First ever book conceptualized for giving One Touch to Pediatrics by Flowcharts • Tables • MCQs • One-Liners



# ONE Touch Pediatrics

## For NEET/NEXT/FMGE/INI-CET

#### **Special Features**

- Written and Compiled by a Leading Faculty and Subject Expert of Pediatrics
- Enriched with Latest Updates up to July 2023
- Entire theory covered in just 192 pages in Flowcharts, Tables and One-liners format
- **100+** MCQs of Recent Exams covered up to July 2023
- All important Images/Illustrations covered



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### **Anand Bhatia**





(One Stop Solution For Last Minute Revision For NEET/NEXT/FMGE/INI-CET)



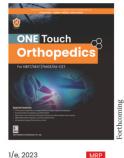
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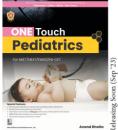
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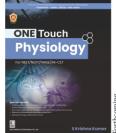


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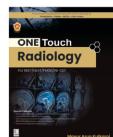


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# ONE Touch Pediatrics

### For NEET/NEXT/FMGE/INI-CET





# **ONE Touch** Pediatrics

### For NEET/NEXT/FMGE/INI-CET

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### ONE Touch Pediatrics

For NEET/NEXT/FMGE/INI-CET

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#### Hello friends!

First of all, I would like to extend my heartfelt thanks to all of you for reading my book and giving your blessings. I still remember, when I was doing MBBS, I faced huge difficulty in covering my syllabus. I had no idea how to study in a proper way and how to crack exams. That day, I promised myself that one day I will change the whole thought process of teaching and will introduce a different way of learning.

So, here is the result of my day and night efforts. I am introducing to you this book which covers all the theories and clinical topics for your UG and PG exams. There is one precious message I would like to convey to all of you: "Never stop believing in your dreams, they were given to you for a reason. Just find the purpose of your existence in this life and once you find it, spend your whole life cherishing it; because once you follow your passion, life becomes beautiful."

#### Who Can Use This Book?

Anyone Who is Preparing for UG and PG Exams.

#### How Should I Read This Book?

- If you are a final year student then develop the habit of finishing one chapter in a day. By the end of the same day, call one of your close friends and just teach him/her whatever you read. (You will never forget that topic in your life).
- If you are appearing for PG entrance exam—you must finish this book in 5 days.
- Time for first reading: 5 days
- Time for second reading: 3 days
- Time for third reading: 2 days

(Try to focus on the images and tables)

#### Always Remember:

"10 किताबों को एक बार नहीं, एक किताब को 10 बार पढ़ो।"

"Instead of reading 10 books one time, Read one book 10 times."

"Life is a one-time offer—use it well."

**Anand Bhatia** 



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#### LATEST QUESTION PAPERS

NEET 2023-2021	
INI-CET 2023-2021	
FMGE 2023 (July and January)	
FMGE 2022	





# THEORY Dedicated to Education



#### **1. GROWTH AND DEVELOPMENT**

#### "If the world was blind, how many people you would have impressed."

Greek Meaning of Pediatrics

Pedia = childLatrics = healer

#### Periods of Growth

Ovum: 0-2 weeks Embryo: 3-8 weeks Fetus: 9 weeks-birth

#### IMPORTANT DEFINITIONS

- Neonate: 0–28 days of life
- Early neonate: 0–7 days •
- Late neonate: 7–28 days
- Infant: 29 days till 1 year
- Toddler: 1–3 years
- Preschool: 3–6 years
- School: 6–12 years
- Adolescent period:
  - Early: 10−13 years
  - Middle: 14–16 years
  - Late: 17−19 years
  - Normal head circumference (HC) at birth: 33-35 cm
  - Rate of increment:
    - O-3 months: 2 cm/month
    - 3-6 months: 1 cm/month
    - 6-12 months: 0.5 cm/month
  - Normal weight of a newborn: 2.5-4 kg
- Average Indian baby weight: 3 kg
- Weight doubles by 5 months and triples by 1 year

#### RATE OF INCREMENT OF WEIGHT

- 1. 0-2 months: 20-40 g/day
- 2. **3–12 months:** 400 grams every month till 1 year 4. After 7 years—3 kg/year

