NICU TIMES
KONDAPUR
KIMS CUDDLES
MOTHER & CHILD CENTRE

An interesting case of Abdominal Cyst in a newborn

- Ovarian cysts are the most common Intra abdominal cysts in a female fetus
- Ovarian cysts with size greater than 4 cms and complicated ovarian cysts need surgical removal
- Laparoscopic ovary conserving surgery is possible in neonates with this condition

Case report:

Baby of Mrs. A was born to a 28 year old G2 A1 mother who conceived naturally with H/o Gestational diabetes mellitus (on insulin) & fibroid complicating pregnancy in mother. Antenatal scans were normal except for growth scan a week prior to delivery showed an abdominal cyst.

A single, live term (38+1 weeks) female baby was delivered by LSCS with birth weight of 2842 grams. Baby cried immediately after birth. APGAR score was 7 and 8 at 1 and 5 min respectively. On examination, baby was euthermic and pink, HR: 160bpm, RR: 52 pm, CFT <3sec, SpO2-98% room air. All pulses were well felt. Baby was admitted to NICU for further evaluation of antenatally detected abdominal cyst.

Systemic examination:

CVS: Heart sounds were normal, no murmur, BP within normal range;

RS: bilateral air entry was good, no added sounds;

CNS: Cry, tone and activity was good and AF at level;

P/A:

- Inspection: localized distension in right lower quadrant, no erythema, visible veins, and equal movements of quadrants
- Palpation: soft, no tenderness, no organomegaly. Localised swelling in right lower quadrant with ill-defined margins measuring approximately 7x4x2 cm extending till right upper quadrant. Swelling was mobile, compressible. Surface over the swelling was smooth.
- Percussion: dull note over swelling
- Auscultation: Bowel sounds
- Genitalia: Female, introitus normal
- Anus patent

Baby passed urine and meconium after birth.

No obvious congenital anomalies.

Possible differential diagnoses for abdominal cyst in a neonate:

- Enteric duplication cyst
- Ovarian cyst
- Giant Meconium Pseudocyst
- Cystic Lymphatic Malformation
- Choledochal Cyst

Workup done:

- X-ray abdomen showed normal bowel gas pattern, no calcification.
- USG abdomen showed anechoic cystic lesion ~5.2x4.1cm seen in lower abdomen displacing urinary bladder laterally ?Mesenteric cyst/ ?Right ovarian cyst
- Paediatric surgeon consultation was sought.
- Pre-op work up showed normal haematological and biochemical parameters.
- Beta HCG and AFP (alpha feto protein) levels were high.

Laparoscopic Surgery (Fig1 & Fig 2):

At around 24 HOL diagnostic and therapeutic laparoscopy was done.

Intra Op findings:

- 8x6x5 cm right ovarian cyst extending from pelvis to right hypochondrium
- 100 ml straw colour fluid was drained.
- 1x1cm of hemorrhagic cyst noted inside
- Multiple ovarian follicles noted
- No evidence of torsion
- Fallopian tube normal

Fluid was sent for analysis and tissue for HPE.

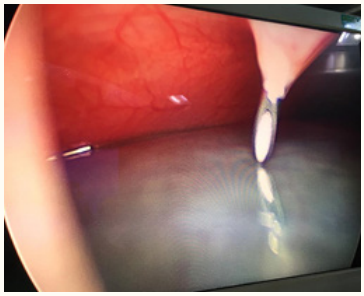

Fig 1: Laparoscopic approach

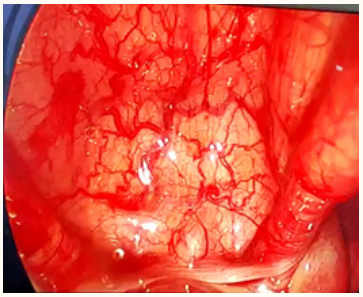

Fig 2: Intracystic view

Post operatively baby was kept NPO for 24 hours and supportive care was continued. Gradually feeds were initiated and hiked to full feeds as tolerated. Post operative period was uneventful and baby was discharged after on Day 5 of life.

HPE report:

Cyst wall lined by ciliated pseudostratified columnar epithelium along with smooth muscle and ovarian stroma in the wall. Focal haemorrhage and aggregates of hemosiderin laden macrophages and congested vessel also noted with in the wall.

Benign paramesonephric cyst with old haemorrhage.

What is the etiology of a fetal/ neonatal ovarian cyst?

The aetiology of a fetal ovarian cyst has not been entirely clarified. An ovarian cyst arise from mature follicles which are usually <2 cm in diameter. The cysts larger than this size are considered to be pathological which can be diagnosed beyond 28 weeks. Ultrasound appearances of uncomplicated ovarian cysts are completely anechoic and have thin walls. The specificity of diagnosis is increased by the visualization of normal ovarian tissue around the cyst or a "daughter cyst" along the cyst wall.

