International Journal of Reproduction, Contraception, Obstetrics and Gynecology
*Kamakeri NS et al. Int J Reprod Contracept Obstet Gynecol. 2017 Jul;6(7):2914-2918*
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20172906

**Original Research Article**

# Study of perinatal autopsies in tertiary care hospital 20 year experience

**N. S. Kamakeri, Ramalingappa C. A., Vinayraju D.***

Department of Obstetrics and Gynecology, KIMS Hubli, Karnataka, India

**Received:** 04 April 2017
**Accepted:** 02 May 2017

***Correspondence:**
Dr. Vinayraju D.,
E-mail: vinayraju319@gmail.com



## ABSTRACT

**Background:** Losing a baby is painful. Looking for answers can help. Although nothing can change the loss, a perinatal autopsy may offer answers to better understand what happened. A perinatal autopsy is a medical exam done on the fetus or infant to help explain the cause of death. This exam may also find the underlying reason for an illness, disease or birth defect.
**Methods:** Babies of mothers with bad obstetrics history, died in utero, neonatal period and baby deaths of unknown cause were subjected for clinical autopsy in the last 20 years. Based on the major and associated pathological findings, an attempt was made to find the cause of death.
**Results:** Immaturity of the organs found to be the most common cause for perinatal death. Meconium aspiration pneumonia, external congenital abnormalities are found to be the other common causes for perinatal mortality.
**Conclusions:** Perinatal autopsies are the effective method of finding the cause of perinatal death, and helps to some extent in preventing the future loses.

**Keywords:** Intruterine, Neonatal, Perinatal, Pregnancy

## INTRODUCTION

Earlier many cases which were not diagnosed clinically in spite of good clinical knowledge were used to be subjected for clinical autopsy and were diagnosing the cases depending on pathologist's opinion. Hence, they were improving clinical knowledge with correlation with pathologist's report.[1-5] Now a day because of improvement in radio imaging modalities the clinical autopsies are drastically reduced because the diagnosis is being done in advance within few minutes with help of USG/CT/ guided FNAC.[6] However we are conducting autopsies on dead babies to know the cause of death for the last 20 years. Government is encouraging hospital deliveries, routine antenatal check-ups to detect any congenital abnormalities, but still many babies are born with congenital abnormalities which is incompatible with life.[7]

## METHODS

Every year nearly 10000 deliveries are being conducted including caesarian sections in our Institute. Age of mothers ranged from 18-46 years. Babies of mothers with bad obstetrics history, died in utero, neonatal period and baby deaths of unknown cause were subjected for clinical autopsy in the last 20 years (January 1997 to December 2016) wherever necessary. The clinical and autopsy data for each case was collected from the departmental records. Based on the major and associated pathological findings, an attempt was made to find the cause of death.

## RESULTS

During the twenty years study period, on an average there were 650 perinatal deaths per year, accounting perinatal

mortality rate around 65/1000. In twenty years study 600 perinatal autopsies done (402 males and 198 females), birth weight of the autopsied cases ranged from 500gm to 3700gm with gestational age ranged from 20 weeks to 42 weeks.

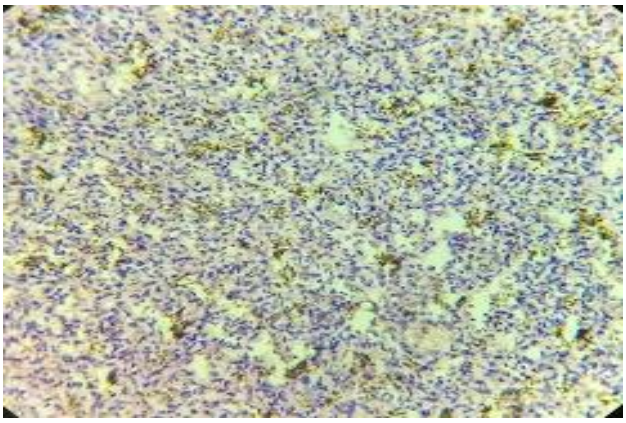

**Figure 1: Microscopy of meconeum aspiration pneumonia.**

The major causes of the death have been analyzed in table. Immaturity of the organs found to be the most common cause for perinatal death. Meconium aspiration pneumonia, external congenital abnormalities are found to be the other common causes for perinatal mortality.