#### Remember

Weight of a 1-year-old is 10 kg

As the age increases, weight increases in even number, that means

Wt. of a 2-year-old will be 12 kg

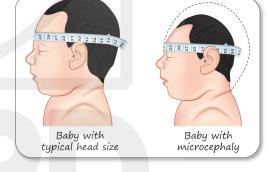
3-year-old: 14 kg 4-year-old: 16 kg 5-year-old: 18 kg 6-year-old: 20 kg

#### Weech's Formula for calculating expected weight

1. 3-12 months =  $\frac{9+x}{2}$  $x \Rightarrow age in months$ 2. 1-6 years = 2x + 8 $x \Rightarrow age in years$ 3. 7-12 years =  $\frac{7x-5}{2}$  $x \Rightarrow age in years$ 

Note: \* Repeated question

\*\* Multiple times repeated question







- 3. 2 kg/year for next 7 years

#### Golden Points

- Length of a newborn: 48–50 cm (19–21 inches)
- Length doubles by 4 years and triples by 12 years
- Length of a 4-year-old will be 100 cm and 12-year-old will be 150 cm
- After 4 years, child gains 6 cm/year height every year till 12 years
- Length of a 1-year-old is 75 cm (means from birth till 1 year there is an increment of 25 cm)
- Expected height formula: Age (in years) multiply by 6 + 77
- <2 years we take the length of baby</li>
- >2 years we take the height

Legal Age Definitions					
Definition of child	<18 years				
Minimum age of marriage	Boy <21 years, Girl <18 years				
Responsibility of crime	12 years				
Juvenile criminal	12–18 years				
Compulsory free education	6–14 years				

#### Infantometer: To Measure the Length of 0-2 years

- Stadiometer: To measure the height of >2 years
- Standing height is about 0.7 cm less than the recumbent length •

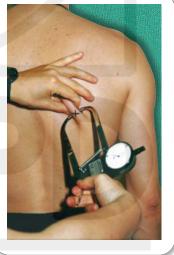
#### Harpenden Caliper

- 1. To know the caloric reserve of the body
- 2. Measured to the nearest of 1 cm



Infantometer

Microcephaly: Head circumference <-3 SD (standard deviation)



Harpenden Caliper

Macrocephaly: HC >2 SD

1-6 years is >10 mm

If it is <6 mm—malnutrition

Normal value

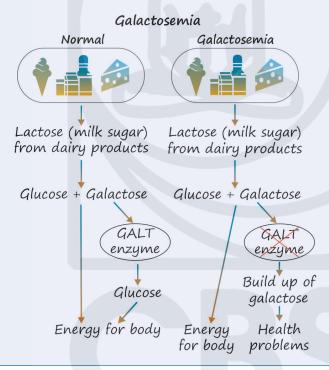
#### THEORY

#### TURNER SYNDROME: MNEMONIC-LOW CABINS

- : Low thyroid, lymphedema L
- 0 : Ovaries under developed, Streak ovaries
- W : Webbed neck
- : Cystic hygroma С
- : Primary amenorrhea, high arched palate Α
- Bi : Bicuspid aortic valve (Most common heart disease in Turner) Absent Barr body\*\*
- : Nipples widely spaced Ν
- : Short stature, horseshoe shaped kidney\*\* sensorineural hearing loss, short S 4th metacarpal

#### Galactosemia

- Breastfeeding contraindicated
- Oil drop cataract
- Hypoglycemia



#### Acquired microcephaly Hand wringing movement Intellectual disability X-linked dominant

Common in girls

Rett syndrome

•

•



#### GENE MUTATION

- TCOF1: Treacher Collins
- FGFR1: Pfeiffer syndrome
- FGFR2: Crouzon syndrome
- FGFR3: Achondroplasia
- ATP7b: Wilson disease
- ATP7a: Menkes disease
- ABCC2: Dubin Johnson
- PTPN11: Noonan syndrome
- MECP2: Rett syndrome
- GABRA 1: Juvenile myoclonic epilepsy (JME)



#### MARFAN SYNDROME

- M Mitral valve prolapse •
- A Arachnodactyly/camptodactyly (contracture of the fingers) + autosomal dominant\*
- R Retinal detachment
- F Fibrillin deficiency FBN1 ch.15q21/flat feet, facial features (flattening of midface—malar hypoplasia), flexible joints (joint laxity)
- A Aortic aneurysm, arm span > height, arch (high arch)palate)
- N -ve urinary cyanide-nitroprusside test/pneumothorax/ nasal voice (high arch palate)/near sightedness
- S Superolateral subluxation of lens/scoliosis/sternalexcavatum or carinatum, signs

Most common congenital heart disease is mitral value prolapse. Most common cause of death is a ortic dissection.

