OBSERVATIONS ON CONGENITAL ANOMALIES OF GASTROINTESTINAL TRACT

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ABSTRACT: INTRODUCTION: Congenital developmental anomalies of gastrointestinal tract are one of the commonest development anomalies encountered in newborn babies. Its prevalence is on increase, presumably because of the improvement in diagnostic as well as improvement in the healthcare awareness among the masses and lowering of infant mortality rate. **AIMS AND OBJECTIVE:** To evaluate the incidence and pattern of developmental malformation of digestive tube in newborn babies. **MATERIALS AND METHODS:** The work has been confined to regular search of any type of developmental malformation of digestive tube in the new born delivered in the Labour Room and further study of the anomalies were done during the surgical operation of the cases in the operation theatre of paediatric surgery unit. Altogether, 78 cases have been collected with different types of congenital anomalies in G.I.T. and further study of age of onset, initial presentation and association with other anomalies were studied. **RESULTS:** In the present study of 78 cases, we have observed the children and newborn with 9 various types of developmental errors in G.I.T. (Table - 1). Among all the cases the incidence of ano-rectal malformation (ARM) was the highest (28%) followed by persistence of vitelline duct (15%), oesophageal atresia with tracheoesophageal fistula (TEF) (2%), congenital pyloric stenosis, intestinal atresia and stenosis (10% each), Hirschsprung's disease (9%), Exomphalos (8%), malrotation of gut (5%) and annular pancreas (3%). Among persistence vitelline duct umbilical adenoma was a common finding. The sex incidence of cases in the present study, the male children outnumbered the females. The approximate ratio was 3:1. **CONCLUSION:** Every baby, after birth should be thoroughly examined clinically as well as by passing an infant feeding tube per orally up to the stomach and examined per rectally up to the stomach and examined per rectally up to the accessible part of rectum so that congenital anomalies of these parts are not missed.

KEY WORDS: congenital anomalies of gastrointestinal tract, developmental malformation of digestive tube.

INTRODUCTION: Congenital developmental anomalies of gastrointestinal tract are one of the commonest development anomalies encountered in newborn babies. Its prevalence is on increase, presumably because of the improvement in diagnostic as well as improvement in the healthcare awareness among the masses and lowering of infant mortality rate. Developmental anomalies of GIT are more amenable to surgical correction than those of other systems. Hence the outcomes of the surgical corrective measures are more favourable as compared to the anomalies of other systems. Many of these congenital GIT anomalies, which previously used to be incompatible with survival, can now be successfully corrected and lives of many such babies are now being saved. This has been possible because of the better understanding of the problem and availability of better diagnostic modalities and improved post operative care in paediatric and neonatal ICUs. Prior to 1939, many of

these anomalies used to be fatal all over the world. Almost all of the common congenital developmental anomalies of the GIT are correctable surgically these days and are compatible with survival if corrective measures are undertaken early by experts in the field of paediatric surgical units well equipped with paediatric ICU for postoperative life support systems. Commonly encountered conditions include oesophageal atresia with or without tracheoesophageal fistula (TEF), imperforate anus with or without rectovesical or rectovaginal fistula, atresia or stenosis of various parts of GIT (duodenal, jejuna, ileal etc.), persistence of vitellointestinal duct impart (Meckel's Diverticulum) or whole , aganglionosis of colon (Hirschsprung's disease), malrotation of gut etc. Although most of these anomalies are obvious at birth, many of them do not manifest clinically at birth or may not manifest at all at later age and are diagnosed only on routine investigation or operative procedures for some other problems. Some of these are not compatible with life unless corrected urgently and at the earliest.

AIMS AND OBJECTIVE: To evaluate the incidence and pattern of developmental malformation of digestive tube in newborn babies.

