International Surgery Journal
Sharma S et al. Int Surg J. 2016 May;3(2):802-811
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20160662

Research Article

A retrospective (2004-2013) and prospective (2014-2015) audit of surgical diseases of newborn with special reference to gastro-intestinal diseases and emergencies over a period of 10 years at a tertiary care centre

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Received: 15 February 2016
Received: 26 February 2016
Accepted: 01 March 2016

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ABSTRACT

Background: A surgical audit of neonatal surgical diseases especially GIT disorders whereby demanding to establish advanced tertiary neonatal care unit.
Methods: A retrospective (2004-2013) and prospective (2014-2015) audit of newborn with surgical diseases especially GIT disorders admitted in a tertiary care center of central India. The trends analyzed for the duration on gender, region and birth weight basis. A data base was generated depicting the burden of diseases in the region. The data base for the prospective study was also compared with a tertiary center from Nigeria.
Results: Total 3309 admission included 73.56 % (2438) patients of GIT diseases followed by neural tube defects & hydrocephalus (16.8%), urogenital disorders (3%) and surgical infections. Congenital anomalies were the most common cause in each category, major part being anorectal malformation (727) and trachea-esophageal fistula (730) followed by CNS neural tube defect (431). Out of 3309 admissions, 2392 neonates were operated for different indications of their disorders and total 1194 deaths recorded during this audit year 2004 to July 2014 - July 2015. Majority of new born admitted with were low birth weight male from rural skirts of this region.
Conclusions: There is significant increase in admissions in last decade with triple fold increase in GIT disorder and substantially increasing onwards. Demands generated through this audit also encouraged the health officials of this region to provide the paediatric division with two more standard working operation theatres (year 2015) with additional ventilator and resuscitation equipment for SNCU. This development has to continue further to achieve parity with international standards, as there is lack of antenatal screening and details of any antenatal check-up are scarce, for congenital anomalies at primary level. Early recognition, risk stratification of the baby and timely referral to higher paediatric surgery units is the way forward.

Keywords: Surgical audit, New born surgical disease, Gastrointestinal disorders of new born

INTRODUCTION

The neonatal period is a critical time for infants all over the world. It is well documented that more than 4 million newborns die globally every year with more than 98% of these deaths occurring in developing countries.[1,2] Birth asphyxia and infections are major contributors to these deaths.[3] However there are other silent contributors to these deaths which are usually not highlighted. Amongst these, are surgical diseases in the new born.[4]

Outcome in neonatal surgeries has greatly improved in developed countries due to better understanding of neonatal physiology, improvements in technology, and advances in neonatal intensive care.[5,6] In developing countries on the other hand, due to the burden of other childhood diseases, neonatal surgery is of low priority to health-care budget holders, thus outcomes expectedly differ from that obtainable in developed countries.[7] In many parts of the developing world, there are several challenges with neonates requiring surgeries. Some of these challenges include delivery outside hospital, delayed referral, poor transportation, and lack of appropriate personnel and facilities for intensive care.[5,7] For those who are managed surgically, post-operative care poses further challenges. For example, total parenteral nutrition is not readily available or affordable for babies in whom enteral nutrition is contraindicated for long periods.[5] These problems continue to contribute to increased morbidity and mortality in neonates with surgical problems and thus overall new born mortality. Furthermore, Resources for neonatal surgery vary hugely between the developed countries and developing countries.[7] The increasing incidence of congenital anomalies and thus neonatal surgical admissions calls for improvement in services for such babies.[4]

In continuum our study focuses on the pattern of surgical diseases in new born with special reference to emergencies of gastrointestinal tract diseases in our region. We have also focused on status of referral pattern, antenatal and postnatal duration of neonatal care as per principles of emergency care on new born, based on details in the clinical data available at the time of admission of such new born in emergency and routine hours.

Incomplete information has made it difficult to define an appropriate role for paediatric surgery in India and to assess the impact of surgical disease on child health and to do planning to improve health services and resources.

Our hospital is one of the 5 tertiary health institutions in the state. The hospital receives referrals for most elective and emergency surgical conditions of new born from all over the state.

METHODS

In this study, all neonates (Age 0 to 28th day of life) admitted in routine and emergency hours in paediatric surgery unit of surgery department of MYH, Indore in duration of year 2004 to July 2014 July 2015 participated has 10 year retrospective and 1 prospective groups with special reference to GIT disorders.

Our hospital is one of the five tertiary health institutions in the state. The hospital receives referrals for most elective and emergency surgical conditions of new born from all over the state. This audit was conducted to generate the data for epidemiological database of surgical emergencies and routine admissions of neonates in this region of state, based on gender wise, region (rural and urban) wise and birth weight wise distribution of surgical diseases of neonates specially GIT disorders with overall trend in retrospective and prospective period.

Data was retrieved from medical records of the hospital as sex, gestational age, birth weight, disease diagnosis, surgical intervention done and patient outcome between the date of admission to date of discharge of the patient. Region wise distribution was defined as per the address of the patients in the records/ referral slips. The birth weight was defined as per Indian standards of <2.5 kgs birth weight as LBW and normal birth weight as >2.5 kgs at birth.

The study also focused on the proportion of new born receiving the intervention and its outcome over the specified period of the audit. The burden of these surgical diseases was expressed as mortality rates, proportional mortality rates and case fatality rates with trends over the same period.

