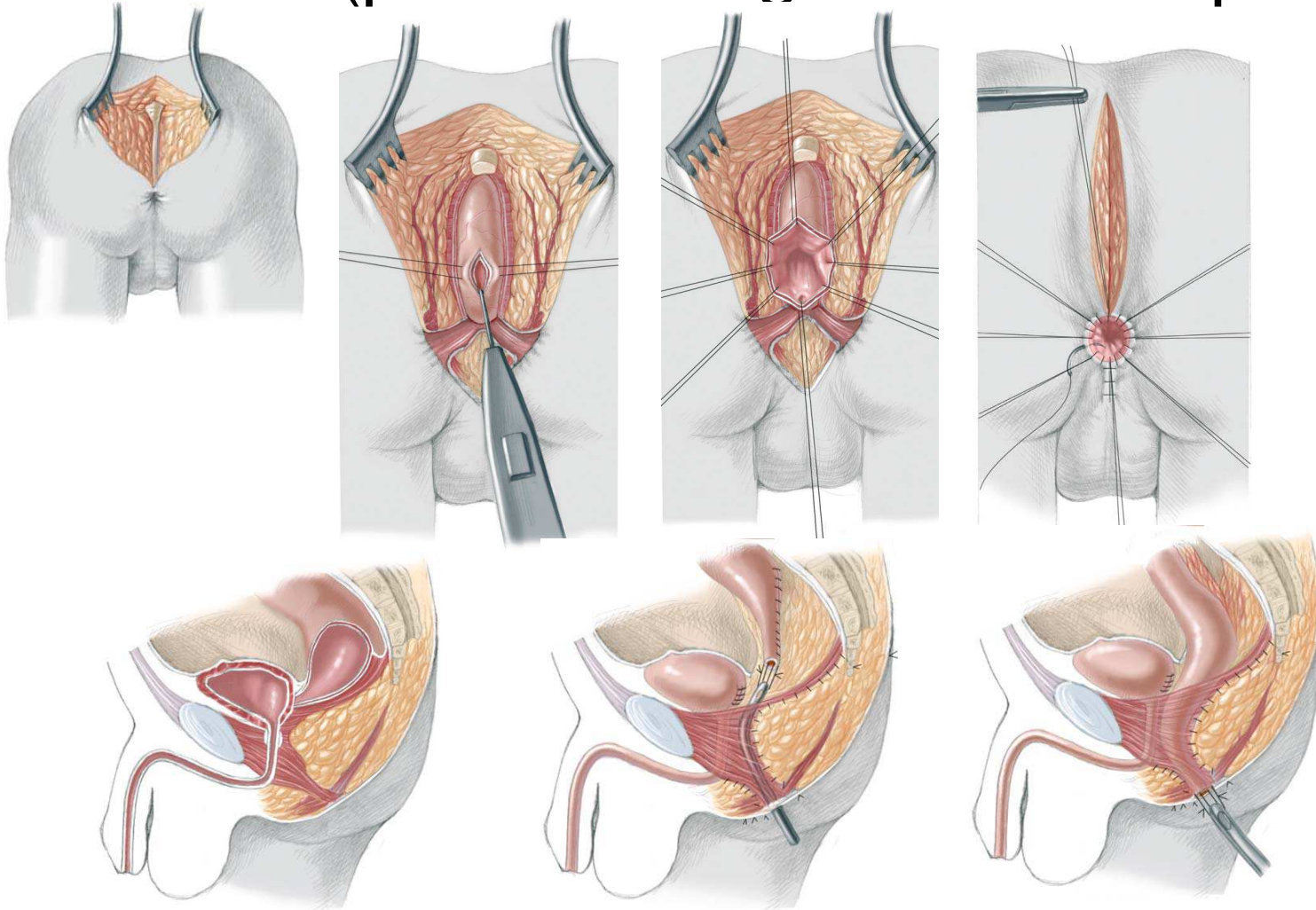
- Short term: infection, wound breakdown



- Long term:
  - incontinence (partial or complete)
  - constipation (even obstruction)

