Surgery in Perinatology

E M Halimun
(Harapan Kita Children & Maternity Hospital, Jakarta)

ABSTRACT Although modern neonatal surgery is a very young subject, it started only after the second world war, the progress is remarkable. The well integrated interdisciplinary team among pediatric surgeons, pediatricians, neonatologists, anesthesiologists, and other relevant specialists made this progress possible. Neonatal surgery has been influenced by the advances in prenatal diagnosis. Neonatal surgical emergencies are related to perinatal conditions such as better antenatal care, including ultrasonogram examination, encouraging the high risk pregnant women to deliver at pediatric/perinatal centers where obstetricians, pediatricians or neonatologists, pediatric surgeons, anesthesiologists are working as a team. Prenatal diagnosis has been one of the most challenging aspects in perinatology and may directly related to the task of the pediatric surgeons to salvage certain type of malformations. Some experience of perinatal surgery is also discussed.
[Paediatr Indones 1995; 35:205-210]

Introduction

It has been generally recognized that surgery in perinatology is the very essence of pediatric surgery. This has never been disputed between pediatric surgeons on one side and general surgeons or organ specialists (urologist, plastic surgeon, etc.) on the other. It has always been agreed that neonatal surgery belongs to the pediatric surgeons.

Although modern neonatal surgery is a very young subject, it started only after the second world war, the progress is remarkable. The well integrated interdisciplinary team among pediatric surgeons, pediatricians, neonatologists, anesthesiologists, and other relevant specialists made this progress possible.

In this brief review I shall discuss two subjects which are of utmost important, i.e.,

* advances in surgical intervention in perinatology, and
* present status of neonatal surgery in Indonesia
Advances in Surgical Intervention in Perinatology

The advent of prenatal diagnosis positively alters the attitude toward the timing of surgical intervention in perinatology. The modern methods of prenatal diagnosis, especially ultrasonography, amniocentesis, and fetoscopy, provide us with early information concerning the clinical condition of the fetus. Early recognition of congenital malformation in utero may be the basis for many important decisions regarding the future of the mother and child. Some fetal malformations with a known pattern of inheritance may be specifically sought for. However, some obstetric conditions such as oligohydramnios and polyhydramnios are associated with underlying fetal malformations. In the past, the only question raised by the prenatal diagnosis of a fetal malformation was whether to abort the fetus or to wait delivery. Nowadays other therapeutic alternatives are available such as changing the mode of delivery and even intrauterine treatment.

The rationale for determining how the prenatal diagnosis of any given fetal defect will affect perinatal management is as follows:
1. incompatible with life: abort
2. dystocia: cesarean section (CS)
3. progressive ill effect: delivery early
4. correctable at term: wait
5. alter development: correction in utero

Lesions incompatible with postnatal life are diagnosed in early pregnancy, the family has the option of terminating the pregnancy. When the malformations are detected too late to save safe abortion, the family should be counseled and appropriate and acceptable postnatal management arranged. The examples of the severe defect that may be considered indications for selective termination are listed in Table 1.

Some of these chromosomal defects can be diagnosed by culture of amniotic fluid cells. Some anatomic defects and developmental abnormalities can be diagnosed by regular prenatal sonography.

Defects that may influence the mode of delivery

Elective cesarean delivery may be indicated in fetal malformations listed in Table 2. These malformations mostly cause dystocia. Other indication for elective CS is a malformation requiring immediate surgical correction in a sterile condition, such as in uncovered meningomyelocele.

CS is also indicated in cases of malformation with fetal distress.

Table 1. Malformations usually managed by selective abortion

- Anencephaly, porencephaly and giant hydrocephalus
- Multiple anomalies associated with chromosomal abnormalities (e.g. trisomy 13 or 18)
- Bilateral agenesis or polycystic kidney disease
- Uncorrectable inherited metabolic or chromosomal disorders (hemoglobinopathies, Tay-Sachs disease etc.)

Table 2. Malformations that may require Cesarean delivery

- Conjoined twins
- Giant omphalocele, gastroschisis
- Large hydrocephalus
- Large sacrococcygeal teratoma
- Large cystic hygroma
- Malformation with fetal distress

Defect that can influence the timing of delivery

Early delivery may be indicated for certain fetal malformations that require correction as soon as possible after antenatal diagnosis. In this condition the risk of prematurity delivery must be considered against the risk of continuing the pregnancy. In some malformations the progressive ill effects to the fetus start directly in utero. In case of amniotic band complex, a part of the fetus is compressed or strangled by herniation through defect in the fetal membrane resulting in deformity or amputation. This simple mechanical restriction to growth must immediately be relieved to prevent deformity. Nowadays, the outcome of preterm infant with RDS could be relieved by the stimulating fetal surfactant production with corticosteroids in ventilator.

Table 3. Anomalies that may require induced preterm delivery for early correction

- Obstructive hydrenephrosis
- Obstructive hydrocephalus
- Gastroschisis
- Strangulated intestinal obstruction (volvulus)

Malformation best corrected after at term delivery

Ideally, malformations that can be diagnosed in utero are best managed by appropriate surgical and medical therapy after term delivery. The term infants have a better anesthetic and surgical risk than the preterm infants. In correctable malformation detected in utero, the delivery can be planned so that appropriate facilities (anesthesiologist, neonatologist, pediatric surgeon) are available. Delivery in a perinatology center is recommended; transporting the fetus in situ (maternal transport) is preferable to postnatal transport of the high risk newborn.
proving the management of the fetus with correctable congenital malformation. However, the more invasive diagnostic and therapeutic procedures may cause significant risks for both fetus and moth, raising difficult ethical questions about risks versus benefits and about the right of the fetus and mother.