How are antenatally diagnosed ovarian cysts managed?

The management of uncomplicated ovarian cysts less than 4 cm in diameter should be conservative with follow-up by ultrasound, which usually shows spontaneous involution, within weeks to months. Complicated cysts are also known to regress although it may take longer. Cysts that are large or have undergone torsion are usually excised or treated with percutaneous needle aspiration

Therapeutic indications of antenatal ovarian cysts

- Before birth: US follow-up (3-4 weeks)
- After birth: Complicated cysts: surgery

Uncomplicated cysts: < 4 cm US follow-up

> 4 cm early percutaneous puncture and/or surgery

What are the differential diagnoses for abdominal cysts in newborns?

1. OVARIAN CYSTS:

A congenital ovarian cyst is a rare entity which can be diagnosed antenatally by ultrasonography (USG). It is the most common intra-abdominal cyst in female neonates which has good prognosis. However, it may undergo complications such as torsion or rupture in intrapartum or postnatal period causing risk to the fetus or it may cause dystocia or intestinal obstruction. The first case of an ovarian cyst was reported in 1889 in a stillborn premature. In 1942, Bulfamonte reported the first case of an ovarian cyst successfully treated during the newborn period.

2. ENTERIC DUPLICATION CYSTS:

GI masses are second in frequency to masses of genitourinary origin in the neonate, comprise **15%** of neonatal abdominal masses. Most gastrointestinal masses are enteric duplication cysts; consist of duplication of the normal enteric wall. Duplication cysts are congenital lesions of uncertain cause that can arise from any part of the digestive tract. These cysts share a muscular layer and arterial blood supply with the adjacent bowel; some have ectopic gastric mucosa. In the abdomen they arise on the mesenteric side of the bowel loops. The most frequent location is the **ileum**, followed by the **stomach**.

Most duplication cysts are closed cystic duplications, do not communicate with bowel. Rarely, they may communicate with bowel and become gas-filled. The most common clinical manifestation is **intestinal obstruction.** As the cysts contain ectopic gastric mucosa in 10–20% of cases, hemorrhage and gastrointestinal bleeding may occur. They may also present as palpable abdominal mass.

"Rim" sign of the cyst wall on ultrasound is virtually diagnostic of enteric duplication cysts. This comprises the **echogenic inner rim** of mucosa and hypoechoic **outer rim** of the muscle layer giving a double layer. Duplication cysts are usually completely excised because of the risk of complications such as volvulus and intussusception.

3. GIANT MECONIUM PSEUDOCYSTS:

Meconium pseudocyst is secondary to inutero bowel perforation. It occurs as a walling-off reaction to ensuing peritonitis by which fibrous granulation tissue contains the perforation. The perforation is often secondary to bowel obstruction caused by segmental atresia, cystic fibrosis, or volvulus, although at times no cause is identified. Large cysts can also be associated with diaphragmatic elevation and secondary ventilatory failure and with anasarca. Newborns present with abdominal distension with or without signs and symptoms of intestinal obstruction. Ultrasound features of a meconium pseudocyst are **thick, well-circumscribed echogenic cyst walls with echogenic viscous content.** Peritoneal calcification is pathognomonic of meconium peritonitis and the meconium **pseudocyst usually contains calcium deposits and plaques**

4. CYSTIC LYMPHATIC MALFORMATION:

Historically known as mesenteric, omental or retroperitoneal cysts. They are proliferations of ectopic lymphatic structures that lack communication with the normal lymphatic system. The **most common location is in the mesentery, especially the ileal mesentery.** The lesions are usually large, commonest presentation in neonate is abdominal distension with a palpable mass. On USG, typically a **large well circumscribed cystic structure with thin walls** and usually contains multiple thin septa. Large cysts may mimic ascites. The contents may be anechoic or may contain internal echoes from haemorrhage, debris, chylous fluid or infection.

5. CHOLEDOCHAL CYSTS:

The choledochal cyst is a cystic dilatation of the biliary tree. Occurs due to focal biliary dilatation as a result of inherent weakness in the biliary tree in its developmental stage. On ultrasound, **the cyst is located in the subhepatic region or at the porta hepatis, separate from the gallbladder. The "teardrop" shape** is used to describe the lesion with a round distal end and a sharp proximal end that communicates with the biliary tree. Visualization of communication of the cyst with the intrahepatic ducts is specific for diagnosis.