The records with inadequate information were excluded from the audit. The data retrieve in the audit were also compared with other tertiary centers (Nigeria Part-Harcourt 2014) for incidence (admissions), case fatality rates, intervention and outcome parameters.

RESULTS

The total number of admissions in the audit period from 2004 to 2015 was 3309 patients. Total 727 patients had anorectal malformation (462 male and 265 female, 627 rural and 100 urban, 652 LBW and 75 normal weight) out of which 651 surgeries were done (510 in retrospective period and 141 in prospective period), 561 patients were discharged (443 in retrospective and 118 in prospective period of this audit). Total 155 mortalities 118 were in retrospective and 37 in prospective period of this audit. ARM had PMR 13% and CFR 21.3%.

Total 730 patients had trachea-esophageal fistula with and without atresia (467 male and 263 female, 651 rural and 79 urban, 625 LBW and 78 normal weight) out of which 649 surgeries were done (489 in retrospective period and 160 in prospective period), 158 patients were discharged (117 in retrospective and 41 in prospective period of this audit). Total 552 mortalities 413 were in retrospective and 139 in prospective period of this audit. TOF had PMR 46.2% and CFR 75.6%.

Total 128 patients had gastroschisis (81 male and 47 female, 107 rural and 21 urban, 115 LBW and 13 normal weight) out of which 121 surgeries were done (83 in retrospective period and 38 in prospective period), 14 patients were discharged (14 in retrospective and 0 in prospective period of this audit). Total 111 mortalities 73 were in retrospective and 38 in prospective period of this audit. Gastroschisis had PMR 9.3% and CFR 87%.

Table 1: System wise admission.

	Year											
Systems	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GIT	126	154	107	150	156	176	190	273	244	282	383	193
GUT	4	5	5	3	9	7	5	21	10	9	9	6
Hydrocephalus	7	8	5	7	7	3	0	26	25	18	12	7
Neural Tube Defect	15	11	16	13	21	21	43	34	43	66	85	63
Neoplasm	1	0	1	2	2	3	0	1	3	2	2	3
Abscess and Cellulitis	4	3	2	4	3	10	4	13	12	15	32	12
Others	6	6	8	5	5	3	5	14	11	6	10	13
Total	163	187	144	184	203	223	247	382	348	398	533	297

Total 73 patients had Omphalocele (52 male and 21 female, 61 rural and 12 urban, 67 LBW and 6 normal weight) out of which 65 surgeries were done (55 in retrospective period and 10 in prospective period), 32 patients were discharged (25 in retrospective and 7 in prospective period of this audit). Total 40 mortalities 37 were in retrospective and 3 in prospective period of this audit. Omphalocele had PMR 3.51% and CFR 54.8%.

Total 44 patients had Congenital Diaphragmatic Hernia (29 male and 15 female, 35 rural and 9 urban, 40 LBW and 4 normal weight) out of which 25 surgeries were done (17 in retrospective period and 8 in prospective period), 12 patients were discharged (8 in retrospective and 4 in prospective period of this audit). Total 28 mortalities 20 were in retrospective and 8 in prospective period of this audit. Congenital Diaphragmatic Hernia had PMR 2.46% and CFR 63.64%.

Total 92 patients had Hirsch sprung Disease (65 male and 27 female, 79 rural and 13 urban, 66 LBW and 26 normal weight) out of which 39 surgeries were done (25 in retrospective period and 14 in prospective period), 81 patients were discharged (56 in retrospective and 25 in prospective period of this audit). Total 9 mortalities 5 were in retrospective and 4 in prospective period of this audit. Hirsch sprung Disease had PMR 0.79% and CFR 9.78%.

Total 171 patients had Intestinal atresia (107 male and 64 female, 137 rural and 34 urban, 149 LBW and 27 normal weight) out of which 159 surgeries were done (129 in retrospective period and 30 in prospective period), 122 patients were discharged (101 in retrospective and 21 in prospective period of this audit). Total 44 mortalities 34 were in retrospective and 10 in prospective period of this audit. Intestinal atresia had PMR 3.86% and CFR 25.73%.

Total 170 patients had perforation peritonitis (101 male and 70 female, 128 rural and 43 urban, 142 LBW and 29 normal weight) out of which 140 surgeries were done (106 in retrospective period and 34 in prospective period), 47 patients were discharged (35 in retrospective and 12 in prospective period of this audit). Total 120 mortalities 94 were in retrospective and 26 in prospective period of this audit. Perforation peritonitis had PMR 10.53% and CFR 70.6%.

Total 164 patients had intestinal obstruction (101 male and 63 female, 125 rural and 39 urban, 130 LBW and 34 normal weight) out of which 90 surgeries were done (78 in retrospective period and 12 in prospective period), 98 patients were discharged (86 in retrospective and 12 in prospective period of this audit). Total 53 mortalities 34 were in retrospective and 19 in prospective period of this audit. Intestinal obstruction had PMR 4.65% and CFR 32.3%.