#### DOWN SYNDROME

#### Mnemonic: "Do Eyes Checkup Along Side"

- Depressed nasal bridge
- Decreased intellectual disability (IQ)
- Down ear (low set ears)

#### Eyes

- Brushfield spots in iris
- Epicanthal folds
- Eyes mongoloid slant

#### Checkup

- Congenital Heart—most specific endocardial cushion defect, most common ostium primum ASD, VSD\*
- Congenital hypothyroidism (open posterior font\*\*)
- Clinodactyly (incurvature of finger)

#### Along

- Atlanto axial instability
- AML acute promyeloblastic leukemia M\_\*\*
- Alzheimer's

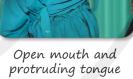
#### Along

- Occiput flat
- Open wide fontanel
- O face means round

#### Side

- Simian crease
- Sandal gap
- Short head: Brachycephaly (image)

B. Walker Murdoch sign/Wrist sign



A. Steinberg sign/

Thumb sign



crease







Single palmer

Sandal gap



•

#### Extra Points

• Most common GIT abnormality in Down syndrome is: Duodenal atresia (X-ray: Double bubble sign)



• Single bubble sign is seen in: Pyloric stenosis



Triple bubble sign: Jejunal atresia

- Most common congenital
- Heart disease in Down's syndrome

For the antenatal screening of down syndrome in 1<sup>st</sup> trimester:

- 1. Nuchal thickness >3 mm
- 2.  $\beta$ -hCG and pregnancy-associated plasma protein A (PAPP-A)

#### 2<sup>nd</sup> trimester:

Triple scan AFP, unconjugated estriol,  $\beta$ -hCG **Quadruple scan:** All 3 + inhibin A

#### THEORY

Skin	Sticky, iriable, transparent	Gelatinous, red,	Smooth, pink	Superficial peeling and/ or rash few	Cracking; pale areas;	Parchment, deep	Leathery cracked, wrinkled	
	crurspurence	translucent	visible veins	veins	rare veins	cracking no vessels	Score	Weeks
Lanugo	None	Sparse	Abundant	Thinning	Bald areas	Mostly bald	-10	20
Plantar	Heel-toe	>50 mm,	Faint, red	Anterior	Creases	Creases over	-5	22
surface	40-50 mm: -1 <40 mm: -2	no crease	marks	transverse crease only	anterior 2/3	entire sole	0	24
		Barely	Flat areola,	Stippled	Raised	Full arola	5	26
Breast	Imperceptible	perceptible	no bud	areola 1–2 mm bud	areola 3–4 mm but	5-10 mm bud	10	28
			Slightly	Well curved			15	30
Eye/ear	Lids fused, loosely: 1	Lids open; pinna flat,	curved pinna;	pinna;	Formed and firm, instant	Thick cartilage ear stiff	20	32
290, 000	tightly: -2	stays folded	soft, slow recoil	soft but ready recoil	recoil		25	34
Genitals	Scrotum flat,	Scrotum	Testes in	Testes	Testes down,	Testes	30	36
(male)	smooth	empty faint rugae	upper canal, rare rugae	descending, few rugae	good rugae	pendulous, deep rugae	35	38
		V V	Clitoris	Majora and	Majora large,		40	40
Genitals (female)	Clitoris prominent, H	nt Prominent, Prominen	Prominent,	minora	mionora	Majora cover clitoris and	45	42
(Temate)	<sup>'</sup> labia flat	small minora	enlarging minora	equally prominent	small	minora	50	44

#### \*Square Window Sign

If the fingers are touching the forearm: baby is term neonate.

#### \*Scarf Sign

If elbow is crossing the midline—baby is preterm.