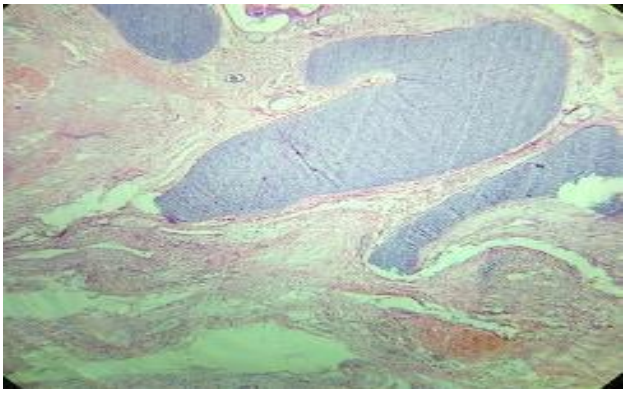

**Figure 2: Microscopy of teratoma showing mature cartilage with epithelial cystic glands and neural tissue.**

A total number of 40 congenital defects were detected in autopsies involving mainly cardiovascular, urogenital, respiration and gastrointestinal in decreased order. 5 cases have associated central nervous system involvement.

Higher rate of mortality was found in preterm (<37 weeks) and low birth weight babies (<2500gm). Multiple pregnancies and maternal diseases like PIH, diabetes mellitus, severe anaemia, are associated with higher perinatal deaths. History of consanguinity was found in 10 cases (1.6%), Rh negative in 24 cases (4%).

**Table 1: Causes of death.**

| Cause of death | Number | % |
|---|---|---|
| Immaturity of organs | 198 | 33 |
| Meconium aspiration pneumonia | 150 | 25 |
| External congenital abnormalities | 40 | 6.7 |
| Dysplastic cystic kidney disease | 40 | 6.7 |
| Polycystic kidney disease | 10 | 1.7 |
| Cystic lung disease | 10 | 1.7 |
| Placental infarction | 6 | 1 |
| Congenital cystic adenomatoid malformation of lung | 5 | 0.8 |
| Renal agenesis | 4 | 0.7 |
| Pulmonary hypoplasia | 2 | 0.3 |
| Cases of hyaline membrane disease of lung | 1 | 0.2 |
| Glycogen storage disease | 1 | 0.2 |
| Idiopathic infantile arterial calcification | 1 | 0.2 |
| Maternal factors | 112 | 18.65 |
| Uncertain causes | 17 | 4.45 |
| Total | 600 | 100.0 |

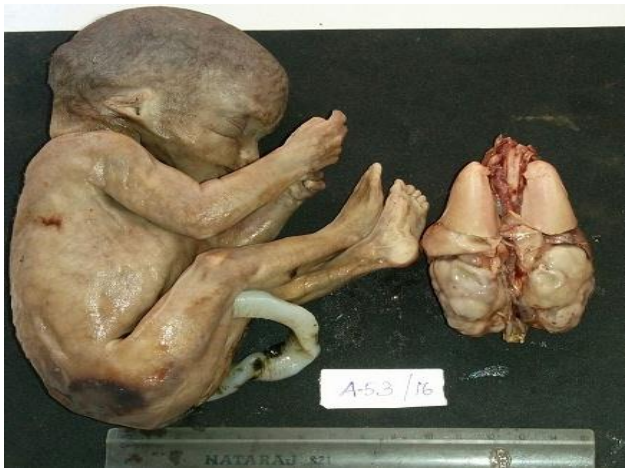


**Figure 3: Baby with autosomal recessive bilateral polycystic kidney disease.**


**Figure 4: Cut section autosomal recessive bilateral polycystic kidney disease.**

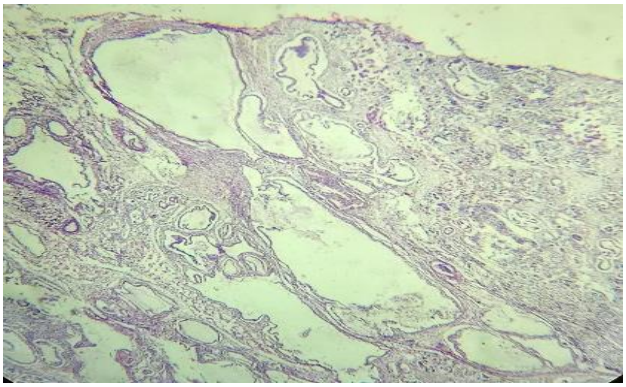

**Figure 5: Microscopy of polycystic kidney disease with many dilated cysts with occasional glomeruli and tubules.**


**Figure 6: Fetus of congenital cystic adenomatoid malformation of lung showing male external genitalia, inset shows cystic adenomatoid malformation of lung, cystic dysplasia of kidney with uterus.**