MATERIALS AND METHODS: The work has been confined to regular search of any type of developmental malformation of digestive tube in the new born delivered in the Labour Room and further study of the anomalies were done during the surgical operation of the cases in the operation theatre of paediatric surgery unit of Patna Medical College& Hospital Patna, Bihar. Consent was taken from both the parents for the study in all cases. The search for developmental errors in G.I.T. was made keeping in view the probable defect in different parts of the developing primitive gut i.e. :-

I. Pharyngeal gut (Cephalic part of fore gut)
II. Caudal part of fore gut
III. Mid gut
IV. Hind gut

Following types of anomalies were kept in mind during the search for developmental errors in G.I.T.:-

Pharyngeal gut:-

- Oesophageal atresia
- Trachea-oesophageal fistula
- Trachea-oesophageal fistula with oesophageal atresia

Caudal part of fore gut:-

- Pyloric stenosis
- Annular pancreas
- Duodenal atresia
- Anomalies in stomach

Mid gut:-

- Intestinal atresia and stenosis
- Remnants of vitelline duct
- Exomphalos
- Malrotation of gut

Hind gut:-

- Imperforate anus
- Rectal atresia
- Recto-vaginal fistula
- Recto-urethral fistula
- Other rectal fistula
- Hirschsprung's disease in older children

Altogether, 78 cases have been collected with different types of congenital anomalies in G.I.T.

OBSERVATION: Altogether 78 children with congenital anomalies in G.I.T. were observed individually during the period of study of which 53 were males and 25 were females. The age incidence varied from 1st day of life to 05 years. There were nine distinct types of developmental errors of digestive tract observed in this series. These were:-

1. Oesophageal atresia with tracheo-oesophageal fistula.
2. Congenital pyloric stenosis
3. Annular pancreas
4. Intestinal atresia and stenosis
5. Persistence of vitelline duct
6. Exomphalos
7. Malrotation of gut
8. Hirschsprung's disease
9. Ano-rectal Malformations.

Sl. No.	Digestive tube anomalies	No. of cases	Percentage
1.	Oesophageal atresia with tracheo-oesophageal fistula	09	12
2.	Congenital pyloric stenosis	08	10
3.	Annular pancreas	02	03
4.	Intestinal atresia and stenosis	08	10
5.	Persistence of vitelline duct	12	15
6.	Exomphalos	06	08
7.	Malrotation of gut	04	05
8.	Hirschsprung's disease	07	09
9.	Ano-rectal malformations	22	28
	TOTAL	**78**	**100**

TABLE NO.1: Showing the relative incidence of nine separate developmental errors of G.I.T among 78 cases under observations.

Sl. No.	Digestive tube anomalies	Male	Female
1.	Oesophageal atresia with tracheo-oesophageal fistula	06	03
2.	Congenital pyloric stenosis	08	00
3.	Annular pancreas	01	01
4.	Intestinal atresia and stenosis	05	03
5.	Persistence of vitelline duct	08	04
6.	Exomphalos	04	02
7.	Malrotation of gut	02	02
8.	Hirschsprung's disease	05	02
9.	Ano-rectal malformations		08
	TOTAL		**25**

TABLE NO. 2: Showing the sex incidence among the children with developmental errors or G.I.T under study.

Male: Female = 3:1

Oesophageal atresia with trachea-oesophageal fistula: Nine cases of these anomalies have been recorded in this study. All cases except one of this series were of same common type i.e. oesophageal atresia with distal trachea-oesophageal fistula. Remainder one case was oesophageal atresia without tracheo oesophageal fistula.

Sign and symptoms	No. of Cases
Saliva pouring from mouth	09
Gas shadow in stomach and intestine (seen in plain X-ray)	08

TABLE NO. 3: Showing he signs and symptoms of six newborn diagnosed as trachea-oesophageal fistula.

Passing an infant feeding tube (No.8) in the oesophagus in an attempt to reach the stomach gave a suspicion of oesophageal atresia in all the cases studied, when this procedure failed.

Sl. No.	Age in days at admission	Sex	Birth weight in lbs.	Plain X-ray chest & abdomen
1.	02	Male	7.0	Gas shadow in stomach & intestine seen.
2.	01	Female	6.0	Gas shadow in stomach & intestine seen.
3.	03	Male	7.5	Gas shadow in stomach & intestine seen.
4.	02	Male	7.0	Gas shadow in stomach & intestine seen.
5.	02	Male	6.5	Gas shadow in stomach & intestine seen.
6.	05	Male	8.0	Gas shadow in stomach & intestine seen.
7.	02	Female	7.5	Gas shadow in stomach & intestine seen.
8.	03	Male	7.0	Gas shadow in stomach & intestine seen.
9.	04	Female	6.5	Not seen.

TABLE NO. 4: Showing the age at the time of admission, sex and result of radiological investigations.

