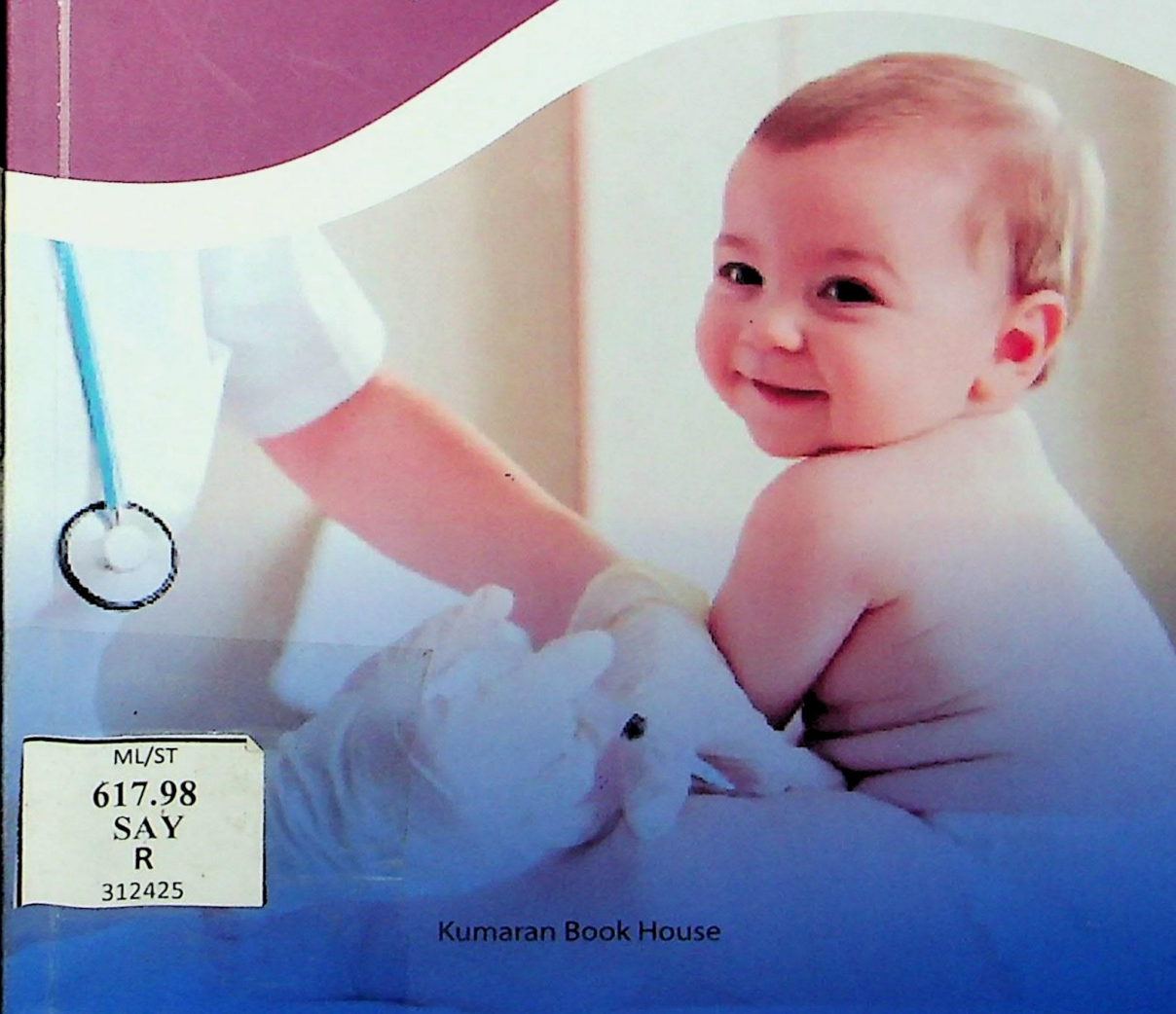




Text Book in Paediatric Surgery

B. Sayanthan



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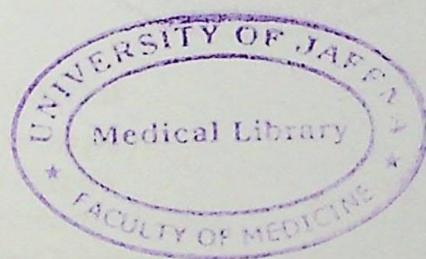
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Textbook in Paediatric Surgery