6. MESENTRIC CYSTS:

They are generated from mesenteric lymphatic swelling and cystic changes. The cyst wall is composed of epithelial cells and connective tissues. Within the cyst, there is chylous fluid or a small amount of blood and cellulose, and it is sometimes referred to as a celiac mesenteric cyst. Mesenteric cysts predominantly occur in the small bowel mesentery, which is near the mesenteric edge of the small intestine and a number have been known to occur beyond the mesocolon or retroperitoneal colon.

7. MULTICYSTIC DYSPLASTIC KIDNEYS:

The most common abnormalities detected at prenatal sonography are those of the urinary tract. Among them, multicystic dysplastic kidney (MCDK) is second only to hydronephrosis. MCDK is thought to arise either from abnormal ureteric budding during embryogenesis or from severe collecting system obstruction.

At sonography, MCDK is characterized by multiple cysts of varying sizes, sometimes separated by a small amount of dysplastic parenchyma. Usually the entire kidney is affected, although segmental MCDK can also occur, mostly in patients with a duplicated collecting system. The contralateral kidney has associated abnormalities in approximately one third of patients. The most common are vesicoureteric reflux (≈ 19% of patients) and ureteropelvic obstruction (≈ 5%).

8. SUPRARENAL CYSTIC LESIONS:

Neuroblastoma are the most common prenatally detected adrenal lesions. Many prenatally detected neuroblastomas contain varying degrees of grossly visible cysts and are called cystic neuroblastomas.

Conclusion:

Ovarian cysts are most common form of intra-abdominal cyst in female newborn. Ovarian cysts are one of the cause of SIDS. Size, location, nature of cyst is important to decide on need of intervention if any. Complications like torsion, rupture, haemorrhage can occur. Simple USG can detect these lesions with greater accuracy. Laparoscopic approach needs to be considered wherever possible.

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An interesting case of Necrotizing Enterocolitis in Extreme Preterm

- Necrotising enterocolitis is one of the morbidities seen in extremely preterm neonates
- We discuss here NEC in a 24 weeks neonate with birth weight of 644 grams
- NEC is common in premature babies. Giving antenatal steroids, delayed cord clamping, feeding mother's own milk, standardized feeding regimen, avoiding empiric antibiotics and antacids, early recognition of symptoms and prompt surgical intervention helps to save babies from NEC related mortality.
- Successful management of NEC and timely start of enteral feeds.

- Baby of Mrs. A was born at 24 weeks of gestation to a 26 year old primigravida mother who conceived naturally with regular antenatal checkups
- Baby was born with a birth weight of 644 grams, delivered by normal vaginal delivery.
- The baby cried immediately after birth, was given PPV for 1 minute with APGARS 6 & 8 at 1 and 5 minutes.
- Baby had HR: 154/min, RR: 54/min, BP: 48/29 (45) mm of Hg.
- All pulses were felt. S1, S2 heard, no added sounds appreciated, Silverman Anderson's score was 5/10.
- Abdomen was soft with no organomegaly, cry and activity appropriate for gestational age.
- No obvious congenital anomalies.

NICU course

- Immediately after birth baby was shifted to NICU.
- Early surfactant 2 doses given via INSURE technique in view of radiological e/o RDS.
- Baby was kept on mechanical ventilation in SIMV mode with Fio2:30%, PEEP:7, PIP:16, Ti:0.4 secs, RR:50 (Fig. 1).
- Baby was extubated to NIMV on day 4 of life.
- Inj. Caffeine started on day 1 of life.

