Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of cases of inguinal hernia in premature infants

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***ABSTRACT*:**
Background: The timing of inguinal hernia repair in preterms represents a balance of the risks of postoperative respiratory complications and hernia incarceration. The present study was conducted to assess cases of inguinal hernia in premature infants. **Materials & Methods:** 32 cases of inguinal hernia of both genders were recorded. PCA and body weight at HR, and postoperative complications were obtained. Hernia repair was performed by open method and under general and caudal anesthesia. **Results:** Birth weight was 1246 grams, PCA at surgery was 11.3 weeks, PCA at diagnosis was 34.7 weeks and body weight at surgery was 2215.7 grams. Complications were bronchopulmonary dysplasia in 2, necrotizing enterocolitis in 1, intraventricular hemorrhage in 3 and patent ductus arteriosus in 1 case. The difference was significant (P< 0.05). **Conclusion:** Premature infants have a high incidence of inguinal hernia.
Key words: Premature infants, Inguinal hernia, Respiratory complications

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This article may be cited as: Kumar A, Bhardwaj AK. Assessment of cases of inguinal hernia in premature infants. J Adv Med Dent Scie Res 2018;6(2):122-125.

INTRODUCTION

Inguinal hernia occurs more commonly in premature infants than in the general population with a reported incidence being up to 30%.[1] Controversial issues in the management of inguinal hernia in premature infants, include timing of repair, the need for contralateral inguinal exploration and the minimum postconceptional age (PCA) for day surgery repair. Optimal timing for inguinal hernia repair (HR) in a premature infant in the neonatal Intensive Care Unit (NICU) is still debated.[2]

The timing of inguinal hernia repair in preterms represents a balance of the risks of postoperative respiratory complications and hernia incarceration. At present, the literature does not clearly define what these risks are and how they should be balanced. A preterm is at a greater risk of a multitude of complications and can often require prolonged postnatal intensive care support.[3] Fortunately, over the last three decades, there have been dramatic improvements in neonatal care with decreased level of stress to the neonate. The addition of high frequency ventilation and gentle ventilation with monitoring of blood gases has decreased the level of respiratory distress that often lead to increased abdominal pressures on the underdeveloped inguinal canal with a patent processus vaginalis in the preterm.[4]

The advent of neonatal laparoscopy with documented feasibility and safety has been a major development. Laparoscopic repair in babies weighing more than 3 kg is (theoretically) beneficial in preventing injury to the vas and is less technically demanding than open inguinal herniotomy.[5] The present study was conducted to assess cases of inguinal hernia in premature infants.

MATERIALS & METHODS

The present study comprised of 32 cases of inguinal hernia of both genders. Parents' consent was obtained before starting the study.

Demographic data such as name, age, gender etc. was recorded. A thorough clinical examination was done. GA, birth weight (BW), comorbidities, site of inguinal hernia and PCA at diagnosis of inguinal hernia was recorded. PCA and body weight at HR, and

postoperative complications were obtained. Hernia repair was performed by open method and under general and caudal anesthesia. The excised cyst was sent for histopathological examination. Results thus obtained were statistically analyzed. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 32		
Gender	**Boys**	**Girls**
Number	20	12

Table I, graph I shows that out of 32 patients, boys were 20 and girls were 12.

