



MORTALITY IN OESOPHAGEAL ATRESIA: A SINGLE CENTER EXPERIENCE

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Introduction

Oesophageal atresia (OA) is one of the common anomaly of a gastrointestinal tract in a newborn. The first primary reconstruction was performed by Cameron Haight in 1941. Thereafter, treatment outcome has improved remarkably. Of late, the survival rate is approximately 80 to 90%; with developed countries charting a survival rate up to 95%. In Malaysia, Hospital Kuala Lumpur (HKL) is the largest Paediatric Surgery center which manages this disease. In early 70's, mortality rate in HKL was reported to be 94% and gradually reduced to 43% in the early 80's.

Objectives & Methodology

Objectives of the study include the review of the current mortality rate among neonates with oesophageal atresia in Hospital Kuala Lumpur, the causes of death and its associated factors.

A retrospective study was conducted from year 2006 to 2016 over a 10 year period. This study includes all neonates (<28 days) who were admitted to our center and diagnosed to have oesophageal atresia. Neonates who did not survive their ordeal during the stay at our center were regarded as mortality. SPSS was used for the statistical analysis in this study.

Results

A total of 253 newborns were admitted for oesophageal atresia over the 10 years period (Figure 1). 55% were male newborn and 89% of all neonates studied were more than 1500g (Figure 2). Mean weight was 2.29kg (± 0.62) (Figure 3). Only 9% were inborn (Figure 4). Surgery was done for 248 of the neonates while 5 of them had no surgery as they had lethal anomalies. 80% (n=198) underwent primary anastomosis and the remaining 20% (n=50) neonates had staged repairs done (Figure 5). Majority of the oesophageal atresia had distal fistulas (89.9%), followed by pure atresia 9.3% (Table 1). There were 42 mortalities (16.9%) following surgical repair excluding 5 non-operated cases (Figure 6). The main cause of death is severe cardiac anomaly (26.2%) followed by respiratory complications (21.4%), post operative complication (21.4%), sepsis (11.9%) and necrotizing enterocolitis (7.1%). In this study, mortality rate was higher in the smaller neonates less than 1500g and those with staged repair (Table 2, Table 3, Figure 7).

Discussion

Mortality rate of neonates with oesophageal atresia in Hospital Kuala Lumpur has improved remarkably over the years. Majority of the cases were referred from other centers nationwide (outborns). The mortality rate in these outborn neonates were reported to be equivalent to those delivered in our centre (inborn) (Table 3). Immediate resuscitation and care from these outborn centers has improved since the development of more level 2 and level 3 Neonatal Intensive Care Unit (NICU). In our studied center, we have a dedicated surgical NICU which allowed us to have a better control on direct admissions of the outborn neonates and its subsequent perioperative care. The availability of experienced paediatric anaesthetic team has provided a safe anesthesia especially to the smaller babies. Besides the technical difficulty of operating in smaller neonates (<1500g), their associated comorbidities such as prematurity, cardiac anomalies, chronic lung disease, necrotizing enterocolitis and sepsis has contributed to the mortality.

Conclusion

The mortality rate in our center for neonates who had undergone surgery for oesophageal atresia is 16.9%. Refinement of operative strategies and detailed postoperative care can improve overall the survival rates in neonates who were diagnosed to have oesophageal atresia.

