

# Study of incidence of congenital anomalies in neonates born at tertiary health care center

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## Abstract

**Introduction:** Incidence of congenital anomalies differs from country to country and from region to region within same country. This could be due to different environmental factors and also due to variability in the nature of study, in the selection of population samples and inclusion and exclusion of certain defects. **Aims and Objectives:** To study the incidence of congenital anomalies in neonates born at tertiary health care center. **Materials and Methods:** All the live born and still born babies born in the GMC Latur were observed meticulously to diagnose congenital anomalies. All babies were examined within 24hrs of birth and followed up for 72hrs. Data collection was done on a prestructured proforma. **Results:** The incidence of congenital anomalies was found to be 43.03 per 1000. The incidence was more in stillbirths (104 per 1000) as compared to live births (40.36 per 1000). The most common system involved was Central nervous system (14.96 per 1000) followed by musculoskeletal system (10.39 per 1000) and gastrointestinal system (5.34 per 1000). **Conclusion:** The incidence of congenital anomalies was found to be 43.03 per 1000.

**Keywords:** congenital anomalies, neonatal.

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Received Date: 12/03/2014 Accepted Date: 23/03/2014

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DOI: 26 March 2014

## INTRODUCTION

Congenital malformations are a major cause of perinatal and neonatal death<sup>1</sup>, both in developed and developing countries.<sup>2</sup> The introduction of new antibiotics and advances made in the field of preventive medicine and immunology resulted in the rapid decline in the infant mortality and morbidity by infectious diseases and thus focused the attention of pediatricians on the problem of congenital malformations.<sup>3</sup> The field of dysmorphology has expanded dramatically as the number of recognizable patterns of malformations has more than tripled during the last 25 years.<sup>1</sup> New insight has been gained into the

pathogenesis of various defects; the potential prenatal effects of various drugs, chemicals, and environmental agents have been better appreciated; and the number of defects; in which prenatal detection is possible has increased. There is great disparity in the figure quoted as incidence of congenital anomalies. The factors affecting it are numerous. The various figures reported by different workers are therefore not strictly comparable. Incidence of congenital anomalies differs from country to country and from region to region within same country. This could be due to different environmental factors and also due to variability in the nature of study, in the selection of population samples and inclusion and exclusion of certain defects.<sup>4</sup> The valid determination of incidence requires the collection of data not only on live-born neonates, but also on still births and on spontaneous and induced abortions. The frequency of malformations is higher in later groups and their exclusion therefore lead to an artefactually low estimated prevalence of malformations (selection bias).<sup>5</sup>

## AIMS AND OBJECTIVE

To study the incidence of congenital anomalies in neonates born at tertiary health care center.

## MATERIAL AND METHODS

### Study Design

The present observational study was conducted with the objective to find out the incidence of congenital anomalies in neonates. The study was conducted at government medical college and hospital, Latur during the year 2011 to 2013. Following inclusion and exclusion criteria was used to select the study subjects.

### Inclusion Criteria

- All the Live born/ Still born babies born in the GMC Latur.

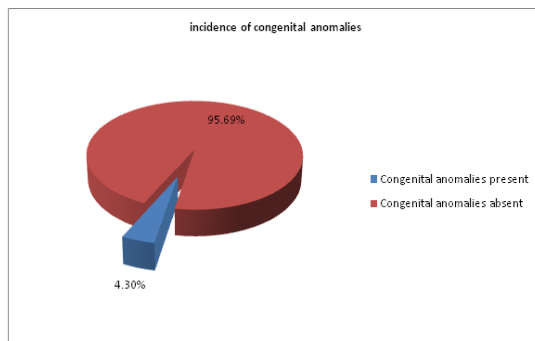
### Exclusion Criteria

- All babies born outside and referred to NICU of medical college.
- Abortions (Gestational age <28wks)

All babies were examined within 24hrs of birth and followed up for 72hrs. Data collection was done on a prestructured proforma. Information was collected from mother about the age, gravida and parity. History of chronic illness, drug ingestion, exposure to x-ray, history of congenital malformations in other offspring, parental consanguinity, nutritional status of mother, history of smoking, tobacco chewing and alcohol consumption, paternal and maternal occupation were obtained. Examination of babies was performed in good light with complete exposure from top to bottom and sex of baby was noted. General and systematic examination of babies was conducted in detail to diagnose the congenital anomaly. Investigation like X-ray, ECGs, biochemical tests, CT, MRI was performed to confirm the diagnosis where ever required.

**Table 1:** Incidence of congenital anomalies

Congenital Anomalies	Total births		Incidence /1000
	No.	%	
Present	443	4.30	
Absent	9851	95.69	43.03
<b>Total</b>	<b>10294</b>	<b>100</b>	



It was observed that there were total 10294 deliveries were conducted in the institute during the study duration. Out of that 9861 (95.69%) were live births and 433

(4.31%) still births. The total number of newborns with congenital anomalies was 443 (4.3%). Thus the incidence of congenital anomalies was 43.03 per 1000.