Total 25 patients had meconium ileus (15 male and 10 female, 19 rural and 6 urban, 24 LBW and 1 normal weight) out of which 20 surgeries were done (17 in retrospective period and 3 in prospective period), 16 patients were discharged (15 in retrospective and 1 in prospective period of this audit). Total 8 mortalities 5 were in retrospective and 3 in prospective period of this audit. Meconium Ileus had PMR 0.70% and CFR 32%.

Total 8 patients had anal stenosis (7 male and 1 female, 8 rural and none urban, 7 LBW and 1 normal weights) out of which 8 surgeries were done (7 in retrospective periods and 1 in prospective period), 4 patients were discharged (3 in retrospective and 1 in prospective period of this audit). Total 1 mortalities 1 were in retrospective and none in prospective period of this audit. Anal Stenosis had PMR 0.09% and CFR 12.5%.

Total 6 patients had annular pancreas (5 male and 1 female, 6 rural and none urban, 5 LBW and 1 normal weight) out of which 6 surgeries were done (2 in retrospective periods and 4 in prospective period), 5 patients were discharged (1 in retrospective and 4 in prospective period of this audit). Total 1 mortalities 1 were in retrospective and none in prospective period of this audit. Annular pancreas had PMR 0.09% and CFR 16.6%.

Total 16 patients had congenital hyperpyloric stenosis (11 male and 5 female, 12 rural and 4 urban, 11 LBW and 5 normal weight) out of which 15 surgeries were done (10 in retrospective period and 5 in prospective period), 16 patients were discharged (11 in retrospective and 5 in prospective period of this audit) no mortalities.

Total 28 patients had malrotation (20 male and 8 female, 20 rural and 8 urban, 26 LBW and 2 normal weight) out of which 26 surgeries were done (17 in retrospective period and 9 in prospective period), 21 patients were discharged (17 in retrospective and 7 in prospective period of this audit). Total 4 mortalities 2 were in retrospective and 2 in prospective period of this audit. Malrotation had PMR 0.35% and CFR 14.2%.

Total 41 patients had cong umbilical and inguinal hernia (27 male and 14 female, 30 rural and 11 urban, 31 LBW and 10 normal weight) out of which 39 surgeries were done (27 in retrospective period and 12 in prospective period), 36 patients were discharged (28 in retrospective and 8 in prospective period of this audit). Total 4 mortalities none were in retrospective and 4 in prospective period of this audit. Cong umbilical and inguinal hernia had PMR 0.35% and CFR 9.7%.

Total 11 patients had choanal atresia (11 male and none female, 8 rural and 3 urban, 10 LBW and 1 normal weight) out of which no surgeries were done, 1 patients were discharged (1 in retrospective and none in prospective period of this audit). Total 10 mortalities, 10 were in retrospective and none in prospective period of this audit. Choanal atresia had PMR 0.88% and CFR 90.9%.

Total 3 patients had biliary atresia (2 male and 1 female, 3 rural and none urban, 2 LBW and 1 normal weight) out of which 3 surgeries were done (3 in retrospective period and none in prospective period), 3 patients were discharged (3 in retrospective and none in prospective period of this audit) no mortalities.

Gender distribution of GIT disorders in neonates

Total of 2438 admissions 1563 are male and 875 are female patients of GIT disorders in neonates. There are 462 male patients suffering from ARM and 467 male patients suffering from TOF admitted in MYH during Year 2004 to 2014-15. There are 265 female patients of ARM and 263 TOF patients admitted during the same period. Gastroschisis 81 males and 47 females, omphalocele 52 male and 21 female and rest are shown in Table 2.

Disease wise regional distribution of GIT disease and emergencies

Total of 2438 GIT neonatal admissions 2056 belong to rural area and 382 belong to urban parts of this region. There are 627 ARM patients from Rural and 100 from urban areas, 651 TOF patients from rural and 79 from urban area and rest are shown in Table 3.

Table 2: Gender distribution of GIT disorders in neonates.

No.	Disease	Male	Female
1	Arm	462	265
2	TOF	467	263
3	Gastroschisis	81	47
4	Omphalocele	52	21
5	CDH	29	15
6	Hirshsprung DS	65	27
7	Intestinal atresia	107	64
8	Perforation peritonitis	101	70
9	Intestinal obstruction	101	63
10	Meconeum ileus	15	10
11	Anal stenosis	7	1
12	Anular pancreas	5	1
13	Cong HPS	11	5
14	Malrotation	20	8
15	Cong umblical hernia	27	14
16	Choanal atresia	11	0
17	Biliary atresia	2	1
	Total	1563	875

Table 3: Disease wise regional distribution of GIT disease and emergencies.

No.	Disease	Rural	Urban
1	Arm	627	100
2	TOF	651	79
3	Gastroschisis	107	21
4	Omphalocele	61	12
5	CDH	35	9
6	Hirshsprung DS	79	13
7	Intestinal atresia	137	34
8	Perforation peritonitis	128	43
9	Intestinal obstruction	125	39
10	Meconeum ileus	21	6
11	Anal stenosis	8	0
12	Anular pancreas	4	0
13	Cong HPS	12	4
14	Malrotation	20	8
15	Cong umblical hernia	30	11
16	Choanal atresia	8	3
17	Biliary atresia	3	0
	Total	2056	382

Disease wise weight distribution

Total of 2438 GIT neonatal admissions 2124 belong to LBW category and 314 patients have normal birth weight. There are 658 ARM and TOF patients who have low birth weight, 75 ARM and 78 TOF patients have normal birth weight and rest are shown in Table 4.