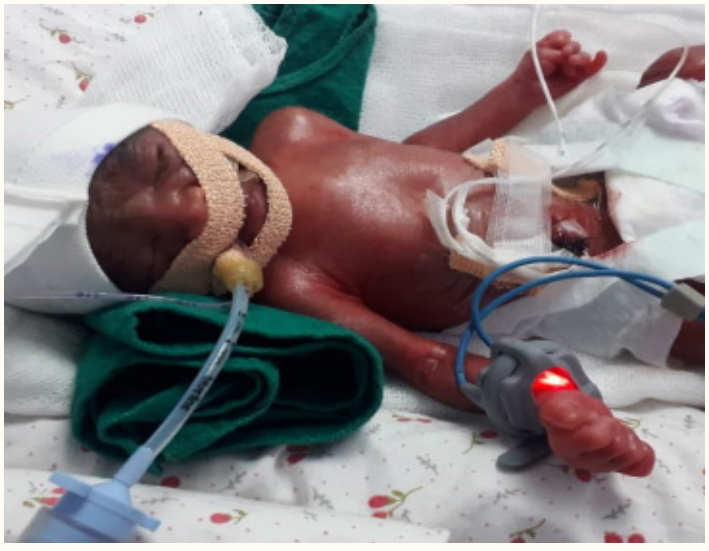

Fig. 1: The neonate on mechanical ventilator

- UAC, UVC were placed.
- 2D echo on day 2 of life showed hemodynamically significant PDA for which Injection Paracetamol was given for 3 days. Review echo on day 5 showed a tiny closing PDA.
- Baby was started on TPN and minimal enteral nutrition, with 10ml/kg initially, gradually increased to 50ml/kg feeds, as baby had bilious aspirates on day 10 of life baby was again kept on NPO and TPN increased to 150ml/kg/day.
- Empirically baby was started on Inj. Piptaz and Inj. Amikacin on day 1 of life, upgraded to Inj. Meropenem and Inj. Amikacin on day 3 of life as baby had bilious aspirate (Necrotising Enterocolitis) and given for 5 days.
- On DOL-10, baby presented with abdominal distension for 1 day, associated with increased oxygen requirement and altered aspirates.
- Baby also did not pass stools for 3 days.
- Baby developed shock needing inotropes (Inj. Dopamine and Inj. Noradrenaline).
- On examination abdomen was distended and tense.
- X-ray showed massive pneumoperitoneum with air under the diaphragm (Fig. 2).

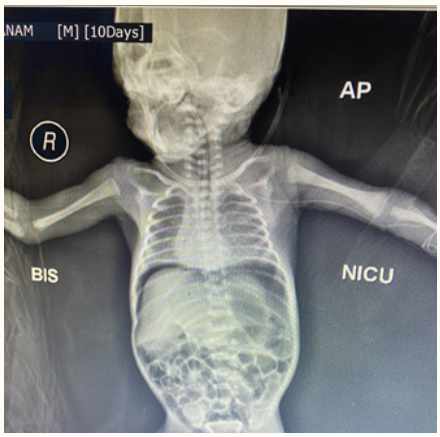

Fig. 2: X-ray s/o pneumoperitoneum

- Diagnosis- NEC Stage-III B
- After taking parental consent and informing prognosis, flank drain was placed initially.
- After stabilization, laparotomy with gastric closure and peritoneal lavage was done on DOL-11.

Intra-operative findings

- Pus in the left hypochondrium
- Gastric perforation of 0.3 mm on the posterior wall
- Small bowel appeared normal
- Splenic flexure of colon with slough (Fig. 3).