# ARM – final treatment

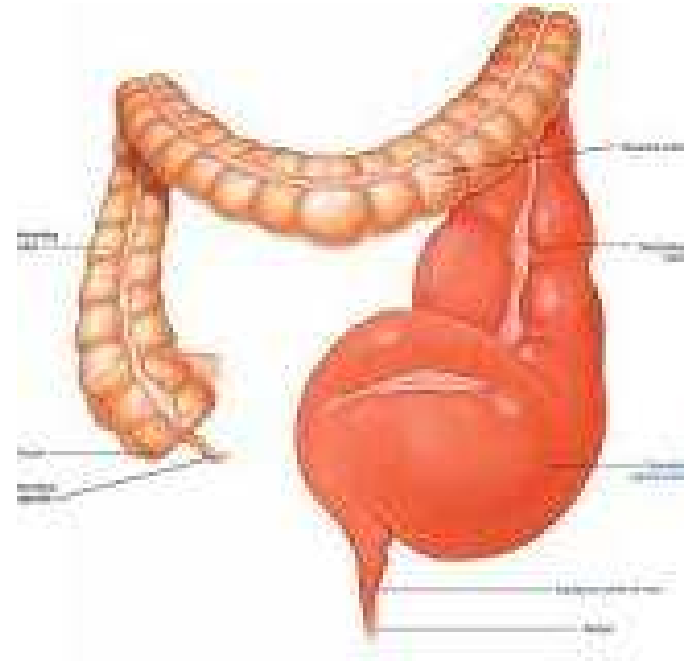
- PSARP (posterior sagittal anorectoplasty)



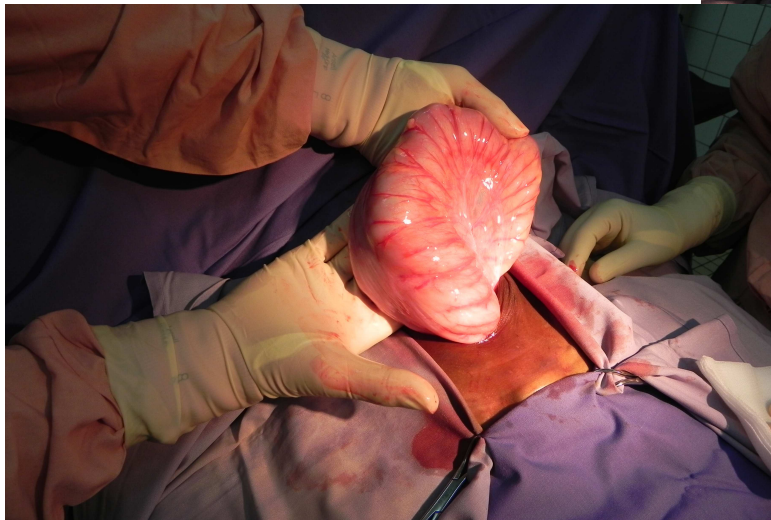
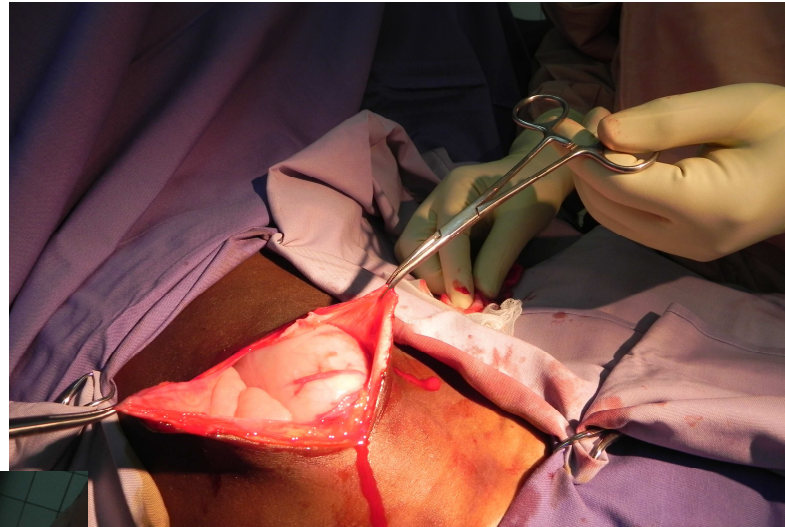


# Hirschsprung disease

- Aganglionic part of colon – functional obstruction
- 4 types:
  - anorectal (short)
  - rectosigmoideal (classical)
  - transversal
  - total aganglionosis
- 1 in 5000 new borns
- Clinically obstruction or „constipation“
- Risk of megacolon enterocolitis – wash outs