References

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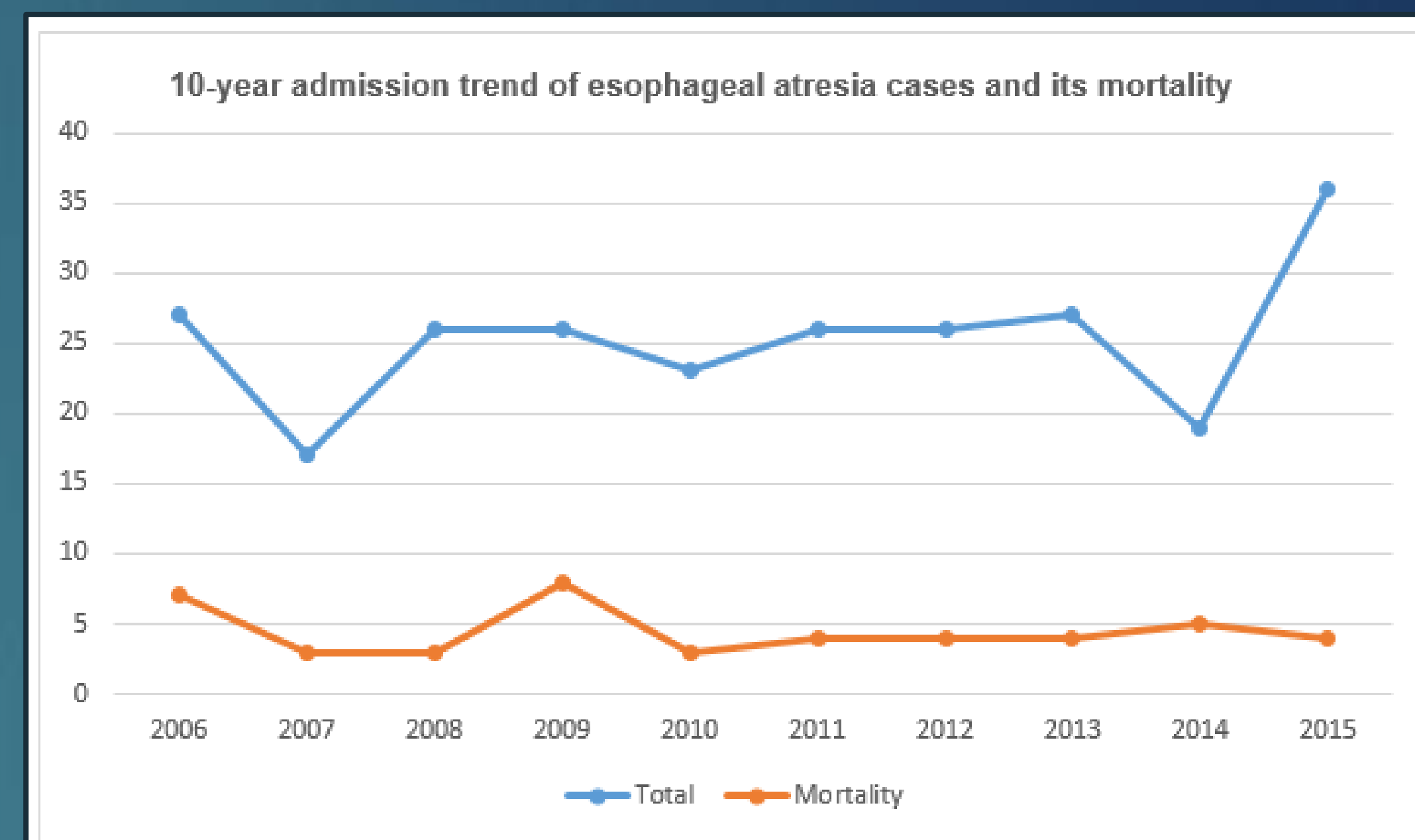


Figure 1: Admission trend over the 10 years duration and its mortality cases (Including 5 non-operated cases)