Table 4: Disease wise weight distribution.

No.	Disease	LBW	Normal
1	Arm	652	75
2	TOF	652	78
3	Gastroschisis	115	13
4	Omphalocele	67	6
5	CDH	40	4
6	Hirshsprung DS	66	26
7	Intestinal atresia	149	27
8	Perforation peritonitis	142	29
9	Intestinal obstruction	124	34
10	Meconeum ileus	24	1
11	Anal stenosis	7	1
12	Anular pancreas	5	1
13	Cong HPS	11	5
14	Malrotation	26	2
15	Cong umblical hernia	31	10
16	Choanal atresia	10	1
17	Biliary atresia	3	1
	Total	2124	314

DISCUSSION

Overall most common system contributing admissions was gastrointestinal tract disease of neonates. Total no. of admissions in this category was 2438 (73.56%) patients. The next system accounting for admissions in neonates was CNS disorders (hydrocephalus 125 and neural tube defects 431) 556 (16.8%) patients in total. Urogenital disorders were third most common disorder for neonatal admissions in the audit. Overall surgical infections (abscess and cellulitis) also contribute significantly for emergency and routine neonatal admission Figure 1.

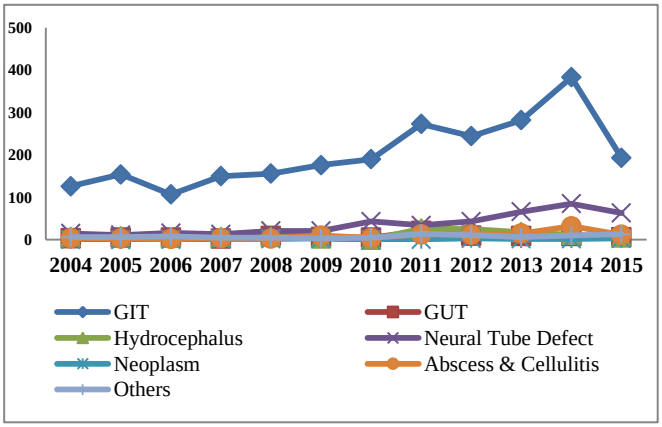

Figure 1: Category- wise trend.

Epidemiology of GIT disorder

There is significant increase in incidence of anorectal malformations which has doubled sales from year 2004 to year 2014-15 admissions of TOF has registered triple fold increase in last decade followed by gastroschisis and omphalocele. Hirsch sprung disease, intestinal obstructions and atresia are amongst the significant contributor. Perforation peritonitis and NEC also account for significant admissions of neonates having GIT disorders (Figure 2 and 3).

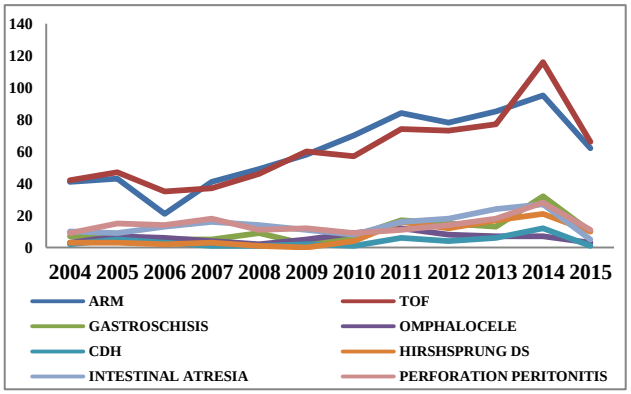

Figure 2: Trend of admission of GIT disorders.

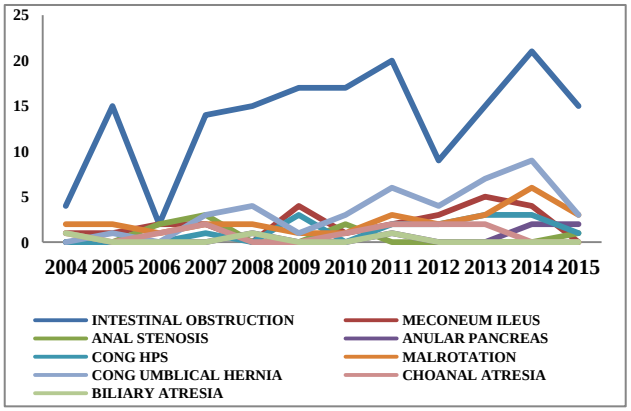

Figure 3: Trend of admission of GIT disorders CTD.