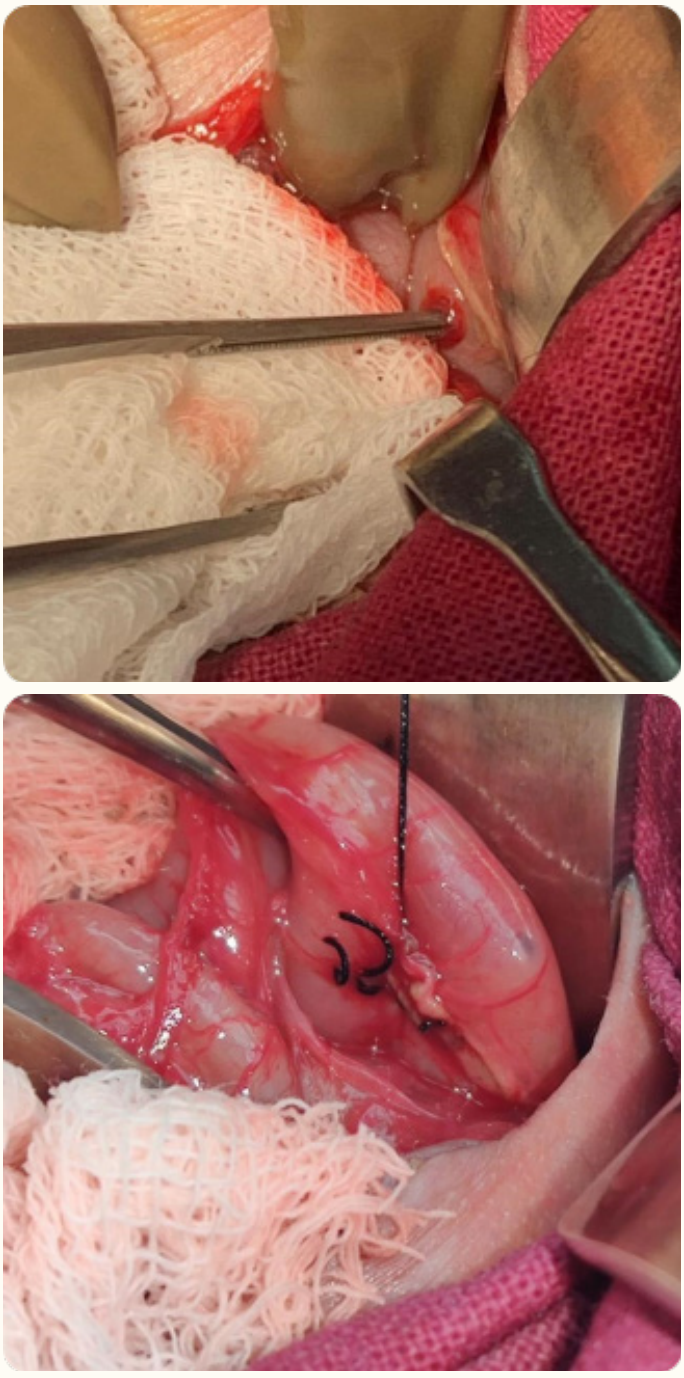

Fig. 3: Intra operative pictures

Postoperative Course

- On POD-3 baby was extubated to NIMV mode, by POD 7 baby weaned off to CPAP.
- Baby oxygen requirement slowly reduced and serial X-rays done showed mild gaseous distension only (Fig. 4).
- Baby was on TPN and NPO for one more week after surgery after which feeds were started and progressed in steps.

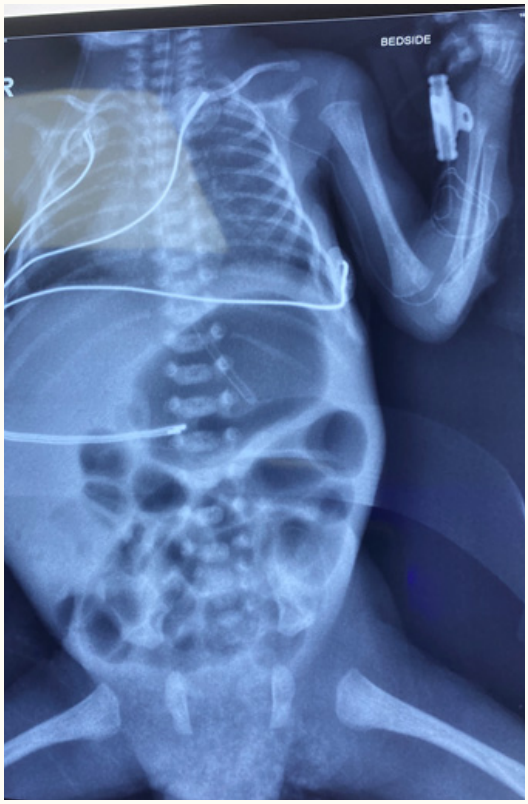

Fig. 4: Post operative X-ray after recovery

Frequently Asked Questions

1. What is necrotizing enterocolitis?

Necrotizing enterocolitis (NEC) is the most common gastrointestinal emergency of the neonate. It happens when tissue in the small and large intestine (colon) gets inflamed. Most common site is terminal ileum and ascending colon. Incidence: 0.3-2.4 cases/1000 live births, 5-10 % of VLBW infants and 2-5% of all NICU admissions. Occurs at 30-32 weeks of gestation, mean age at onset is 12 days.

2. What are the risk factors for NEC?

- Prematurity – Inflammatory propensity of the immature gut. Decreased intestinal barrier function. Decreased gut motility and aberrant vascular regulation.
- Enteral feeding – Prolonged NPO and Formula feeding. Early enteral feeding is not shown to increase the risk of NEC.
- Abnormal bacterial colonization – Prolonged empirical antibiotic therapy. Decreased commensal flora. Increased pathogenic bacteria.
- Anemia, PRBC transfusion
- Perinatal asphyxia, sepsis, PDA, Polycythemia, AEDF/REDF.
- Maternal cocaine abuse - 2.5 times increased risk. Maternal toxemia.

3. How do we make a diagnosis of NEC?

A. Clinical characteristics: Temperature instability, Apnea, Lethargy, Abdominal distension or tenderness, Gastric aspirates, vomiting (bile, blood), ileus (decreased or absent bowel sounds), bloody stools, abdominal wall erythema or induration, persistent localized abdominal mass or ascites.