One child in the series was 05 days of age. That was due to delay in diagnosis in the hospital of periphery. The child was home delivered in the country-side.

All the children of the series were fully mature having satisfactory birth weight. There were no other associated congenital anomalies in any child.

Congenital pyloric stenosis: Eight cases of congenital hypertrophic pyloric stenosis were recorded in the present.

All cases were male children and was first born child of the parents.

The age incidence of these patients was from 21days to 52days. Most of the children were emaciated with wrinkled skins. Four children were severely cachectic.

Sl. No.	Age in days	Sex	Parent's complains	Radiological finding
1.	23	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
2.	28	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
3.	30	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
4.	47	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
5.	35	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
6.	21	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
7.	27	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.
8.	22	Male	Milky vomiting after each feed	Hypertrophied stomach, barium not passed in the duodenum.

TABLE NO.5: Showing the age, sex, complains and radiological findings of all the eight recorded asses of congenital pyloric stenosis.

In all such cases pylorus was hypertrophied as observed in the operation theatre during operation (Pyloromyotomy). In every child muscular hypertrophy was so much pronounced that mucosa immediately bulged out after dividing hypertrophied muscle fibers.

Annular Pancreas: Only two cases of this anomaly were found during period of study. A male child presented in surgical emergency at the age of 06 months with complains similar to pyloric stenosis.
Intestinal atresia: Only eight cases were found of this type of anomaly. The entire eight new born baby within 06 days of age in which five were male and three female.

Sl. No.	Age in days	Sex	Sites of Atresia
1.	03	Male	Jejunum
2.	04	Female	Ileum
3.	06	Male	Ileum
4.	04	Male	Ileum
5.	05	Male	Ileum
6.	02	Female	Jejunum

7.	03	Male	Jejunum
8.	04	Female	Ileum

TABLE NO. 6: Showing the age, sex and sites of atresia among the cases of intestinal atresia.

The sites of atresia were more common in ileum (63%) than jejunum (37%). The Ileal atresia were of a long cord segment type between the intestines (two blind and, connected by cord segment).

Persistence of vitelline duct: There were twelve have been recorded during the study period of which only four were female and rest eight were men.

Sl. No.	Age	Sex	Presentation	Types of anomalies
1	1½ Year	Male	Umbilical Adenoma with mucus and watery discharge.	Meckel's diverticulum connected with atretic vitelline duct.
2	07 Years.	Male	Umbilical Adenoma with faecal discharge.	Small vitello-intestinal duct with quite patent lumen.
3	06 Months	Female	Small umbilical Adenoma with mucus discharge.	Atretic vitello-intestinal duct of small size.
4	07 Months	Male	Umbilical Adenoma with watery discharge.	Small vitello-intestinal duct.
5	09 Months	Male	Umbilical Adenoma with watery discharge.	Small vitello-intestinal duct.
6	02 Years	Female	Umbilical Adenoma with intestinal obstruction.	Long cord like connection from umbilical to Meckel's.
7	10 Months	Male	Umbilical Adenoma with intestinal obstruction.	Long vitelline duct connected with terminal ileum.
8	06 Months	Male	Umbilical Adenoma with intestinal obstruction.	Long vitelline duct connected with terminal ileum.
9	1½ Year	Male	Umbilical Adenoma with intestinal obstruction.	Long vitelline duct connected with terminal ileum.
10	11 Month	Female	Umbilical Adenoma with mucus and watery discharge.	Long vitelline duct connected with terminal ileum.
11	02 Years	Female	Umbilical Adenoma with mucus and watery discharge.	Long vitelline duct connected with terminal ileum.
12	10 Months	Male	Umbilical Adenoma with	Long vitelline duct connected

			mucus and watery discharge.	with terminal ileum.

TABLE NO. 7: Showing the age, sex and presentation of the cases diagnosed as persistence of vitelline duct.

In all the four cases of intestinal obstruction cases the vitelline ducts were long causing twisting of intestinal loops over it. Over 08 cases had small vitelline-intestinal duct.

The incidence of this anomaly was substantial in this series. It occupies 15% of cases in total number of development G.I.T. errors.

Malrotation of gut: There were 04 cases of this type of G.I.T. anomalies encountered in this study. Two were male child and another two were female child.