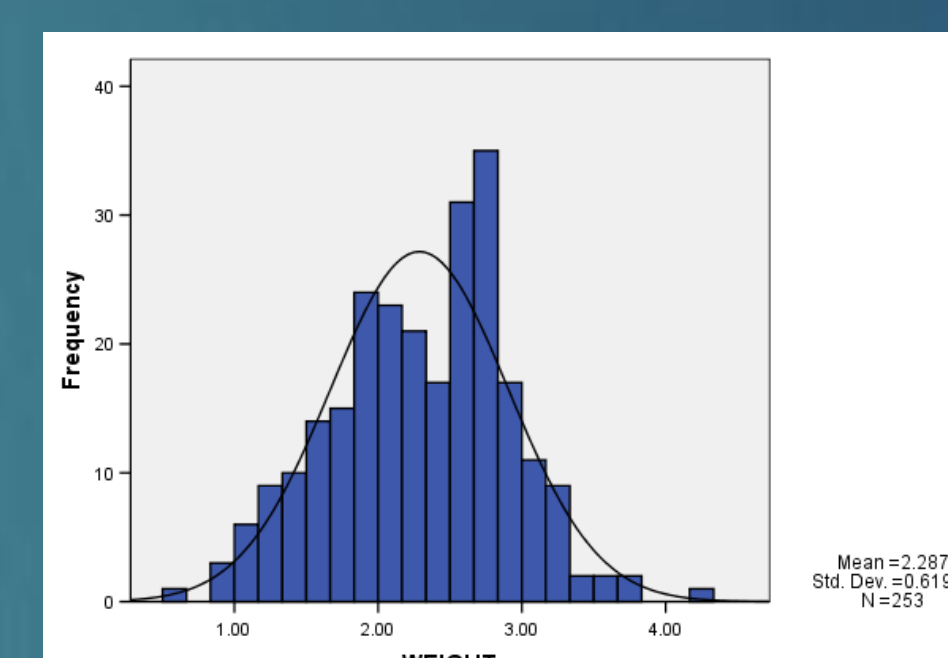


Figure 2: Weight distribution

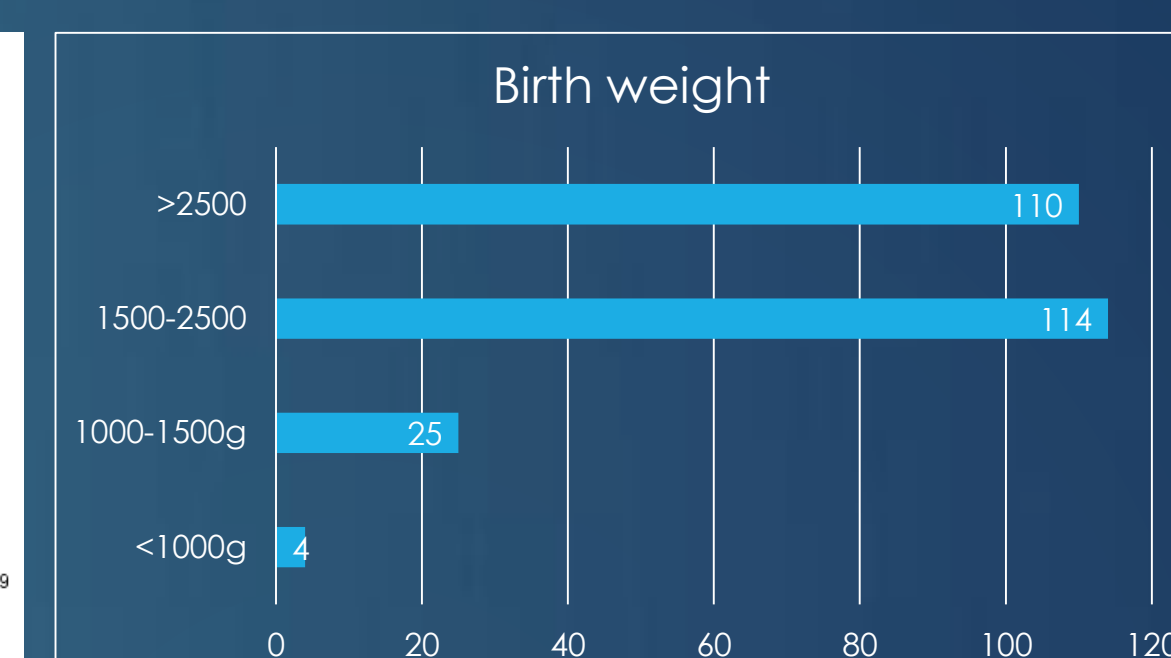


Figure 3: Weight distribution

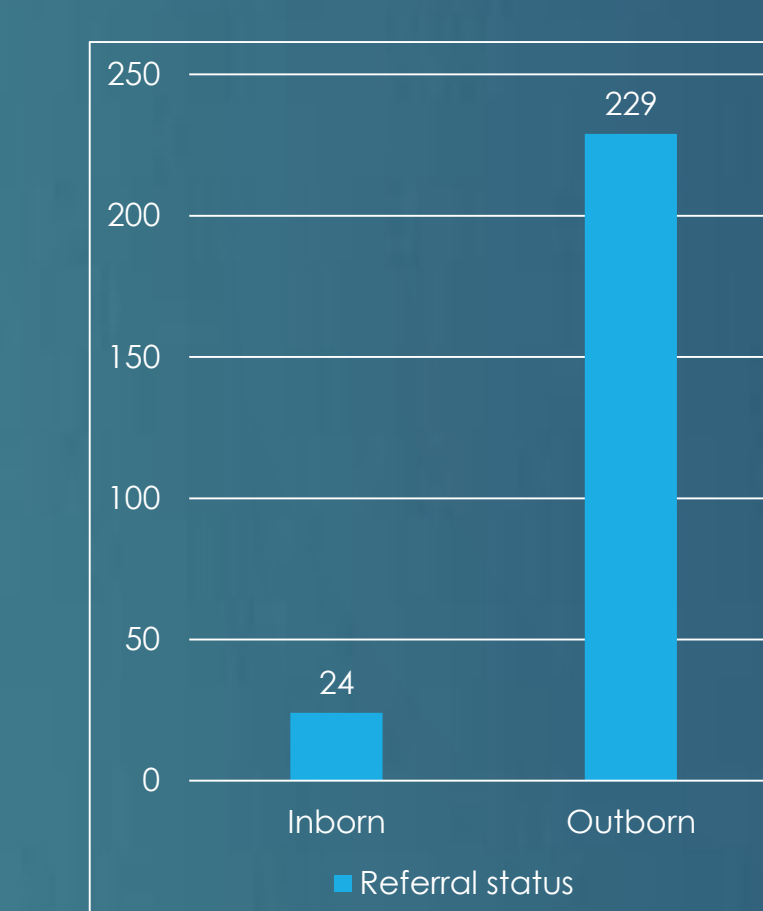


Figure 4: Referral status

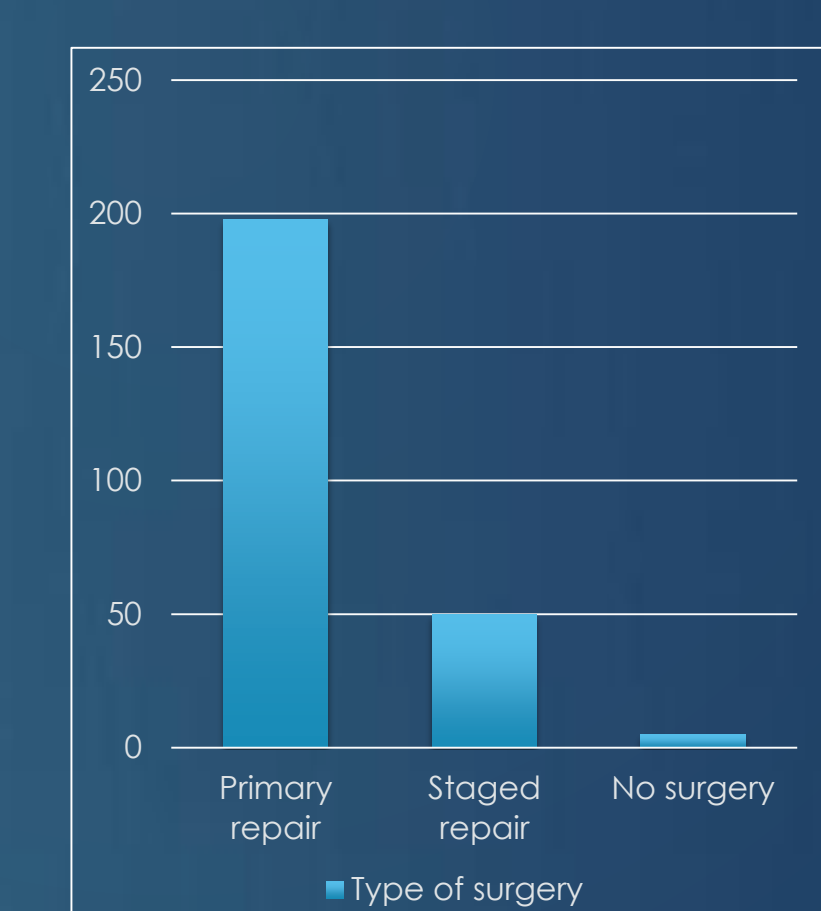


Figure 5: Type of surgery

Type	Numbers	%
Pure OA	23	9.3
OA with distal fistula	223	89.9
OA with proximal fistula	1	0.4
OA with double fistula	1	0.4