#### GESTATION WISE FEEDING IN A NEWBORN



#### Golden Points

• A baby can breathe while sucking due to higher position of larynx

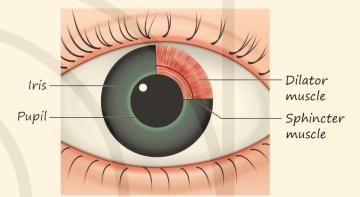


Location of brown fat

- Can newborn shiver? No
- They have nonshivering thermogenesis by the breakdown of brown fat (image showing brown fat location)
- Brown fat is absent in mesentery
- Do newborn have tears? No
- Are newborns color blind? Yes

#### Newborn's pupils are constricted

- ROP (retinopathy of prematurity) screening:
  @32 weeks of gestation or 4 weeks postnatal age (which ever is later)
- Risk factor: Prematurity and oxygen toxicity
- Keep the target SpO, in newborn 91-94%
- Treatment: Bevacizumab (intravitreal)



Immature dilator muscle in a newborn

#### Extra Points

Is babinski response (extensor plantar response) normal in newborn?

Yes it is normal (image attached)



Normal temp of newborn	36.5° – 37.5°C
Mild hypothermia/cold stress	36-36.5
Moderate	32-36
Severe	<32
Hyperthermia	>37.5

- Nursery temp should be kept: 22°-26°C (72°-78°F)
- Noise decibels allowed in NICU is 45 DB

Imp PYQs

### Dealcatea to Laucation

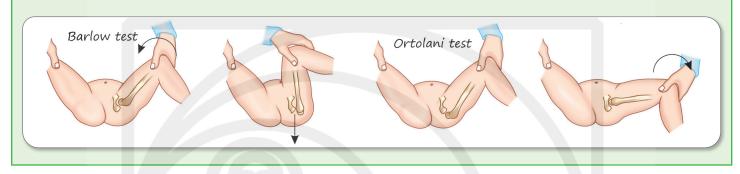
#### **Recent** Question

Q: The range of environmental temp at which the BMR is at minimum, oxygen consumption is least and baby maintains its normal body temp is called:

- A. Thermoneutral environment
- C. Ambient environmental temp
- B. Thermal comfort zone
- D. Ideal thermal environment

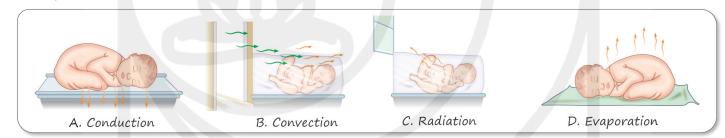
#### Test for:

- B for barlow B for bad
- In barlow we are dislocating the hip (image)
- In Ortolani test we are relocating the hip (image)



#### Method of Heat Loss in Newborn

- A. Conduction: Directly in contact with cold surface
- B. Convection: Fan/open window
- C. Radiation: Inevitable: Have to happen, through skin\*
- D. Evaporation: Near a cold surface or near a cold wall of nursery



#### APGAR SCORE

	Indicator	0 point	1 point	2 points
А	Appearance (skin color)	Blue; pale	Pink body; blue extremities	Pink
Р	Pulse	Absent	Below 100 bpm	Over 100 bpm
G	Grimace (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
А	Activity (muscle tone)	Absent	Flexed arms and legs	Active
R	Respiration	Absent	Slow and irregular	Vigorous cry

- Normal APGAR >7
- Moderate birth asphyxia: 4–7

- Severe birth asphyxia: 0-3
- Respiratory rate is not a part of APGAR score

#### NEONATAL SEPSIS

#### "There is no shortcut to success, we all have taken the stairs."

- Types
- Early-onset sepsis (EOS) <72 hours
- Late-onset sepsis (LOS) >72 hours
- MCC in India: Acinetobacter f/b klebsiella
- MCC throughout in the world: E. coli
- MCC overall in the world: Group B streptococci
- MCC of early onset sepsis: Group B streptococci
- Poor feeding (earliest clinical feature)
- Hypothermia (more common)/hyperthermia
- The most common manifestation of LOS neonatal sepsis: Meningitis
- Gold standard IOC: Blood culture
- Treatment: Antibiotics

#### SEPTIC SCREEN IN NEONATAL SEPSIS

Components	Abnormal value		
Total leukocyte count	<5000/mm <sup>3</sup>		
Absolute neutrophil count	Low counts as per Manroe chart for term and Mouzinho's chart for VLBW infants		
Immature/total neutrophil	>0.2		
Micro-ESR	>15 mm in 1 <sup>st</sup> hour		
C-reactive protein (CRP)	>1 mg/dL		

