CORRESPONDENCE

LAPAROSCOPIC APPROACH TO SURGICAL MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA IN THE NEWBORN

The incidence of congenital diaphragmatic hernia is between 1 in 2,000 to 5,000 births.[1-3] Approximately one third of infants with CDH are stillborn,[4] but these deaths usually are caused by associated fatal congenital anomalies. When still born babies are counted with live births, girls appear to be more commonly afflicted than boys.[1,4] Defects are more common on the left side; with approximately 80% being left sided and 20% right sided.[1,5] The authors describe the laparoscopic approach to the management of congenital left sided diaphragmatic hernia in a 9-day-old neonate. The operating time was 40 minutes. The postoperative period was uneventful. Feeding was begun on the first postoperative day, and the patient was discharged on the fifth day after the surgery. The follow-up period had no complications. Laparoscopic diaphragmatic hernia repair offers all the advantages of minimal invasive surgery and a new approach for repair of diaphragmatic hernia in neonates.

INDEX WORDS: Laparoscopy, diaphragmatic hernia, neonate.

The majority of pediatric surgeons agree that in neonates the abdominal approach is the method of dealing with diaphragmatic hernia because it is associated with fewer postoperative complications.[6,7] The most important factor determining survival in an infant with congenital diaphragmatic hernia is the degree of associated pulmonary hypoplasia.

Laparoscopy in pediatric surgery has come a long way over the last decade, and now with the advent of small sized instruments, laparoscopic surgery in neonates also is possible. Here we present the case of a 9-day-old girl with congenital left-sided posterolateral diaphragmatic hernia, which was successfully repaired laparoscopically.

CASE REPORT

A 6-day-old full-term girl was referred for evaluation of tachypnoea and failure to feed well. The child weighed 2.4 kg and had a respiratory rate of 70 per minute. There was no evidence of peripheral cyanosis. Plain x-rays of the chest and abdomen showed loops of intestine and stomach displaced in the left side of the chest with angulation of the mediastinum and shifting of the cardiac shadow into the contra lateral thorax (Fig 1). An upper gastrointestinal contrast study confirmed the presence of stomach and small bowel in the left side of the thorax (Fig 2). There was no evidence of any other associated congenital anomalies. The child maintained an oxygen saturation (Sa_{O_2}) of 95 with supplementary oxygen through a hood at 2 to 3 L/min. After stabilizing the child for 48 hours with nasogastric decompression and intravenous fluids, we performed a laparoscopy. After inflating the abdomen to a pressure of 10 mm Hg with CO_2 through a veres needle, we placed 3 ports. The 3-mm umbilical port was used for the telescope, whereas 1 3-mm port was placed 3 cm to the left and one 5-mm port 5 cm to the right of the umbilical port. Laparoscopy showed a 7-cm posterolateral defect in the left dome of the diaphragm (Fig 3) with the bowel, stomach, colon, and spleen inside the thoracic cavity. After reducing the hernial contents, a thin-walled sac was visualized. A small slit was placed to open the sac, which facilitated it to be manipulated down into the abdominal cavity. The thorax showed a small hypoplastic lung. The diaphragmatic defect was closed with continuous 3-0 Vicryl sutures in 2 layers, with the knot placed