# Hirschsprung



Paediatric Surgery in MSF

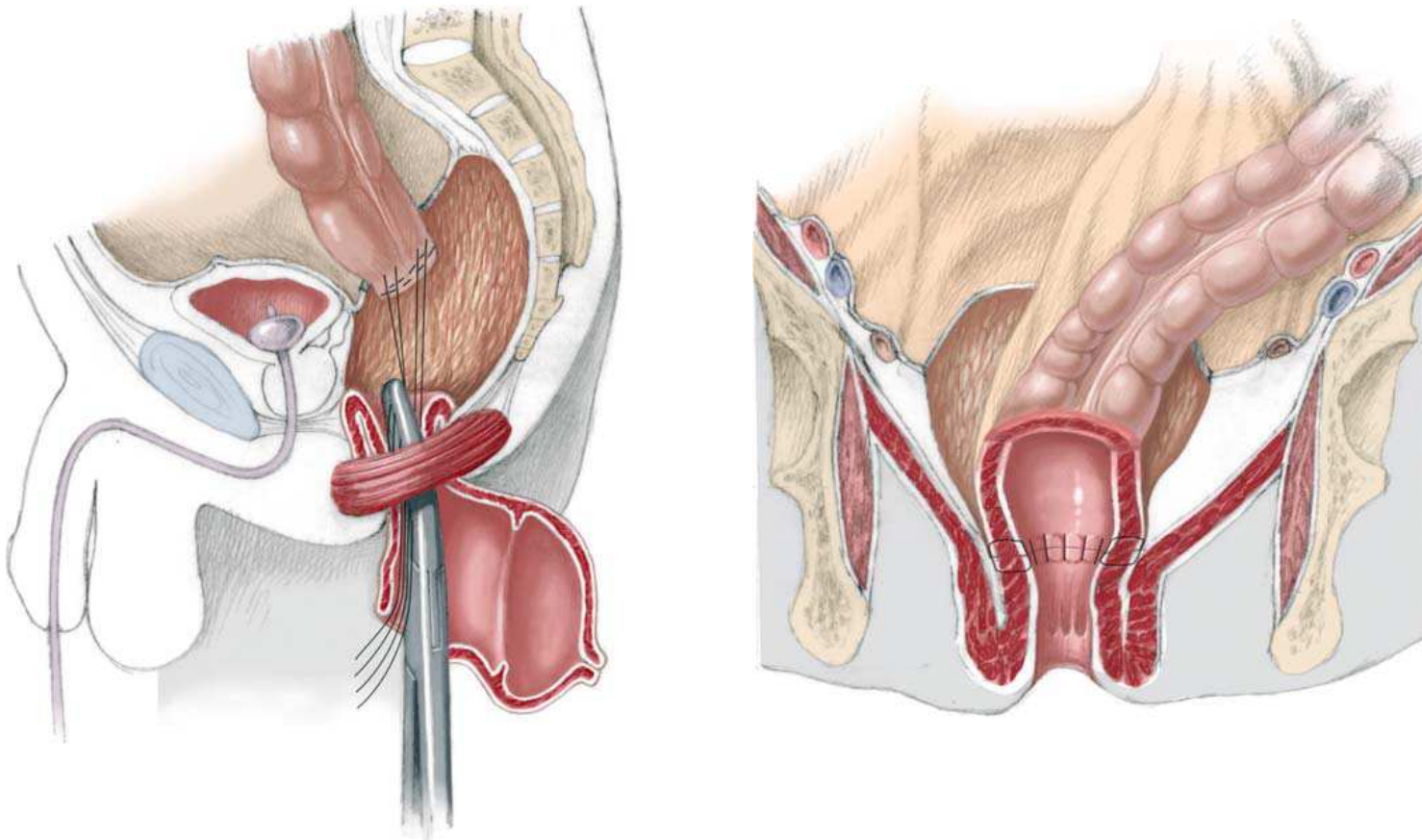
# Hirschsprung



Paediatric Surgery in MSF



# Hirschsprung – final treatment



# Limits of paediatric surgery operations

- 1. MSF context – often only life saving procedures or potentially life threatening diagnosis, e.g. hernias (minor burns versus cleft lip...)
- 2. MSF simple conditions (cost and effectivity...)



# Operations of children in the field - limits

- Poor history (language and cultural barrier, illiteracy of parents, no concept of time...)
- Poor diagnostic tools (reliable USS, CT, labs...etc.)
- Poor or no cooperation of little patients
- Poor or no follow-up of long term complications
- Poor or no final operations

Children don't explain their problems, don't ask for help and suffer quietly on and on...

# Discussion

- Colostomy – organisation of follow up and final operation?  
(example of Rutshuru:  
keep name and village  
and call in  
for final procedure  
if paed surgeon arrives)



# Discussion

- Palliative care
  - Morphine infusion?  
(e.g. for 5kg child 10mg of Morphine for 24h  
+- Midazolam?)



# MSF SURGEONS ?



Paediatric Surgery in MSF





**Thank you for your attention!**

Paediatric Surgery in MSF