Graph I Distribution of patients

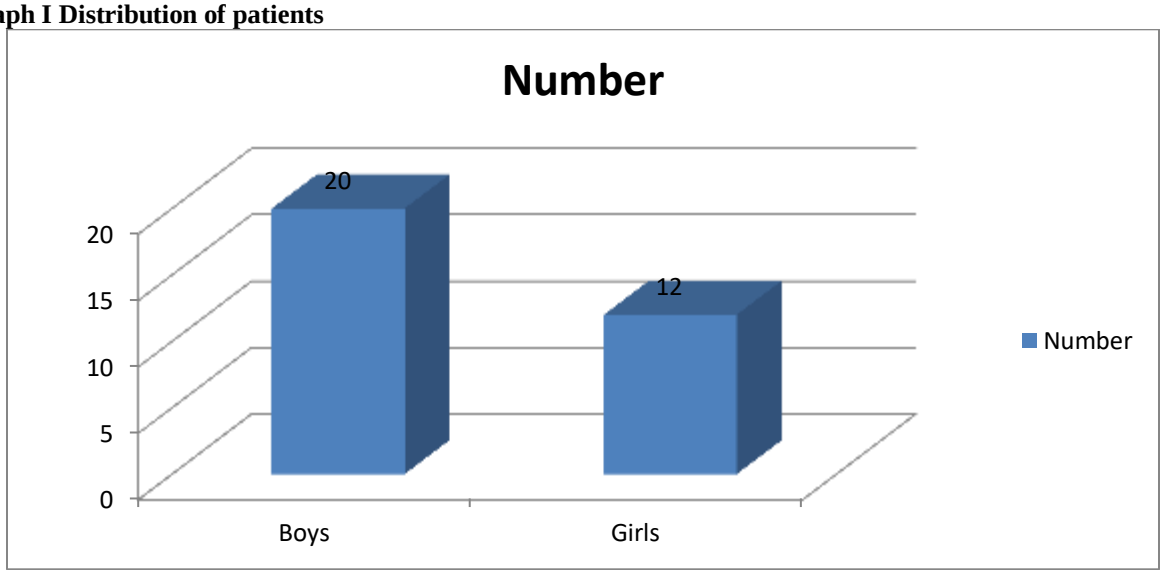


Table II Assessment of parameters

Parameters	Mean
Birth weight (grams)	1246
PCA at surgery (weeks)	11.3
PCA at diagnosis (weeks)	34.7
Body weight at surgery	2215.7

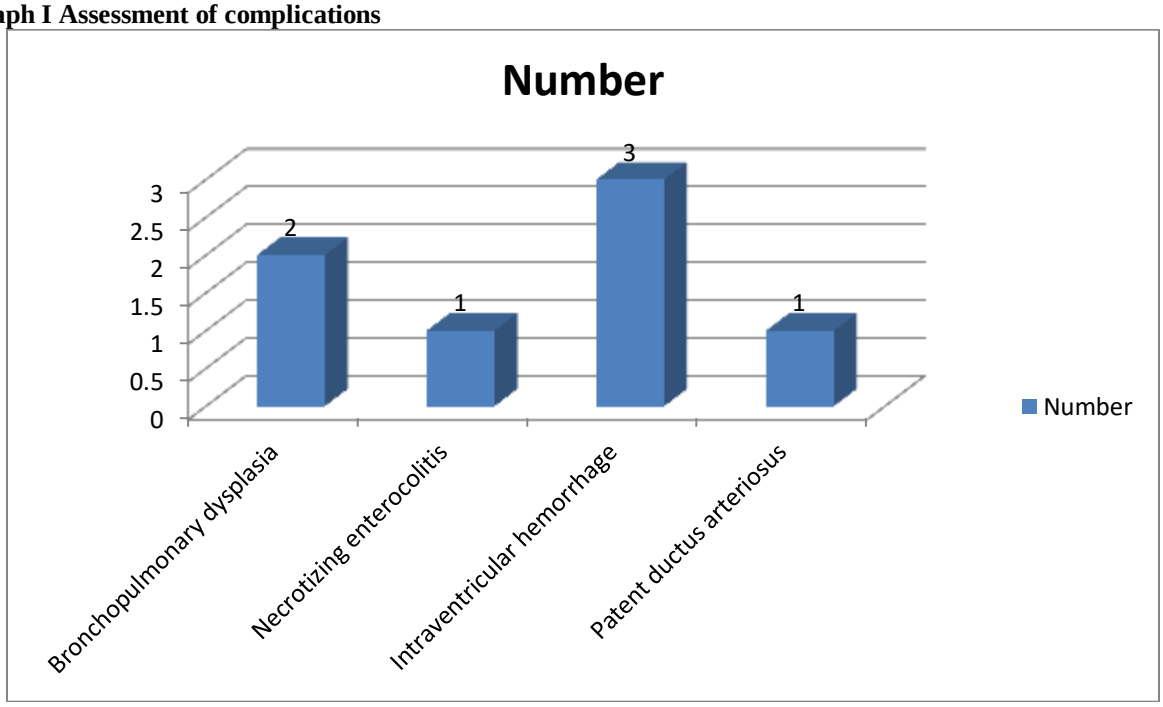
Table II shows that birth weight was 1246 grams, PCA at surgery was 11.3 weeks, PCA at diagnosis was 34.7 weeks and body weight at surgery was 2215.7 grams.