**Figure 7: Specimen of congenital cystic adenomatoid malformation of lung, cystic dysplasia of kidney with uterus.**

## DISCUSSION

Fetal death occurs prior to the complete expulsion or extraction of the products of conception irrespective of the duration of pregnancy, and is indicated by absent breathing, heartbeat, pulsating umbilical cord or muscular movement. Intrauterine and intrapartum deaths are included. In the present study immaturity of organs were the major cause accounting for perinatal death. Congenital malformations were detected in 198 cases (33%), maximum in the cardiovascular system, findings are similar to studies.[8,9] Unexplained fetal death was found to be associated with in 4.45% of the cases, in contradiction to the study results obtained by Huang et al, where as he found higher percentage of un explained fetal death.[10]

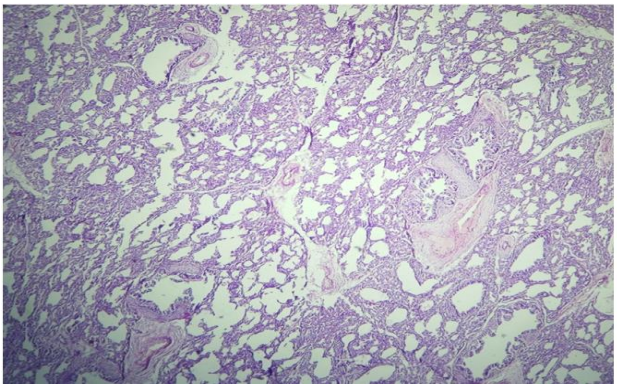

**Figure 8: Microscopy of congenital cystic adenomatoid malformation lung.**

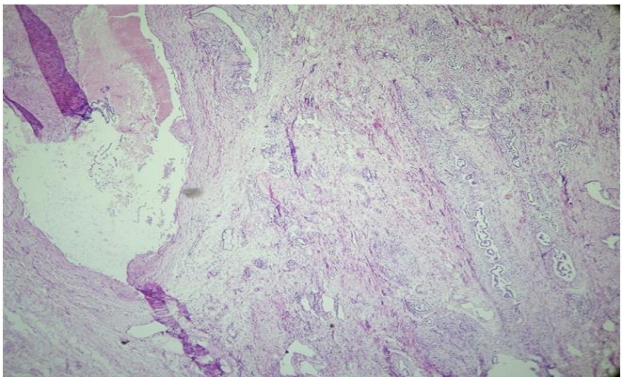

**Figure 9: Microscopy of cystic dysplastic kidney in congenital cystic adenomatoid malformation of lung.**

Maternal hypertensive disorders were found to be significantly associated with intrauterine fetal death in18.65% of the women. Similar results were seen in a study done by Korejo et al, where hypertensive disorders contributed to 24% of the fetal deaths.[11] Benefits of autopsy: The direct benefits of autopsy to parents are not limited to refining the risk of recurrence. Even after autopsy, sometimes a definitive final diagnosis cannot be made and information given to parents may cover a range of possible diagnoses. In such cases the storage of fetal samples for possible future genetic analysis provides the hope of an accurate diagnosis (which may have ramifications for the wider family) at a much later date. In most cases in which the scan findings are confirmed parents can gain comfort that their baby had the prenatally suspected condition. The finding of additional

malformations, as well as in some cases changing the diagnosis, may be helpful in targeting tests in a subsequent pregnancy. A wider importance of autopsy is in its value for quality control for prenatal diagnosis, teaching, and research. The decline in autopsy rate and issues surrounding the retention of tissues and organs for diagnostic studies, teaching, and research has been the subject of much debate since the adverse publicity concerning autopsies and organ retention.