B. Abdominal X-ray findings:

1. Abnormal gas pattern consistent with ileus.
2. Bowel wall edema
3. Pneumatosis intestinalis
4. Portal or hepatic venous air, pneumobilia, pneumoperitoneum (gas under diaphragm)
5. Isolated intestinal perforation

The Modified Bell's staging system for NEC is summarized below:

Stage	Systemic Signs	Abdominal Signs	Radiological Signs	Treatment
IA (Suspected)	Temperature instability, apnea, bradycardia, lethargy	Gastric retention, abdominal distention, emesis, heme-positive stool	Normal or intestinal dilation, mild ileus	NPO, antibiotics x 3 d
IB (Suspected)	= IA	Grossly bloody stool	= IA	= IA
IIA (definite, mildly ill)	= IB	= IB + absent bowel sounds with or without abdominal tenderness	Intestinal dilation, ileus, pneumatosis intestinalis	NPO, antibiotics x 7-10 d
IIB (definite, moderately ill)	= IIA + mild metabolic acidosis and thrombocytopenia	= IIA + absent bowel sounds, definite tenderness, with or without abdominal cellulitis or right lower quadrant mass	=IIA + ascites	NPO, antibiotics x 14 d
IIIA (advanced, severely ill, intact bowel)	=IIB + hypotension, badycardia, severe apnea, combined respiratory and metabolic acidosis, DIC and neutropenia	IIB + signs of peritonitis, marked tenderness and abdominal distention	= IIB + ascites	NPO, antibiotics x 14 d, fluid resuscitation, inotropic support, ventilator therapy, paracentesis
IIIB (advanced, severely ill, perforated bowel)	= IIIA	= IIIA	= IIIA + pneumoperitoneum	= IIA + surgery

- **Lab workup:** Thrombocytopenia, metabolic acidosis, persistent and severe refractory hyponatremia. Serial CRP studies may be helpful.

4. What are the differential diagnosis of NEC?

- Pneumonia & sepsis.
- Surgical abdominal catastrophes (malrotation with obstruction, midgut volvulus, intussusception, gastric perforation.
- Spontaneous Intestinal Perforation - the differences between NEC and SIP are summarized in the table below.
- Infectious enterocolitis
- Allergic colitis
- Feeding intolerance due to immature gut

	SPONTANEOUS INTESTINAL PERFORATION	NECROTISING ENTEROCOLITIS
Age of onset	Early onset (<7 days)	10-12 days
Risk factors	Prematurity	Prematurity, bacterial dysbiosis, formula feeding
Pathology	Preserved mucosal integrity, focal perforation without inflammation	Segmental coagulative necrosis of mucosa with focal hemorrhage
Clinical condition	More stable	Critical
Mortality	Less	More
Areas mostly involved	Terminal ileum / jejunum	Terminal ileum and ascending colon
Associated metabolic abnormality	None	Hyponatremia, metabolic acidosis, thrombocytopenia
	Higher association with PDA treatment (Indomethacin)	-
Type of babies affected	More common in extreme preterm babies	Preterm>>>Term (seen in CHD, polycythemia, asphyxia)

Frequently Asked Questions

5. How to manage NEC?

Medical management:

- Cardio-respiratory stability, Remove UAC, UVC.
- Discontinuation of feeds, bowel decompression through NG tube or OG tube, TPN.
- Respiratory support. Correct metabolic derangements
- Pain management, Maintain hematocrit.
- Control of source of infections (Antibiotics), send blood cultures.
- Renal stability by strict monitoring of urine output, and fluid therapy according to it.
- Neurologically strict monitoring for meningitis and IVH
- Counseling & Family support.

Surgical management:

- Prompt early consultation should be obtained with the pediatric surgeon.
- Surgical Management mainly consist of resection and enterostomy (resection with primary anastomosis is used in select cases).
- In ELBW infants (<1000gm) and extremely unstable infants, peritoneal drainage under LA can be done. In many cases, this temporizes laparotomy until the infant is more stable, and in some cases, no further operative procedure is required.
- GI perforation is a generally agreed-upon indication for surgical intervention (increasing abdominal distension, an abdominal mass, worsening clinical picture despite medical management, persistent fixed loop on serial radiographs).
- Full thickness necrosis of the GI tract (signs of peritonitis like ascites, abdominal mass, abdominal wall erythema, induration, persistent thrombocytopenia, progressive shock, or refractory metabolic acidosis).

6. What are the preventive strategies of NEC?

1. Antenatal Corticosteroids, Avoid intrapartum Augmentin.
2. Delayed cord clamping.
3. Exclusive feeding of human milk (MOM> PDHM).
4. Standardized feeding regimen.
5. Enterally fed probiotics.
6. Avoid Empiric antibiotic therapy (> 3 days).
7. Avoid antacids.
8. Avoid severe anemia and follow guidelines for PRBC transfusions.

Evidence

- Antenatal corticosteroids reduces incidence of NEC by 54% (WHO recommendations for preterm labour).
- Meta-analysis of 6 RCTs showed formula fed infants are 2.77 times more at risk of developing NEC compared to human milk fed infants.
- Probiotics reduces incidence of NEC (RR 0.70), mortality (0.76), Late onset sepsis (0.89) Cochrane 2020.
- ESPGHAN recommends (with low certainty of evidence) L.rhamnosus, B.infantis, B. lactis, S.thermophilus to reduce NEC rates.
- Delayed cord clamping reduces incidence of NEC(Cochrane 2019).