1. *Anorectal malformations*

The mortality rate showing a decrement from 4.96% in year 2004 to 4.04% in year 2014 although there was hike in admission 41 in year 2004 to 62 till July in year 2015. In year 2013-2015 the incidence of disease (19.7%) was higher as compare to data of JRH (UK) (4.7%) and KCMC (Africa) (9.5))available for year 2003-2005. Case fatality rate of BHU audit was 6% but it was 19.98% in this region.[7,18]

2. *Tracheo-oesophageal fistula and esophageal atresias*

The mortality rate showing a decrement from 21.7% in year 2004 to 15.6% in year 2014, although there was hike in admission 42 in year 2004 to 66 till July in year 2015. The major cause of mortality includes poor recovery from anesthesia, sepsis, low birth weight and other associated congenital diseases. In year 2013-2015 the incidence of disease was higher as compare to data of JRH (UK) and

KCMC (Africa) available for year 2003-2005. Case fatality rate of BHU audit was 34% but it was 75.22% in this region.[7,18]

3. *Gastroschisis*

Admission increased total 7 in year 2004 to 10 till July in 2015 but managing to check the mortality 4.34% in 2004 to 3.05% in 2015. In year 2013-2015 the incidence of disease (4.47%) was comparable to data of JRH (UK) (5.5%) and higher than KCMC (Africa) (0.9%) available for year 2003-2005. Case fatality rate of BHU audit was 60% but it was 90.48% in this region.[7,18]

4. *Omphalocele*

The mortality rate showing a decrement from 1.86% in year 2004 to 0.34% in year 2014 although there was hike in admission 3 in year 2004 to 7 in year 2014 and 3 till July in year 2015.[7,18]

5. *Congenital diaphragmatic hernia*

The case fatality rate showing decrement from 100% in year 2004 to 50.6% in year 2014 although there was hike in admission 2 in year 2004 to 12 in 2014.

6. *Hirschprug's disease*

The mortality rate showing a decrement from 1.06% in year 2005 to 0.68% in year 2015 although there was hike in admission 3 in year 2004 to 21 in 2014 and 10 till July in year 2015.

7. *Intestinal atresia*

The mortality rate showing a decrement from 1.24% in year 2004 to 1.8% in year 2014 and no mortality in 2015, although there was hike in admission, 10 in year 2004 to 27 in 2014 and 5 admissions till July in year 2015.

8. *Perforation peritonitis*

The mortality rate showing a decrement from 4.96% in year 2004 to 3% in year 2014 and 1.01% in 2015 although there was hike in admission 9 in year 2004 and 28 in 2014 and 11 till July in year 2015.

9. *Intestinal obstruction*

The mortality rate showing a decrement from 1.24% in year 2004 to 1.01% in year 2015 although there was hike in admission 4 in year 2004 and 21 in 2014 and 15 till July in year 2015.

10. *Meconium ILEUS*

The mortality rate showing a decrement from 0.53% in year 2004 and No deaths reported in year 2015.

11. Annular pancreas was one of the rare disorders encountered in the region in the study, only 6 cases managed surgically and only one mortality.

12. *Congenital Hypertrophic Pyloric stenosis*

Out of 16 all were treated surgically and no mortality were reported.

13. Significant cases of malrotation (28) were admitted and operated (26) with decrement in mortality over the period of study.

14. Congenital umbilical and inguinal hernias are having low PMR and CFR and overall low mortality.

15. Choanal atresia a rare encounter in the study where high CFR.

16. Biliary atresia again a rare disease in the region only three patients in the decade all operated and no mortality.

Gender wise distribution of all GIT disorders is male neonates being twice more affected than females. Low birth weight neonates are major contributors of the lot about seven times more than normal birth weight neonate. Majority of neonates about six times reported from the rural skirts of the region. The burden of individual diseases of GIT is described graphically in year wise pattern where overall decrement in behavior of burden is obviated (Figure 4 to 18). The reason being, improvement the level of tertiary care, early referral compared to early records although admissions have been triple fold.

Burden of disease - (mortality rates, PMR and CFR over the years)

1. Mortality rates Figure 4A-4E.

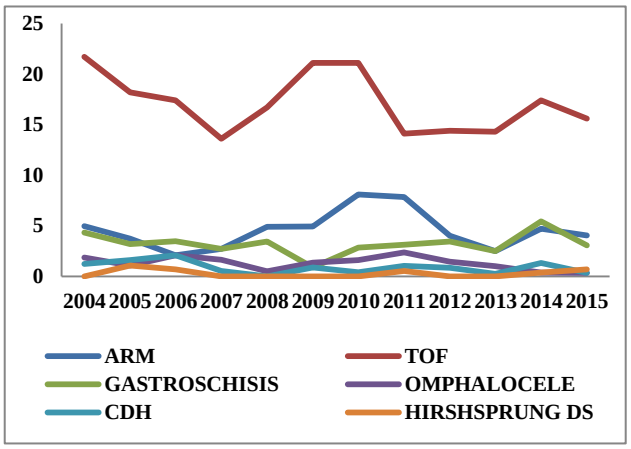

Figure 4A: Mortality rates.

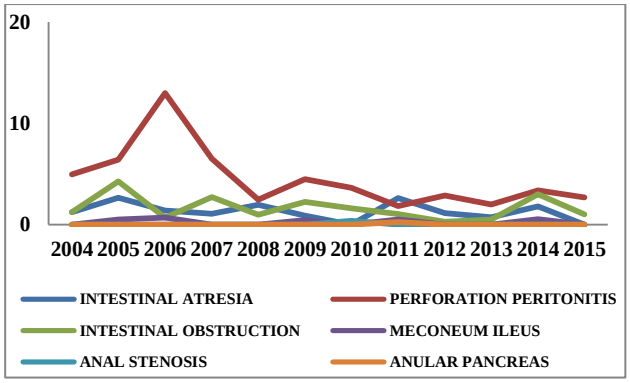

Figure 4B: Mortality rates.