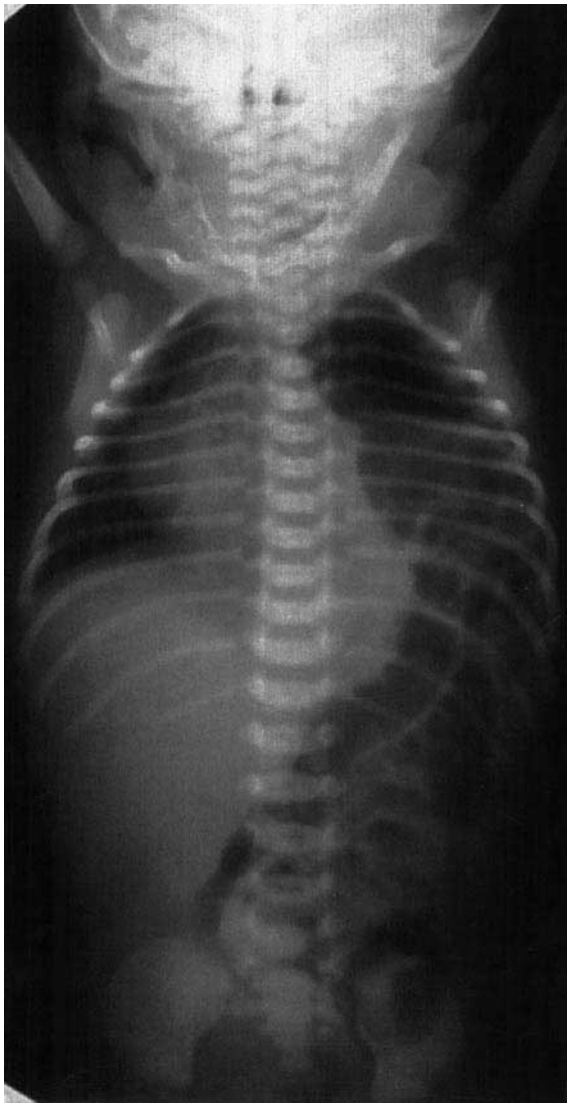

Fig 1. Plain x-ray chest with abdomen erect posterior-anterior view of the child shows absence of diaphragm on the left side with displaced bowel in the chest.

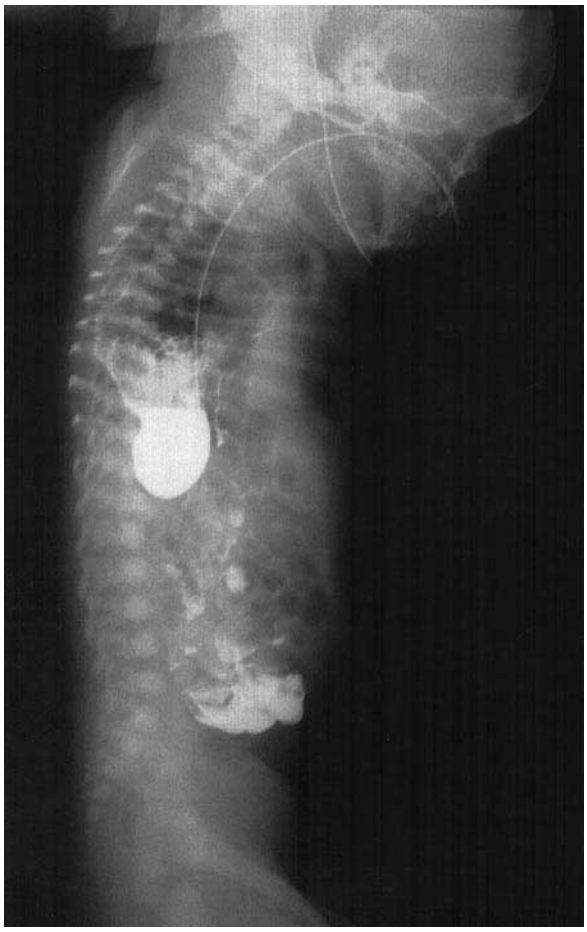

Fig 2. Lateral x-ray of the child with oral contrast instilled through a feeding tube shows bowel displaced in the chest.