**Neonatal Surgery in Indonesia**

In Indonesia up till 1992 there were only 15 pediatric surgeons serving a country with the population (census on 1990) of 180,000,000 population with the birth rate of 30 per 1000 mothers; it means that there will be 5.1 million newborn babies per year. Unfortunately the infant death rate (1990) is still high, namely 50 per 1000 live births.

Neonatal surgical cases may be grouped into:
1. Congenital malformations
2. Neonatal surgical emergencies related to perinatal conditions

### 1. Congenital malformations

Inborn malformations which need immediate surgical intervention in the neonatal period are listed in Table 6.

**Abdominal wall defect**

Gastrochisis and omphalocele, even if treated in the pediatric surgical center still give a high mortality rate, i.e., up to 45%. These cases usually present themselves to the surgeons with hypothermia, dyneys and contaminated bowel/surface. These conditions are due to poor transformation and hygiene.

### Surgical respiratory distress syndrome

Cases like lobar emphysema and cystic lung disease are not common findings in the pediatric surgical centers. It is not a really uncommon defect but mostly due to failure of the primary health personnel to detect the disease.

**Urinary tract obstruction**

Unilateral or bilateral hydronephrosis is the result of urinary tract obstruction. Early surgical intervention in the neonatal period gives a good prognosis. Unfortunately in this country usually these cases are neglected until the babies become older before going to surgery.

### 2. Neonatal surgical emergencies related to perinatal conditions

The development of prenatal diagnostic teams and neonatal intensive care services in pediatric centers in Indonesia have resulted in the survival of many seriously ill newborns, which might cause another serious complications in infancy such as necrotizing enterocolitis (NEC), pneumothorax, and secondary intracranial bleeding.

In 1991 at the Children and Maternity hospital Harapan Kita, Jakarta, we found 75 surgical cases among neonates treated in the level II and III wards:
- 47 cases of NEC
- 3 cases of spontaneous pneumothorax
- 25 secondary cerebral bleeding

Forty seven cases or 96% of NEC cases were treated conservatively by parental nutrition for more than 7 days, nasogastric drainage and antibiotics with a survival rate of 55%. Two cases of NEC underwent surgery with the indication of worsening after the conservative treatment, persistence of bowel loop or signs of pneumoperitoneum. Only one case survived. Spontaneous pneumothorax is a predicted complication after intensive respiratory care. Most of the pneumothorax cases resolved spontaneously. Only three cases needed thorax drainage,
which gave a good relieve. Secondary cerebral bleeding needs a long term follow-up if the patients survive from the primary disease. Only cases with secondary progressive intracranial tension needs immediate VP shunting.

Conclusions
To improve the outcome of neonatal surgical cases in Indonesia, one should do:
- a better antenatal care, including ultrasononogram examination
- encourage the high risk pregnant women to deliver at pediatric/perinatal centers where obstetricians, pediatricians or neonatologists, pediatric surgeons, anesthesists are working as a team. Maternal transport is better than ill newborn transport
- educating the physician, midwives, nursing staff in the primary health centers in early diagnosis on high risk pregnancy and life threatening congenital malformation
- improve the quantity and quality of pediatric surgeons in Indonesia

References

Response of Preterm Infants of Mothers Who Are Chronic Carriers of Both HBsAg and HBeAg to Pre-S2 Containing Hepatitis B Vaccine (TGP 943) - A Preliminary Report

Abdul Hamid Sutohardjo
(Division of Perinatology, Department of Child Health, Medical School, University of Udayana/Central General Hospital Sanglah, Denpasar)

Abstract
This study aimed to examine the immunogenicity and protective efficacy of a pre-S2 containing hepatitis B vaccine (TGP 943, Takada, Japan) in 9 preterm infants. A control group of preterm infants were given plasma derived hepatitis B vaccine (Korean Green Cross, Korea). All these preterm infants were born to both HBsAg and HBeAg positive mothers and born in central General Hospital Sanglah Denpasar from January 3, 1992 to October 30, 1992. The gestational ages were 35-37 weeks and birth weights were 2000-2500 grams. The difference of the anti pre-S2 antibody between two groups of preterm infants was evident at month 6. Anti-HBs antibody response was almost same in the two groups of preterm infants. None in preterm infants in this study became positive for HBSAg during follow up for at least 6 months. 2 of 8 preterm infants in control group became positive for HBSAg during follow up for at least 6 months. Our study demonstrated a better anti pre-S2 antibody response and also comparable anti-HBs antibody response in preterm infants vaccinated with a pre-S2 containing hepatitis B vaccine, compared with those with conventional plasma-derived vaccine. [Paediatr Indones 1995; 36:211-215]

Introduction
Hepatitis B vaccination and HB immunoglobulin prevent perinatal transmission of hepatitis B in normal term infants born to mothers who are chronic carriers of hepatitis B surface antigen. The Committee on Infection Disease of the American Academy of Pediatrics stated in 1991 that "data on the effectiveness of HB vaccine are not available for infants with birth weight less than 2000 grams". WHO has concluded that the simplest