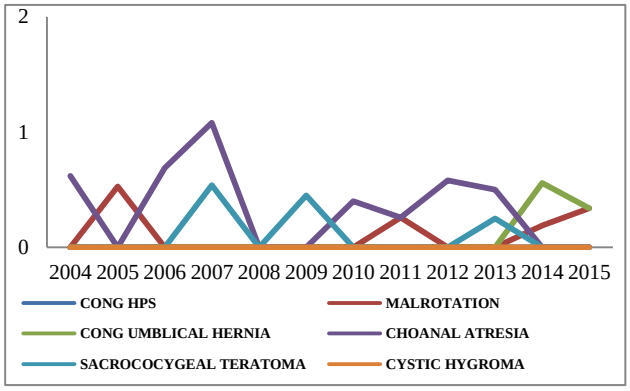

Figure 4C: Mortality rates.

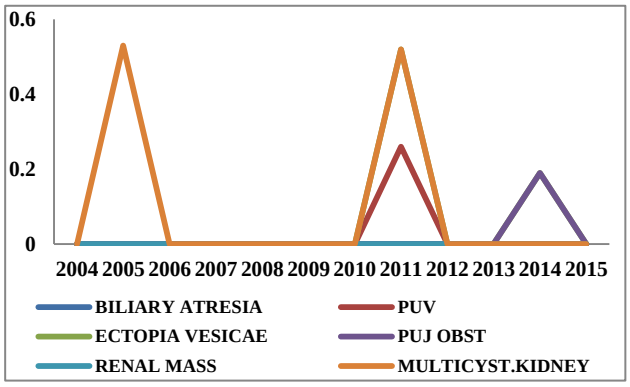

Figure 4D: Mortality rates.

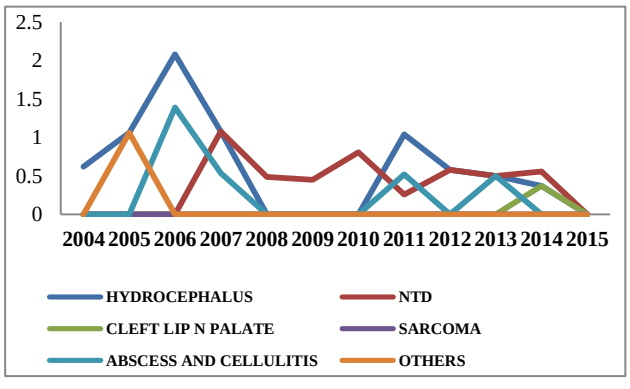

Figure 4E: Mortality rates.

2. Disease wise proportional mortality rates Figure 5A to 5D.

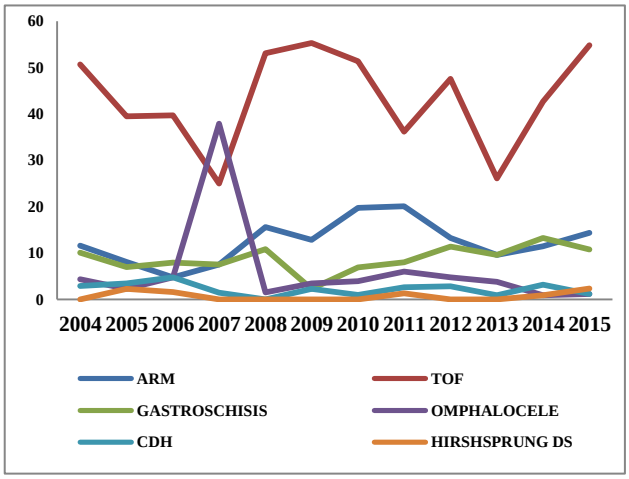

Figure 5A: Disease wise proportional mortality rates.

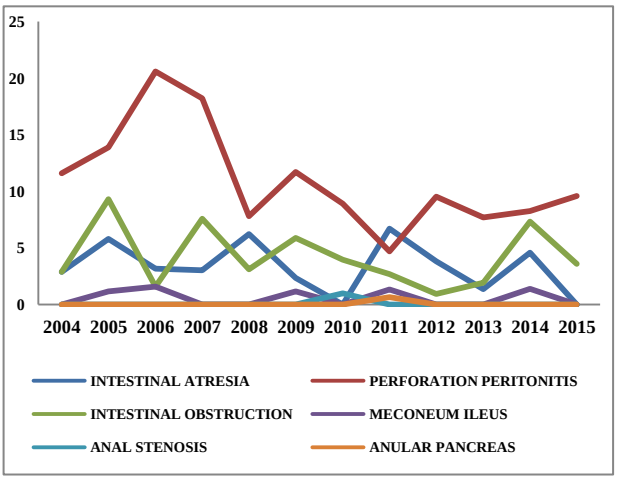

Figure 5B: Disease wise proportional mortality rates.