Summary

- NEC is common in premature babies. Giving antenatal steroids, delayed cord clamping, feeding mother's own milk, standardized feeding regimen, avoiding empiric antibiotics and antacids, early recognition of symptoms and prompt surgical intervention helps to save babies from NEC related mortality.
- Risk factors in our case - Extreme prematurity, Sepsis requiring antibiotics, Shock.

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Ano Rectal Malformation

- ARM is one of the commonest gastrointestinal malformations in newborns
- X-ray cross table view has replaced an invertogram to categorise the type of ARM

Case report:

Baby of Mrs Hema, was born to G3A2 mother who conceived naturally with normal antenatal scans. A single, live, term (38 weeks), male baby delivered by LSCS with birth weight 2838 grams. The baby cried immediately after birth and did not require any resuscitation. The baby was referred to our centre in view of absent anal opening. On examination, baby had a HR-154/min, RR-46/min, AF - at level. On auscultation S1,S2 were heard with bilateral air entry. Abdomen was soft with no organomegaly. Cry tone and activity were normal. Bilateral femoral pulsations were well felt.

Baby had absent anal opening with male genitalia.

Paediatric surgeon's opinion was taken. X-ray cross table lateral view, XRAY Lateral spine were done and suggestive of high anorectal malformation and surgical intervention done in the form of colostomy at 24 hours of age. 2D ECHO done suggestive of large muscular VSD for which furosemide was started.

Introduction:

Anorectal malformations (ARMs) are a complex group of congenital anomalies involving the distal anus and rectum, as well as the urinary and genital tracts

1. What is the etiology behind ano rectal malformations?

- **ETIOLOGY:**
  - Consanguinity
  - HLXB9 gene mutations
  - Congenital syndromes

2. How do we evlaluate babies with ARM?

PRENATAL EVALUATION:

- Prenatal diagnosis of most ARMs is rare.
- Presence of a cystic abdominal/pelvic mass in combination with gastrointestinal and urologic anomaly should heighten the suspicion for cloacal anomalies.

POSTNATAL EVALUATION

- Thorough physical examination.
- A clear understanding of the potential locations for perineal fistulas is essential

3. How does ARM present differently in male and female newborns?

MALES

- Examine the perineum for anal opening, covered anus or anocutaneous fistula along the median raphe. If present, the lesion is 'low': plan for anoplasty
- If there is meconium in the urine or on the urethral meatus: Lesion is 'high' with a fistula. Clinically a flat underdeveloped bottom. Usually needs a colostomy. 95% of boys present with 'high' lesion

FEMALES

- 95% of females present with low lesion: anal stenosis, anterior displaced anus or rectovestibular fistula(opening in posterior rim of the introitus)
- How many orifices can be seen?

1. Three: 'Low' lesion, can often be dilated to provide temporary relief of obstruction.
2. Two: Recto-vaginal fistula with opening above hymen
3. One: Cloaca. Always require a colostomy, lesions can be very complicated

4. What are the commonly associated malformations with ARM?

- Cardiovascular -Tetralogy of Fallot, atrial septal defect, ventricular septal defect, dextrocardia, coarctation of the aorta
- Gastrointestinal - Esophageal atresia; duodenal, jejunal, or ileal atresia; absent colon; intestinal malrotation; volvulus; Meckel diverticulum
- Musculoskeletal Hip dislocation or dysplasia, fusion of iliac bones, Madelung deformity, arthrogryposis, clubfoot, polydactyly, syndactyly, limb deficiency
- Spinal cord and spine -Sacral agenesis, vertebral dysplasia, spina bifida, tethered cord, myelomeningocele
- Urogenital - Vesicoureteral reflux, hydronephrosis, bilateral or unilateral renal agenesis, renal dysplasia, renal ectopia, horseshoe kidney, polycystic kidney, renal duplication, megaureter, exstrophy of the bladder, micropenis, hypospadias, double uterus or double vagina, vulvovaginal atresia, ambiguous genitalia

5. What are the most Common Syndromes or Multisystemic Conditions Associated with ARMs: Associations of congenital anomalies -

- VACTERL (Vertebral anomalies, Anal atresia, Cardiac malformations, TracheoEsophageal fistula, Renal and Limb anomalies),
- OEIS (Omphalocele, Exstrophy, Imperforate anus, Spinal defects),
- MURCS (MÜllerian duct aplasia, Renal aplasia, Cervicothoracic Somite dysplasia)

6. What is the role of radiological evaluation in ARM?

RADIOLOGIC EVALUATION

Invertogram at 24 hours of life:

Determine distance betwn rectum & perineal skin.