Table III Assessment of complications

Complications	Number	P value
Bronchopulmonary dysplasia	2	0.04
Necrotizing enterocolitis	1	
Intraventricular hemorrhage	3	
Patent ductus arteriosus	1	

Table III, graph I shows that complications were bronchopulmonary dysplasia in 2, necrotizing enterocolitis in 1, intraventricular hemorrhage in 3 and patent ductus arteriosus in 1 case. The difference was significant (P< 0.05).

Graph I Assessment of complications



DISCUSSION

Most pediatric surgeons doing laparoscopic neonatal hernia repair prefer to wait till the baby gains adequate weight (size is clearly a technical issue due to a safe working domain but is generally feasible above 2 kg).[6] There have been anecdotal cases of incarceration during this waiting period and this has further emphasized the fact that waiting is not detrimental for the neonate. This also prevents the risk of anesthetic drugs on a premature renal and hepatic system. Reducing the incarcerated hernia and performing an elective procedure after 3 days reduces the morbidity from 10-20% to 1-2%.[7] The incidence of bilateral hernia is increased in preterms. Waiting for an adequate period allows appropriate diagnosis for the presence of a contralateral patent processus vaginalis, especially if open procedure is planned. Babies at increased risk of developing a bilateral inguinal hernia, include those with cystic fibrosis, urological anomalies involving pubic diastasis, congenital dislocation of hip, abdominal wall defects, connective tissue disorders, ventriculoperitoneal shunt, peritoneal dialysis and ascites.[8] The present study was conducted to assess cases of inguinal hernia in premature infants.

In present study, out of 32 patients, boys were 20 and girls were 12. We observed that birth weight was 1246 grams, PCA at surgery was 11.3 weeks, PCA at diagnosis was 34.7 weeks and body weight at surgery was 2215.7 grams. Crankson et al[9] in their study infants were grouped into 2: Group 1 had repair (HR) just before discharge from the neonatal intensive care unit (NICU) and Group 2 after discharge. Eighty four premature infants were identified. None of 23 infants in Group 1 developed incarcerated hernia while waiting for repair. Of the 61 infants in Group 2, 47 (77%) underwent day surgery repair and 14 were admitted for repair. At repair mean postconceptional age (PCA) in Group 1 was 39.5 ± 3.05 weeks. Mean PCA in Group 2 was 66.5 ± 42.73 weeks for day surgery infants and 47.03 ± 8.87 weeks for admitted infants. None of the 84 infants had an episode of postoperative apnea. Five (5.9%) infants presented subsequently with metachronous contralateral hernia and the same number of infants had hernia recurrence.

We found that complications were bronchopulmonary dysplasia in 2, necrotizing enterocolitis in 1, intraventricular hemorrhage in 3 and patent ductus arteriosus in 1 case. Lee et al[10] proposed that former premature infants with PCA between 41 and 46 weeks can safely undergo outpatient herniorrhaphy. Laituri et al[11] had reported overnight observation after HR for premature infants. A high percentage of these premature infants had a postoperative event related to apnea in the recovery room, but not overnight. Due to the evolution of anesthetic practice, and the use of newer less soluble volatile anesthetic agents, infants have faster awakening in the recovery room.

Vogels et al[12] found a recurrence of 62.5% in premature boys who underwent HR and concluded that large hernial sacs, inadvertent opening of sacs, low gestation, and specific comorbidities such as the presence of ventriculoperitoneal shunt or connective tissue disease are associated with a higher likelihood of recurrence.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that premature infants have a high incidence of inguinal hernia

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