#### Golden Point

Which is the risk factor in EOS which warrants immediate antibiotic treatment? Foul-smelling liquor

## CONDITIONS IN A NEWBORN WHICH LOOKS ABNORMAL BUT ARE NORMAL & THEY ARE SELF RESOLVING WITH NO TREATMENT REQUIRED



Hymental tag



Milia: keratin deposition beneath the skin



Epstein pears: inclusion cyst over the hard palate



Neonatal pustular melanosis: maculopapular pustular rash without an erythematous base contains accumulation of neutrophils (remember n for neonatal n for neutrophils



Mongolion spot—most common location is lumbosacral region



Erythema toxicum: maculopapular pustular rash with an erythematous base—it contains accumulation of eosinophils (remember e for erythema e for eosinophils)



Harlequin color change



Stork bite/salmon patch/nevus simplex—these are small capillary hemangiomas

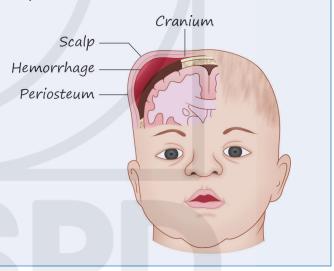
#### HEAD SWELLINGS IN A NEWBORN

#### Caput succedaneum

- Cause: Prolonged labor
- Not confined to suture line
- Doesn't cause jaundice
- Resolves in 3 days
- Content: Fluid
- Onset: Appears within few hours after birth
- Location (plane of swellings): Subcutaneous plane

#### Cephalohematoma

- Cause: Traumatic or forceps delivery
- Confined to suture line
- Causes jaundice
- Resolves in 3–6 weeks
- Content: Blood
- Onset: Appears 3–5 days after birth
- Location: Between skull and periosfeum (usually over parietal bone)



#### Layers of Scalp

- S Skin
- C Connective tissue
- A Epicranial aponeurosis/galea aponeurotica
- CAPUT succedaneum swelling is b/w S and A
- L Loose areolar tissue
- P Pericranium/periosteum
- Cephalhematoma is b/w A and P

#### Ichthyosis Vulgaris

- Defective lipid transport
- Defective dev. of normal skin barrier



Icthyosis vulgaris

- Autosomal recessive
- Thickened, ridged, and cracked skin forms horny plates over the entire body, disfiguring and constricting the digits.
- Rx: Fluids—to avoid dehydration from transepidermal water loss
- Emulsifying agents
- Oral retinoids
- Hygiene
- MCC of distress in:
  - Preterm: HMD/RDS
  - Term: Transient tachypnea of newborn (TTN)
  - Post-term: Meconium aspiration syndrome (MAS)
- MCC of neonatal mortality is: Prematurity

#### INFANT OF DIABETIC MOTHER (IDM)

- Mother will be hyperglycemic and baby will be hypoglycemic
- Infant of diabetic mother will always be a macrosomic baby (>4 kg)
- IDM baby's will never be IUGR or low birth weight baby
- Most common congenital heart disease: Ventricular septal defect
- Most specific: TGA
- Most common neurological abnormality: Neural tube defect
- Most specific: Caudal regression syndrome/sacral agenesis
- All organs increase in size except brain