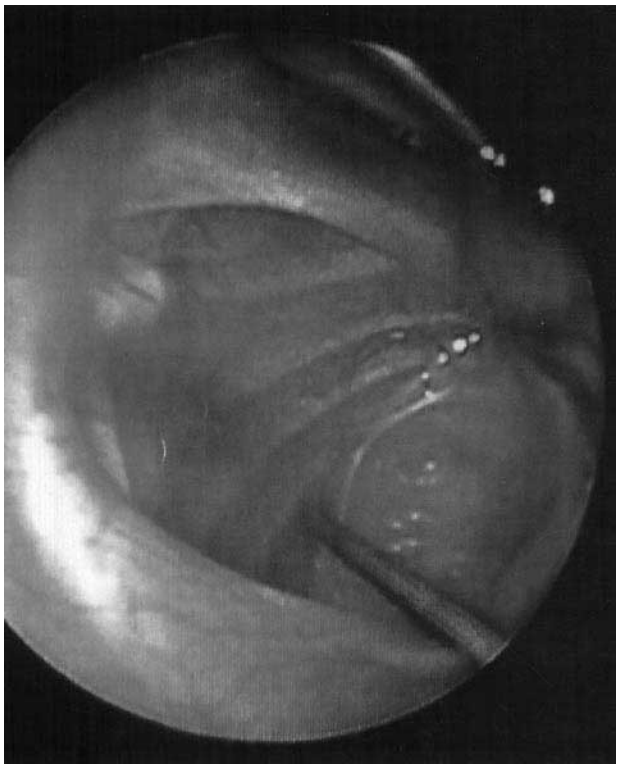

Fig 3. Diaphragmatic defect seen through the laparoscope (Transabdominal view), with the rim of the defect seen. The instrument is inside the thoracic cavity.

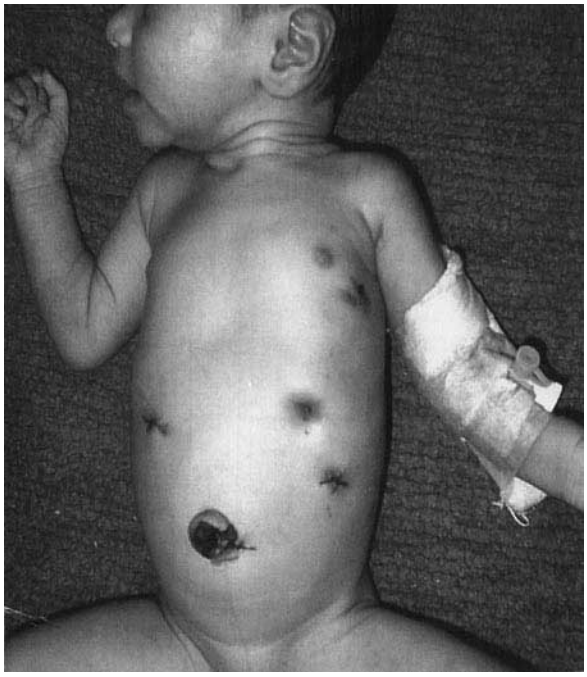

Fig 4. Postoperative picture of the child. The scar in the right hypocondrium and the left lumbar region apart from the umbilicus are the port sites. The scar seen in the left hypocondrium is the scar of the suture and the scar in the chest is of the intercostals drain.

extracorporeally. A 16F intercostal tube drain was placed at the end of the procedure. The bowels were explored, and no obstructive feature was observed.

The entire procedure took 40 minutes. The postoperative period was uneventful, and no form of ventilatory support or supportive oxygenation was required. The intercostal tube was removed on the first postoperative day, and feeding was started from the nasogastric tube. The child was put on breast feeding from the second postoperative day. The child was discharged on the fifth postoperative day with a good cosmetic result (Fig 4). Follow-up results have been good.

DISCUSSION

Laparoscopy has been used to extend our diagnostic capabilities as well as to facilitate a smooth transition to therapeutic measures when necessary. It is well tolerated by infants, even neonates and premature ones. It demands some adjustments in instruments and insufflation pressure (maximum 10 mm Hg used for this patient), with instant adjustments made according to the situation encountered. In the current case, the child with no evidence of fatal associated anomalies and a good respiratory reserve, was better off with a laparoscopic repair. This is the first of its kind in India, and also among one of the first ever reported worldwide. The laparo-

scopic approach, along with providing a beautiful picture of the defect and facilitating an easy repair, helps avoid the disadvantages of large scars, adhesion formations with an early return to oral feedings, and early discharge from the hospital. Laparoscopy for selected neonates can be an important tool in the armamentarium of the pediatric surgeons for the treatment of a complex problem like congenital diaphragmatic hernia.

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