**Table 2:** Incidence of congenital anomalies among live births and still births

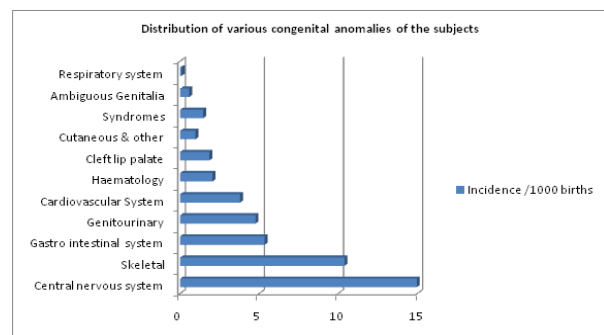
Congenital Anomalies	Live births (n=9861)	Still births (n=433)
Present	398 (4.04%)	45(10.39%)
Absent	9463(95.96%)	388 (89.6%)
Incidence / 1000	40.4	103.9

$$\chi^2 = 40.6955, df=1, p < 0.05 \text{ (significant).}$$

Out of total 9861 live birth, 398 (4.04%) live births had congenital anomalies. The incidence of congenital anomalies in live birth was found to be 40.36 per 1000 births. Whereas out of total 433 still births congenital anomalies were observed in 45 (10.39%) cases with incidence of 103.9 per 1000 birth.

**Table 3:** Distribution of various congenital anomalies of the subjects

System	Congenital Anomalies (n=443)	Incidence /1000
Central nervous system	154	14.96
Skeletal	107	10.39
Gastro intestinal system	55	5.34
Genitourinary	49	4.76
Cardiovascular System	39	3.79
Haematology	21	2.04
Cleft lip palate	19	1.85
Cutaneous and other	10	0.97
Syndromes	15	1.46
Ambiguous Genitalia	6	0.58
Respiratory system	1	0.10



When system wise analysis of congenital anomalies was done it was observed that central nervous system (14.96%) anomalies were most common followed by skeletal system (10.39%). very few anomalies of respiratory system (0.09%) were diagnosed.

## DISCUSSION

The present study was conducted to find the incidence of congenital anomalies in neonates born at tertiary health care center. It was observed that there were total 10294 births in the hospital during the study period. Out of them total 443 births were with congenital anomalies. Thus the incidence of congenital anomalies in the present study was 43.03 per 1000 births i.e. 4.3%. Similar findings were reported by Verma M *et al*<sup>6</sup> (3.6%), Bhat V *et al*<sup>7</sup> (3.7%) and Singh M *et al*<sup>8</sup> (5.5%). The incidence reported by Mital VK *et al*<sup>9</sup> (2.24%), Dutta H K *et al*<sup>10</sup> (0.08%) and Swain *et al*<sup>11</sup> (1.2%) was much lower than the present study. Our centre was a tertiary referral unit and many complicated high-risk pregnancies are admitted at our hospital. This may be the cause of higher incidence in the present study. It was observed that out of total 433 stillbirths, 45 cases had congenital anomalies, giving the total incidence of anomalies in still births to be 10.39% which is statistically very significant. Our findings are in consistent with studies of Mital VK *et al*<sup>9</sup> which mentioned the incidence of congenital anomaly in still birth as 9.09%, study of Verma M *et al*<sup>6</sup> also showed incidence of 12.6% in stillbirths; Chaturvedi P *et al*<sup>31</sup> mentioned incidence of 9.8% in still births, whereas Parmar A *et al*<sup>12</sup>, Swain S *et al*<sup>11</sup>, Datta V *et al*<sup>13</sup> showed incidence of 13.30%, 6.9% and 6.06% respectively. The difference in the occurrence of congenital anomalies in still birth and live birth was statistically significant ( $X^2 = 40.6955$ ,  $df=1$ ,  $p < 0.05$ ). It is well established that malformed babies have low growth potential and may result in abortion or preterm delivery and they may have higher chances of being still born or dying later in the neonatal period. It was observed that central nervous system anomalies were the commonest congenital anomalies, which contribute to incidence of 14.96/1000. Our findings are consistent with study of Mital VK *et al*<sup>9</sup> which also showed CNS as the commonest anomaly with incidence of 6.74/1000, Verma M *et al*<sup>6</sup> with incidence of 20.6/1000, Gupta S *et al*<sup>14</sup> with incidence of 6.4/1000. It was followed by skeletal anomalies with 10.39 /1000 incidence, gastrointestinal system with incidence of 5.34/1000, genitourinary system with incidence of 4.76/1000, cardiovascular system with incidence of 3.78/1000, haematology with 2.04/1000 incidence, cleft lip palate with 1.84/1000 incidence, cutaneous involvement and syndrome with 0.97 and 1.45 per 1000 birth respectively, ambiguous genitalia with 0.58/1000

incidence and the least of the system involved was the respiratory system with incidence of 0.09/ 1000.

## CONCLUSION

The incidence of congenital anomalies was found to be 43.03 per 1000. The incidence was more in stillbirths (104 per 1000) as compared to live births (40.36 per 1000). The most common system involved was Central nervous system (14.96 per 1000).

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Source of Support: None Declared  
Conflict of Interest: None Declared