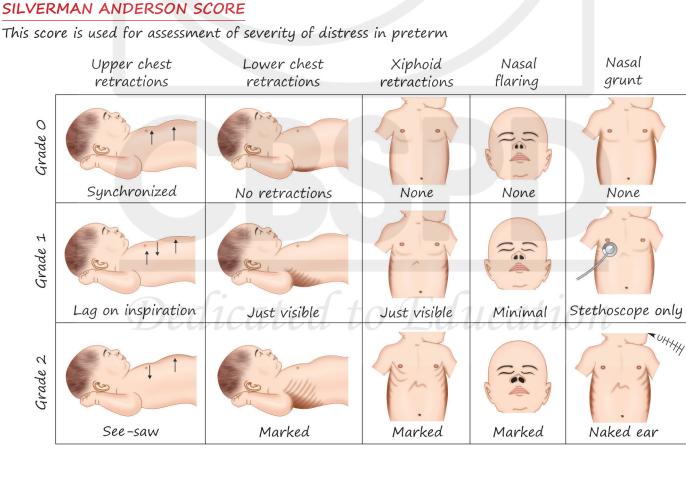




Macrosomic baby

#### Sacral agenesis

Caudal regression syndrome

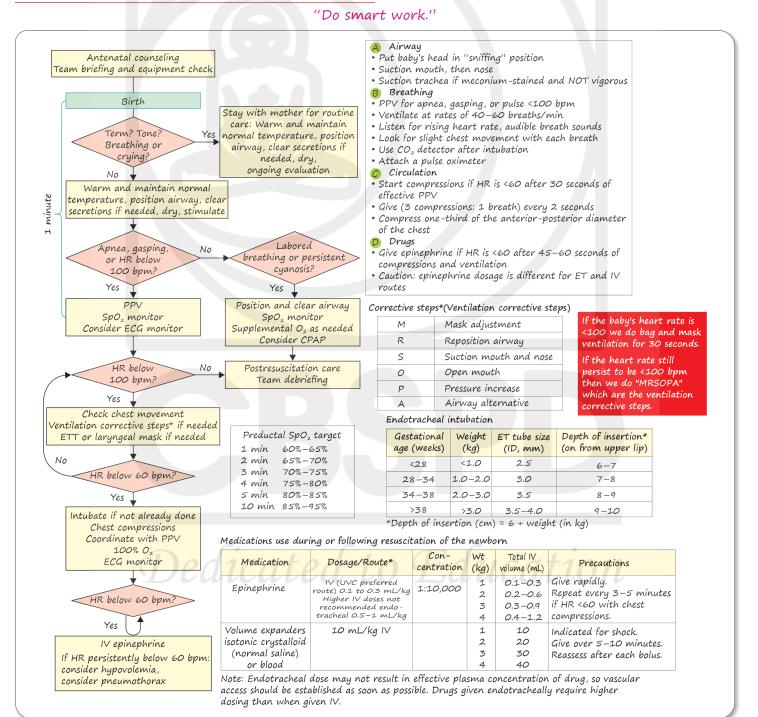


#### DOWNE SCORE

Used in term neonates for assessment of severity of distress.

Score	0	1	2
Respiratory rate (rate/min)	<60	60-80	>80
Cyanosis	None in room air	No cyanosis with oxygen support	Cyanosis in spite of oxygen support
Retractions	None	Mild	Moderate to severe
Grunting	None	Audible with stethoscope	Audible without stethoscope
Air entry	Good	Decreased	Barely audible

#### NEONATAL RESUSCITATION (LATEST UPDATE)



3

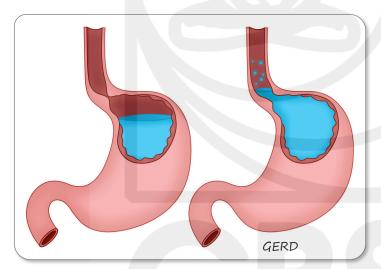
#### THEORY

#### 15. GIT/HEPATOLOGY

"If that's what you are Then that's who you are There's no use in fighting it & If you are not gonna fight it You might as well embrace it."

### GASTROESOPHAGEAL REFLUX DISEASE (GERD)

- Most common esophageal disorder in children
- Passing the gastric contents of esophagus into the esophagus
- About 50% of healthy 3–4 months old infants regurgitate at least once per day.
- Risk factors:
  - Obesity
  - Esophageal atresia
  - Preterm babies
  - Cystic fibrosis
  - Cerebral palsy



- Clinical features:
  - Regurgitation of feed
  - Not gaining weight
  - Heartburn
  - Hematemesis
  - Dysphagia
  - Odynophagia
- Stridor
- Sandifer syndrome: Arching of the back with spasmodic dystonia
- Gold standard: 24-hour pH recording
- **24-hour esophageal manometry:** Measurement of the esophageal acid exposure

- UGI endoscopy: Erosions/breaks in the distal esophageal mucosa
- Complications:
  - Stricture esophagus
  - Barrett's esophagus
  - Treatment:
    - Lifestyle modifications/propped up 45°
    - Avoid tea/coffee
    - Trial of an extensively hydrolyzed protein formula.
    - H<sub>2</sub> receptor antagonist (ranitidine)
    - **PPI proton pump inhibitors**: Lansoprazole (treatment of choice)
    - Surgery: Nissen fundoplication