Sl. No.	Age in days	Sex	Parent's complain	Nature of problems
1.	02	Male	Bilious vomiting with constipation.	Caecum and ascending colon was found on left side of the abdomen.
2.	04	Female	Bilious vomiting with constipation.	Caecum and ascending colon was found on left side of the abdomen.
3.	02½	Male	Bilious vomiting with constipation.	Caecum and ascending colon was found on left side of the abdomen.
4.	03½	Female	Bilious vomiting with constipation.	Caecum and ascending colon was found on left side of the abdomen.

TABLE NO. 8: Showing age, sex, parents complain nature of rotation of gut.

All the 04 cases were observed in the operation theatre during the operation and caecum were noted. In all the cases the caecum and colon was lodged on the left side of abdomen.

Sl. No.	Age in Days	Sex	Type
1.	02	Male	Exomphalos minor
2.	01	Male	Exomphalos major
3.	03	Male	Exomphalos minor
4.	02	Female	Exomphalos minor
5.	02	Male	Exomphalos major
6.	01	Female	Exomphalos minor

TABLE NO. 9: Showing the age, sex and types of exomphalos.

It was observed that majority of the exomphalos comes as minor type (67%) in the series and male were in preponderance.

Hirschsprung's disease: 7 cases of this condition have been encountered during the present study period. Out of these 05 were male (71%) and rest were female (25%).

Among 07 patients, age incidence was 1½ to 07 years.

Sl. No.	Age in Years	Sex	Parent's complains			Findings		
			Constipation	Soiling of Napkins	Protruded Belly	Abdominal lump	R.R. Exam	Plain X-ray
1.	03	Male	++	+	+++	+	Bowel evacuate during exam faecolith felt	Colonic Dilatation
2.	02	Male	+	+	+	+	-Do-	-Do-
3.	02½	Male	++	+	+	+	-Do-	-Do-
4.	07	Male	++++	++	++	+	-Do-	-Do-
5.	02	Female	+	+	+	+	-Do-	-Do-
6.	04	Female	+++	++	+	++	-Do-	-Do-
7.	03	Male	+	+	+	+	-Do-	-Do-

TABLE NO. 10: Showing the incidence of age, sex and complains with finding in case of Hirschsprung's disease anomaly.

Sl. No.	Radiological findings	
	Plain X-ray	Barium Enema
1.	Marked colonic distention with fluid and gas level.	Funneling at the recto sigmoid.
2.	Colonic distention was present with gas	Only dilatation of colon.
3.	Colonic distention with gas and fluid levels in intestine.	Funneling at the recto sigmoid.
4.	Colonic distention was present with gas.	Only distention of colon.
5.	Marked colonic distention with fluid and gas level.	Funneling at the recto sigmoid.
6.	Colonic distention was present with gas.	Only dilatation of colon.
7.	Colonic distention with fluid and gas levels in intestine.	Funneling at the recto sigmoid.

TABLE NO.11

All the seven cases were observed during the operation. In all the cases, parents complained that the baby had not passed meconium at birth.

Sl. No.	Time of Meconium passing
1.	After 2 days
2.	After 36 hours
3.	On 3rd day
4.	After 2 days
5.	After 3 days
6.	After 4 days
7.	After 36 hours

TABLE NO. 12: Showing the time of meconium passing in 07 cases of Hirschsprung's disease.

Ano-rectal Malformation: Altogether 22 cases have been detected with this type of anomaly during the study period.

The incidence of this anomaly was quite high it occupied 28% of the cases in total number of developmental errors in G.I.T.

14 children were male and 08 were female. Male children had mostly imperforate type of anomaly.

Sl. No.	Age	Sex	Type of Deformities
1.	2 Days	Male	Imperforate anus
2.	7 Months	Female	Recto-vestibular fistula
3.	1 Day	Male	Imperforate anus
4.	1 Day	Male	Membranous anus
5.	3 Days	Male	Imperforate anus
6.	6 Months	Female	Recto-vestibular fistula
7.	7 Months	Female	Ano-valval fistula
8.	1 Day	Male	Imperforate anus (high type)

9.	2 Days	Male	Imperforate anus
10.	3 Days	Male	Ectopic anus (Anterior)
11.	1 Day	Male	Imperforate anus
12.	1 Day	Male	Imperforate anus
13.	2 Days	Male	Imperforate anus (high type)
14.	1 Year	Female	Recto-vaginal fistula
15.	2 Days	Male	Imperforate anus
16.	10 Months	Female	Recto-vestibular fistula
17.	10 Months	Female	Recto-vestibular fistula
18.	2 Days	Male	Imperforate anus (high type)
19.	2 Days	Male	Recto-vestibular fistula
20.	2 Days	Male	Recto-vestibular fistula
21.	7 Months	Female	Membranous anus
22.	1 Day	Female	Ectopic anus

TABLE NO.13: Showing incidence of age, sex and type of deformities in Ano-rectal area of G.I.T.