Table 1: Types of oesophageal atresia

Birth weight	Survival	Mortality
>2500g	98	10 (9.3%)
1500-2500g	91	20 (18.0%)
1000-1500g	16	9 (36.0%)
<1000g	1	3 (75.0%)

Table 2: Mortality rates according to weight

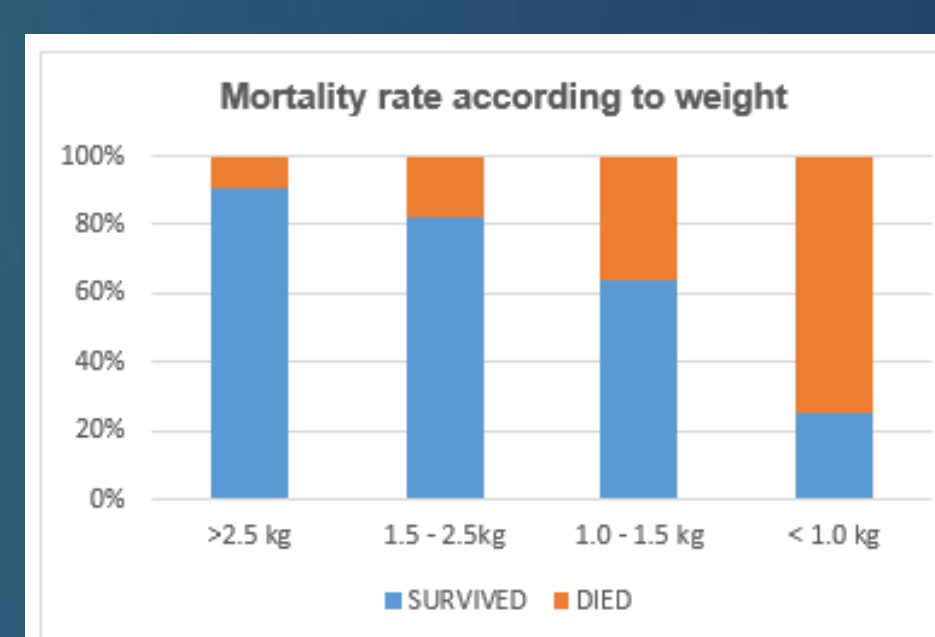


Figure 6: Mortality rates according to weight

	Survival	Mortality	p-value
Mean birth weight in kg (SD)	2.35 (0.58)	1.96 (0.70)	<0.001 ^a
Birth weight:			
< 1500g	17 (58.6%)	12 (41.4%)	0.001 ^b
≥ 1500g	189 (86.3%)	30 (13.7%)	
Referral status			
Inborn	17 (74.0%)	6 (26.0%)	0.242 ^c
Outborn	189 (84.0%)	36 (16.0%)	
Type of anomaly			
Pure OA	18 (78.3%)	5 (21.7%)	0.559 ^c
OA with TOF	188 (83.6%)	37 (16.4%)	
Type of surgery			
Primary repair	171 (86.4%)	27 (13.6%)	0.006 ^b
Staged repair	35 (70.0%)	15 (30.0%)	

^a Independent t test ^b Chi square test ^c Fisher's exact test

Table 3: Mortality and its associated factors