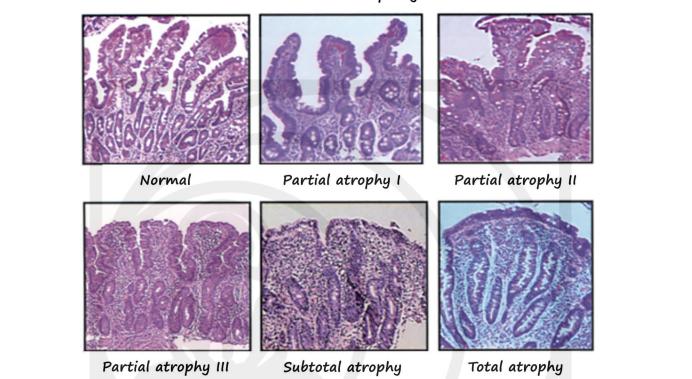
#### CELIAC DISEASE

- Celiac disease is a disease of:
  - Genes HLA class 2 HLA DQ2, HLA DQ8 (HLA – human leukocyte antigen)
  - Grains gluten sensitivity
  - Hallmark lesions
  - Villus atrophy
  - Crypt hyperplasia
  - Increased intraepithelial lymphocytes (IELs)
- Patient is sensitive to gluten
- Gluten is present in:
  - o Wheat
  - Chapati
  - o Cake
  - Muffin
  - Burger
  - o Pizza
  - o Sandwich
    - Hot dog
  - o Bread

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- Typical clinical features:
  - Vomiting
  - Diarrhea

The celiac enteropathy



- Constipation
- Failure to thrive



Dermatitis herpetiformis

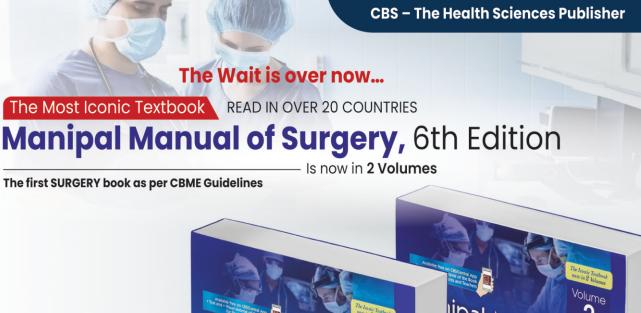
- Extraintestinal manifestations are more common which are:
  - Dermatitis herpetiformis: Intense itchy blisters filled with water—elbows/knees/ lower back
  - Failure to thrive
  - Short stature
  - Delayed puberty
  - Arthritis
  - Osteopenia
- Most common extraintestinal manifestation of celiac disease: Iron deficiency anemia.



Dermatitis herpetiformis

- MC cause of chronic diarrhea in children: Celiac disease.
- Small bowel diarrhea is seen.
- First serological testing: tTg-IgA (Tissue transglutaminase IgA).
- <2 years: EMA: Endomysial antibodies.
- Duodenal biopsy: Scalloping.
- The degree of villus atrophy and the number of IEL are based on: Marsh Oberhuber classification.





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#### **About the Author**

**Anand Bhatia** *MBBS MD* (*Pediatrics*) is one of the youngest Pediatricians who has made his presence felt in the entire nation in a short span of time. He has done his MBBS from Dr. B.R. Ambedkar Medical College, Bangalore, Karnataka. He pursued his MD Pediatrics from Teerthanker Mahaveer University, Moradabad, Uttar Pradesh. He has a wonderful teaching experience of 7 years and is currently working as Assistant Professor in N.D.M.C. Medical College, Hindu Rao Hospital, New Delhi. Pediatrics has always been a loving & caring branch and Dr Anand has justified it by his exemplary services to this branch of medicine.



He has changed the way of teaching by introducing real case scenario or clinical teaching and video-based learning which is new creation in the history of mankind. The only genuine intention of creating this book is to give an authentic knowledge of learning in the field of Pediatrics. Give your best & destiny will do the rest is the motto of the author.



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