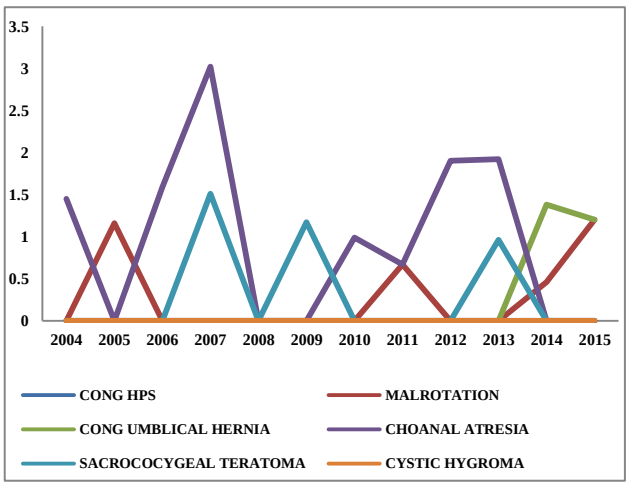

Figure 5C: Disease wise proportional mortality rates.

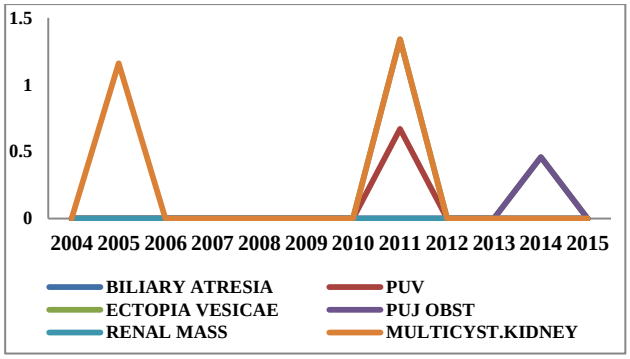

Figure 5D: Disease wise proportional mortality rates.

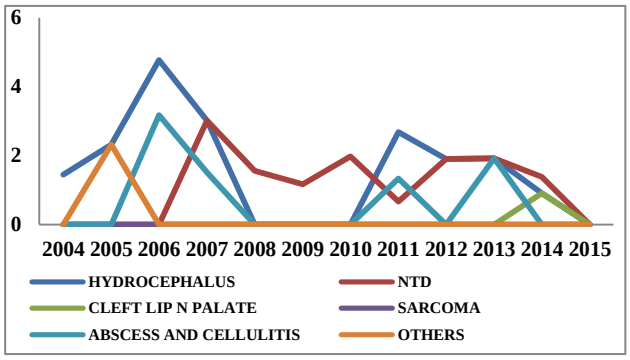

Figure 5E: Disease wise proportional mortality rates.

3. Disease wise case fatality rates Figures 7A to 7E.

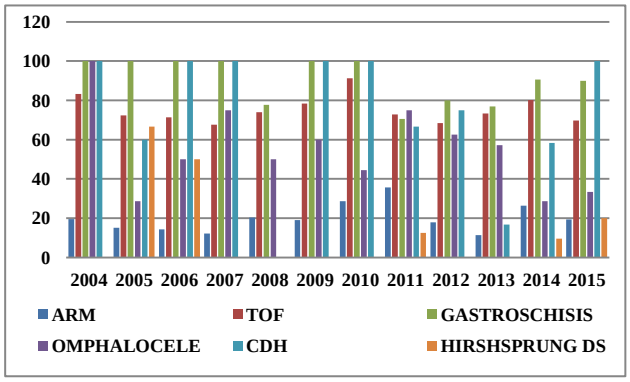

Figure 6A: Disease wise case fatality rates.

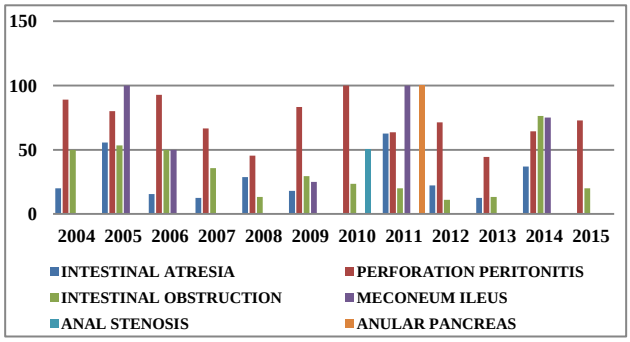

Figure 6B: Disease wise case fatality rates.

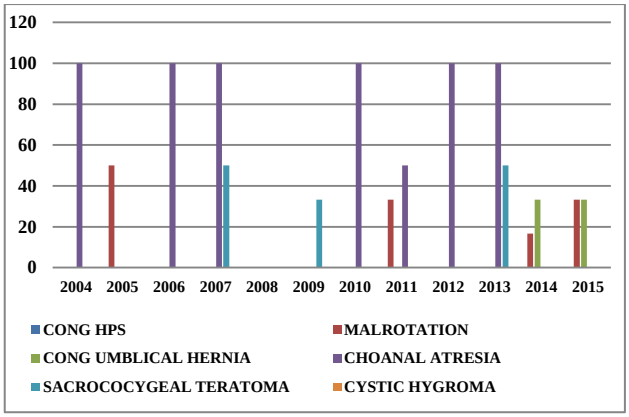

Figure 6C: Disease wise case fatality rates.