Type of deformities	Male	Female	Percentage Approx.
Type-I (Stenotic)	2	0	9
Type-II (Membranous)	2	0	9
Type-III (Imperforate)	9	8	77
Type-IV (Atretic)	1	0	5

TABLE NO. 14: Show type of ano-rectal malformations as per classification of Ladd & Gross (1934).

DISCUSSION: The present study of 78 Children of development errors of digestive tube, we have attempted to find out the incidence and pattern of anatomical presentation as pointed out earlier under various sections.

In the present study of 78 cases, we have observed the children and newborn with 9 various types of developmental errors in G.I.T. (Table - 1). Among all the cases the incidence of ano-rectal

malformation (ARM) was the highest (28%) followed by persistence of vitelline duct (15%), oesophageal atresia with tracheoesophageal fistula (TEF) (2%), congenital pyloric stenosis, intestinal atresia and stenosis (10% each), Hirschsprung's disease (9%), Exomphalos (8%), malrotation of gut (5%) and annular pancreas (3%). Among persistence vitelline duct umbilical adenoma was a common finding.

Contrary to the usual trend the prevalence of oesophageal atresia with TEF was substantial in the present study. Vast majority of these cases belonged to the commonest variety reported in the literature, i.e. Upper blind pouch and distal tracheoesophageal fistula.

The sex incidence of cases in the present study, the male children outnumbered the females. The approximate ratio was 3:1 (among 78 observed cases 53 were male and 25 female).

Oesophageal Atresia with Tracheoesophageal Fistula: There were nine cases of oesophageal malformation in our aeries. All of them except one belonged to the same common type of the anomaly that is esophageal atresia with distal tracheoesophageal fistula. The remaining one case was oesophageal atresia without co existing tracheoesophageal fistula.

Congenital Pyloric Stenosis: A fair number (8 cases) were found in the present series, all the children of this defect were male and first born child of the parents. The age of patients at the time of presentation was uniform i.e. between 21 to 47 days.

Hernanz-Schulman M. (2003) reported incidence of these condition as 2 to 5 per 1000 births in the white population. The sex ratio reported by him was 4:1 (Male: Female)[1]. Our finding of sex incidence in all males is different from this author who may be because of smaller size of our series as well as the period of study [1].

Intestinal Atresia stenosis and Malrotation of Gut: Altogether 8 cases of these anomalies have been analyzed and studied individually in this series. Among these, commonest was small intestine and lowest was annular pancreas defects. There were 5 cases of ileal atresia, 4 of malrotation, 2 cases of annular pancreas, 3 cases of jejunal atresia. All these patients presented with signs of small bowel obstruction. 7 among 8 children (87%) were within first five days of life (Table VI & VIII). As it is evident that these congenital defects produce symptoms from birth. The age of patient with annular pancreas was 5 months and 8 months respectively in 2 cases. The incidence of sex in the series was 5 male and 3 females. Thus M : F ratio of 1:6:1.

Grosfeld (1991) observed that bilious vomiting is slightly more common in jejunal atresia (84%) than in ileal atresia (81%), while abdominal distention is more frequently noted in ileal atresia (98% of cases)[2,3,4].

Gangopadhyay et al (2008) in a 10 years review of cases at IMS (BHU) Varanasi found bowel atresia in 7.5% cases of neonatal intestinal obstruction which is approximately the same as found in our series [5].

Persistence of vitelline duct and Exomphalos: There were 18 cases of these two anomalies of midgut area of digestive tube. Among those, 12 cases were with persistence of vitelline duct and 6 were exomphalos.

The patients with vitelline duct belonged to relatively higher age group. Incidence was from six months to seven years. The cause of this higher age presentation is the non-emergency nature of the condition.