**Figure 10: Gross picture showing fetus amorphous with placenta and attached umblical cords for twins.**

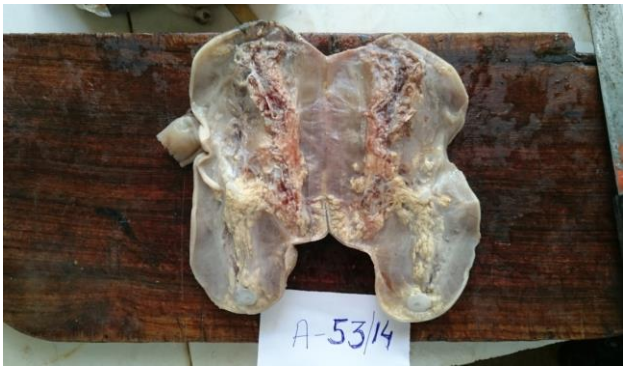


**Figure 11: Cut section showing heterologous elements with hair.**

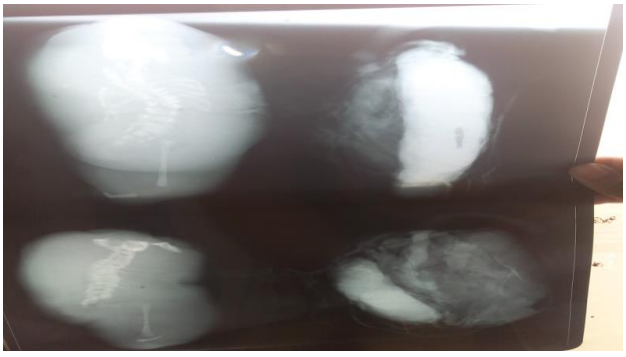

**Figure 12: X ray of amorphous fetus showing axial skeleton with limb bud (A-53/14).**

Parents should be provided with full information and not be coerced into accepting an autopsy examination. It is important that those advising them at such a sensitive time do not take what may be the superficially kinder route of avoiding detailed discussion about the autopsy. Parents need full information about the potential benefits of the examination, including details both about the procedures involved and about the benefits in providing information about risks of recurrence if they are to make a truly informed decision. This discussion should be with an appropriately trained professional. Our study provides important information for parents. If a termination has been carried out because of anomalies detected by ultrasound scan, by declining an autopsy, parents will remain ignorant of information of recurrence risk.[11]

## CONCLUSION

A total of 600 perinatal and fetal autopsies were conducted from the period of January 1997 to December 2016. Out of 600 autopsies, 402 (67%) males and 198 (33%) female's autopsies were conducted. Out of 402 males 150 babies had congenital malformations, and 48 female babies had congenital malformations among 198 females. Congenital anomalies were commonest in the birth weight group of 1000-1500 grams accounting for 79 cases. Most of the fetal and neonatal deaths due to lethal malformations occurred in the age group of 21 to 30 years (17%), in these group 4 cases had congenital malformations. In the age group, less than 20 years out of 12 fetal autopsies 7 presented with malformation and 4 mothers were primigravida and 8 were multigravida. In more than third gravid, four cases showed congenital anomalies.

This study confirms the most number of perinatal deaths occurred in Low Birth Weight and preterm babies. Even though the prenatal ultrasonography reasonably predicts the malformations, fetal autopsy is essential to look for additional malformations. Fetal and neonatal autopsy helps the parents by giving the information regarding recurrence risk of fetal anomaly, so that regular antenatal check-ups with specific diagnostic test help to avoid congenital anomalies in subsequent newborn.

## ACKNOWLEDGMENTS

Authors would like to thank Director, Principal of KIMS Hubli for their support.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Chiswick ML. Commentary on current World Health Organization definitions used in perinatal statistics. Br. J. Obstet. Gynec. 1986:93:1236-8.
2. WHO/FRH/MSM/96.7. Perinatal mortality. A listing of available information material, health and safe

mother hood program. Geneva: World Health Organisations; 1996.
3. Dayal AK, Manning FA, Berck DJ. Fetal death after normal biophysical profile score. An 18-year experience. Am J Obstet Gynecol. 1999;181:1231-6.
4. Singer DB, Macpherson T. Fetal death and the macerated stillborn fetus. In. Wiggelsworth JS, Singer DB edn. Textbook of Fetal and Perinatal Pathology. Malden: Blackwell Science; 1998:246.
5. Arias E, MacDorman MF, Strobino DM. Annaul summary of vital statistics. 2002. Paediatrics. 2003;112:1215-30.
6. Bell R, Gliniania SV, Rankin J. Changing patterns of perinatal death.1982-2000: A retrospective cohort study. Arch. Dis. Child Fetal neonatal ed. 2004;89:531-6.
7. Bendon RW. Review of some causes of stillbirth. Paedr Der Pathol. 2001;4:517-31.
8. Naik V, Babu P, Reddy ES, Prasad BV, Radha BA, Myreddy N et al. Study of various congenital anomalies in fetal and neonatal autopsy. Int J Res Med Sci. 2015;3(5):1114-21.
9. Dandekar CP, Mysorekar VV, Rao SG, Anupama V. Perinatal Autopsy-A Six Year Study. Indian Pediatr. 1998;35:545-8.
10. Huang DY, Usher RH, Krammer MS. Determinants of unexplained antepartum fetal deaths. Obstet Gyenecol. 2000.95(2):215-21.
11. Korejo R, Bhutta S, J Noorani KJ. An audit and trends of perinatal mortality at the Jinnah Postgraduate Medical Center, Karachi. J Pak Med Assoc. 2007;57:168-72.

**Cite this article as:** Kamakeri NS, Ramalingappa CA, Vinayraju D. Study of perinatal autopsies in tertiary care hospital 20 year experience. Int J Reprod Contracept Obstet Gynecol 2017;6:2914-8.