Originally: infants held in inverted position column of gas in rectum rises as high as possible with radio- opaque probe at anal dimple.

Now: Newborns placed in prone position with hips and knees flexed to chest . Infant stays in this position with bottom up for some time, and radio-opaque marker is placed at anal dimple.

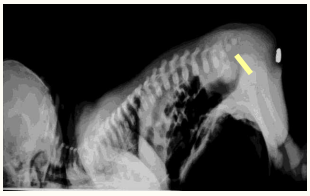
Cross-table radiograph (Minimum 3 minutes duration)

Distance between rectal gas column and bead measured.

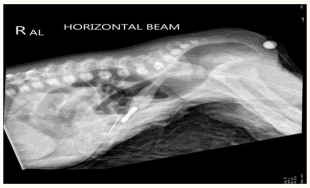
Rectal gas bubble

<1-2 cm from perineal skin -- Low lesion

>1-2 cm from perineal skin -- High lesion



HIGH ARM



LOW ARM

7. What is the role of surgical techniques in ARM repair?

SURGICAL TECHNIQUES:

Staged Repair

Stage 1: Diverting Colostomy. (Double-barrel colostomy)

Proximal end : Ostomy.

Distal end: Mucous fistula.(Mucous fistula subsequently used to perform distal colostogram before the second stage)

Stage 2: Definitive reconstruction: (At about 1 year age)

Two main approaches for reconstruction of ARM:

PSARP (posterior sagittal anorectoplasty)

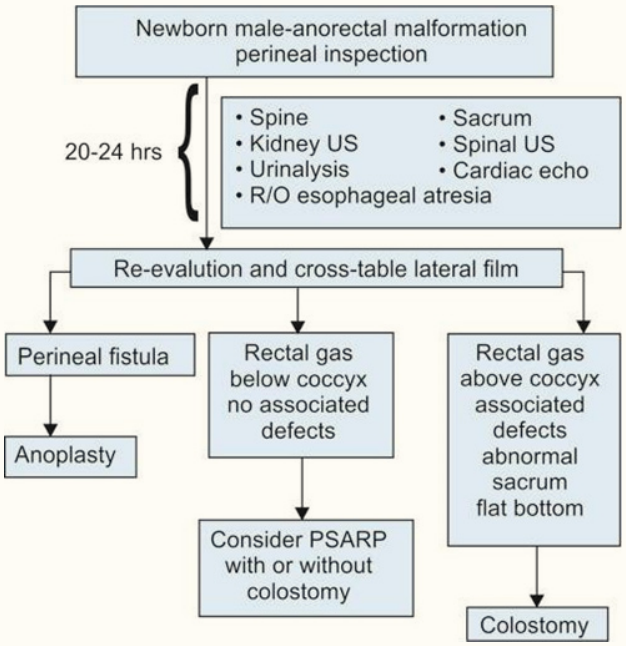
LAARP (Laparoscopy-Assisted Anorectoplasty

Stage3: Colostomy Closure.

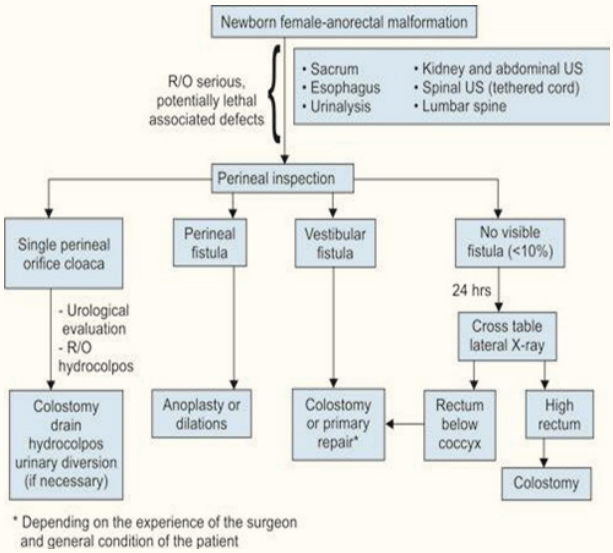
Once the reconstruction has been performed and healed, the colostomy is reversed.

Typically 4 to 6 weeks after reconstruction

MANAGEMENT OF MALE ANORECTAL MALFORMATION



MANAGEMENT OF FEMALE ANORECTAL MALFORMATION:



Dr. Rajshri Prasad
Registrar - Paediatric

Dr. Aparna C
Clinical Director - Neonatology
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Notes:

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KIMS CUDDLES
MOTHER & CHILD CENTRE

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