Most important presenting feature was the presence of umbilical adenoma (Raspberry tumour). These finding alone may be considered as the "Spot Light" for vitelline duct remnant.

In this series 12 cases of vitelline duct remnant had umbilical adenoma. One case with 7 years of age presented with fecal discharge from the umbilicus.

4 patients of the present series presented with intestinal obstruction. During operative procedure the obstruction was found to be a long vitelline duct connecting terminal ileum to the umbilicus over which loops of intestine have been twisted itself leading to intestinal obstruction.

In the case with faecal umbilical fistula, the lumen of the whole of vitellointestinal duct was patent.

In 8 Cases of the present series vitelline duct was short in length.

Among the patient with exomphalos, two were of major type and remaining 4 were minor type. Commonly both types of defects occur with equal frequency, although exomphalos minor form 67% and exomphalos major were 33%. The cause of this deference is again likely to be due to smaller size of our series and shorter span of study.

HIRSCHSPRUNG'S DISEASES: Only 7 cases of this defect have been encountered in this study. The reported incidence of this defect is around one in 5000 live birth (Sieber et al, 1979) [12]. The male female ratio of this defect in our series was 2.5:1.

Rescorla et al (1992) found 82% of their patient (260 cases) to be male and 18% female [6,19,20].

ANO-RECTAL MALFORMATION: These defects are the commonest G.I.T. tube anomalies encountered in our series, i.e. 22 out of 78 cases (28%). This is the commonest anomaly of hindgut area of G.I.T. Among these, seven cases were fistulous and remaining were of imperforate type or ectopic anus. The incidence of various types of this malformation has been shown in Table-XIV. Type-I (Stenotic) was 2 cases (9%), Type-II (Membranous), 2 cases (9%), Type-III (Imperforate) 17 cases (77%) and type-IV (Atretic) had I case (5%).

Trusler and Wilkinson (1962) reported 15% incidence of type 15% of Type-II and 78% of Type-III in there review of anorectal malformations. The reports of Ladd and Gross (1934), Kiesewetter (1970) were similar. Thus our findings have marked similarity to those of these authors [7-11].

SUMMARY AND CONCLUSIONS: A study was done on the cases of developmental errors of the digestive tube which were either delivered in labour Room. The incidence and mode of presentation of different digestive tube anomalies were obtained and findings analyzed in detail.

The following variety of anomalies were encountered –

Sl. No.	Anomalies	Cases
1.	Oesophageal Atresia with or without	09 cases

	Tracheoesophageal Fistula.	
2.	Congenital Pyloric Stenosis	08 cases
3.	Annular Pancreas	02 cases
4.	Intestinal Atresia and Stenosis	08 cases
5.	Persistence of Vitelline Duct	12 cases
6.	Exomphalos	06 cases
7.	Malrotation of Gut	04 cases
8.	Hirschsprung's Disease	07 cases
9.	Anorectal Malformation	22 cases

After individual study and observations of various types of developmental anomalies of G.I.T., following conclusions were made –

1. Most of the developmental errors of G.I.T. present as surgical emergency cases in neonates and early childhood.
2. Most of the congenital errors are amenable to surgical correction and life of nearly all these patients can be saved if diagnosed early and surgical correction instituted in time.
3. Better understanding and high index of suspicion of the congenital G.I.T. defects will help in early diagnosis and prompt transport to a higher centre adequately equipped higher centre for the earliest possible surgical treatment.
4. Developmental defects in the foregut account for more than 60% of all the G.I.T. anomalies.
5. Anorectal malformations are the commonest developmental defect of G.I.T.
6. Oesophageal atresia with tracheoesophageal fistula and congenital pyloric stenosis are commonest developmental defects of foregut.
7. Vitelline Duct Remnants is the commonest developmental defect of midgut.
8. A newborn with copious mouth secretion and salivary outpouring should at once raise the suspicion of oesophageal atresia.
9. A pink colures tumour at the umbilicus (umbilical adenoma) in early childhood is the definitive sign of vitelline duct remnant.
10. By and large, male children suffer from developmental anomalies of G.I.T. more frequently than female children.
11. Last but not least, Every baby, after birth should be thoroughly examined clinically as well as by passing an infant feeding tube per orally up to the stomach and examined per rectally up to the stomach and examined per rectally up to the accessible part of rectum so that congenital anomalies of these parts are not missed.

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