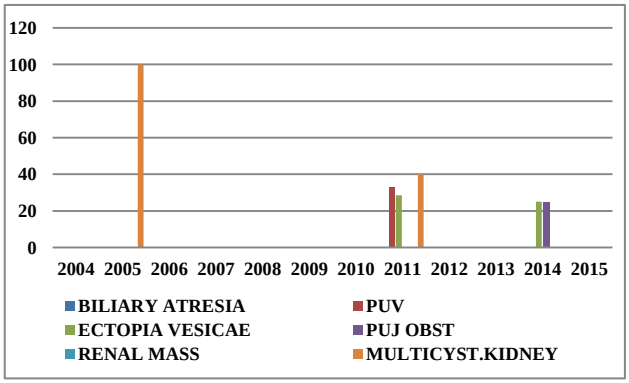

Figure 6D: Disease wise case fatality rates.

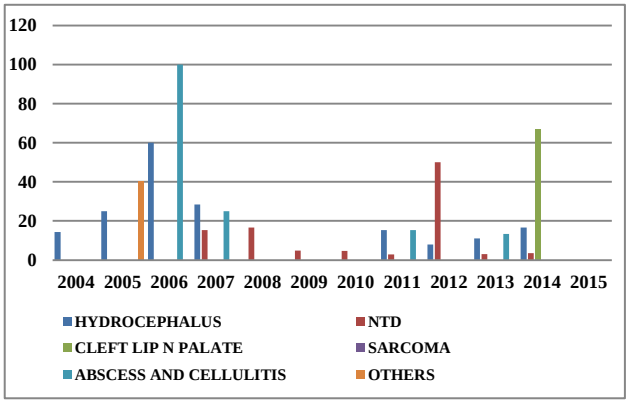

Figure 6E: Disease wise case fatality rates.

Comparison of surgical audit: Indore (2014) and Nigeria part-Harcourt (2014)

We also compared our surgical audit of year 2014 with surgical admission in newborn unit in Nigeria Part Harcourt year 2014 (Table 5).[4]

Overall 440 patient admitted in our setup, 320 were operated, 214 discharged and 204 patient died, There were 22 neonates discharged against medical advice. In Nigerian report total 119 neonates admitted with surgical diseases out of which 55 were operated 60 discharged 35

died. Mortality rate observed in our audit was 46.4% (440 admissions). Whereas in Nigerian study 29.4% (119 admissions). 73% neonates have surgical intervention in our setup whereas 46.2% neonates were operated in Nigerian study. The major cause of mortality includes poor recovery from anesthesia, uncontrolled sepsis, low birth weight and other associated congenital diseases.

The overall data suggests higher admission rate, surgical intervention and mortality rate at our setup as compared to Nigerian neonatal care center. We are having higher burden of ARM, TOF, Gastroschisis and Neurological disorders as compared to Nigerian center (Table 5).

Table 5: Surgical admissions in a newborn unit in a low resource setting, challenges in management and outcomes.[5]

No.	Disease	Surgery				Discharge		Died		DAMA		Total	
		Yes		No									
		Ind.	Nig.	Ind.	Nig.	Ind.	Nig.	Ind.	Nig.	Ind.	Nig.	Ind.	Nig.
1	ARM	86	10	9	3	68	6	25	4	2	3	95	13
2	TOF	107	2	9	3	21	0	93	3	2	2	116	5
3	Gastroschisis	30	0	2	3	1	0	29	2	2	1	32	3
4	Omphalocele	7	0	0	12	5	6	2	3	0	3	7	12
5	Perforation peritonitis	26	5	2	18	9	13	18	6	1	4	28	23
6	Intestinal obstruction and atresia	31	16	17	5	17	8	26	9	5	4	48	21
7	Cong umblical hernia	9	5	0	0	6	5	3	0	0	0	9	5
8	PUV	1	0	0	4	1	3	0	0	0	1	1	4
9	Ectopia vesicae	4	0	0	1	3	0	1	1	0	0	4	1
10	Hydrocephalus	3	5	9	1	10	3	2	2	0	1	12	6
11	NTD	16	13	69	6	73	10	3	4	9	5	85	19
12	CLEFT LIP and palate	0	0	3	7	0	6	2	1	1	0	3	7
13	Total	320	55	120	63	214	60	204	35	22	24	440	119

Ind: Indore, India; Nig: Nigeria

CONCLUSION

There was an increase in the admissions three folds over the past years, the overall mortality rate remained more or less the same i.e. 9%. The major cause of mortality includes poor recovery from anesthesia, uncontrolled sepsis, low birth weight and other associated congenital diseases. Significant improvement has been achieved in the outcome of pediatric surgery over the last decade. This development has to continue further to achieve parity with international standards. In our region there is lack of antenatal screening protocols and details of any antenatal checkup are scarce, regarding congenital anomalies at primary health care setting. Early recognition, risk stratification of the baby and timely referral to higher pediatric surgery units is the way forward.

Hospital admission data can be a valuable tool for assessing the epidemiology of diseases within populations. With determined, systematic and wide-ranging data collection, we can develop substantial insight of pediatric surgical disease trends.

This study demonstrates the extent and spectrum of newborn surgical diseases in this part of India and highlights the need for newborn surgical care in developing countries.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Sharma S, Laddha A, Shukla K. A retrospective (2004-2013) and prospective (2014-2015) audit of surgical diseases of newborn with special reference to gastro-intestinal diseases and emergencies over a period of 10 years at a tertiary care centre. Int Surg J 2016;3:802-11.