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Dr. B. Sayanthan

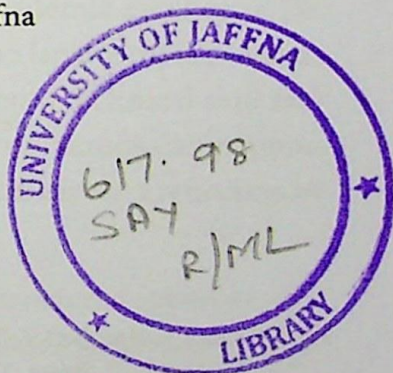
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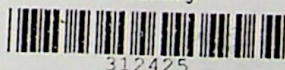
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Textbook in Paediatric Surgery

by Dr.B.Sayanthan

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Foreword

It is with great pleasure that I write the foreword for the Textbook in Paediatric Surgery, a comprehensive and timely contribution to the academic and clinical field of pediatric surgery. This work stands as a valuable resource for medical students, surgical trainees, and young clinicians who seek to build a strong foundation in the principles and practice of pediatric surgical care.

The author, Dr. B. Sayanthan, is a board-certified Consultant Paediatric Surgeon and Senior Lecturer in Surgery at the University of Jaffna. He brings to this textbook not only extensive clinical experience but also a deep commitment to surgical education and academic excellence. Dr. Sayanthan is particularly known for his expertise in laparoscopic pediatric surgery, a field in which he has demonstrated both technical skill and innovation. His academic journey is marked by numerous distinctions, including multiple gold medals during his medical career, a reflection of his dedication and scholarly excellence.

This textbook is characterized by its clarity, structured approach, and practical relevance. Covering a wide spectrum of conditions from neonatal emergencies to complex congenital anomalies, each chapter is thoughtfully written and enriched with high-quality illustrations, radiological examples, and step-by-step management algorithms. The content is current, evidence-based, and tailored to the unique needs of children, emphasizing both clinical decision-making and surgical precision.

Beyond being a reference, this book serves as a dependable guide for clinicians dealing with the intricacies of pediatric surgical care. The integration of operative techniques, updated guidelines, and real-world clinical insights ensures that this text remains not only academically rigorous but also practically useful in diverse clinical settings.

I extend my sincere congratulations to Dr. Sayanthan for this remarkable academic contribution. His unwavering dedication to advancing pediatric surgery and medical education is evident throughout this volume. I am confident that this textbook will be an enduring asset to the surgical community and an inspiration to future generations of pediatric surgeons.

Dr. Paramanathan Sajeewan

Consultant Paediatric Surgeon

National Hospital Kandy

Preface

The discipline of paediatric surgery continues to evolve in complexity and breadth, necessitating a clear, structured, and clinically relevant reference that addresses both foundational and advanced aspects of the field. Test Book in Paediatric Surgery has been conceived and developed with the objective of bridging this essential need, particularly for undergraduate and postgraduate medical students, surgical trainees, and healthcare professionals involved in the management of paediatric surgical patients.

Drawing upon years of clinical practice and academic involvement, this text is the culmination of a commitment to medical education and paediatric surgical care. The book encapsulates a wide spectrum of surgical conditions encountered in paediatric populations, ranging from neonatal emergencies to congenital anomalies, oncological challenges, and trauma. Each chapter has been meticulously curated to provide concise yet comprehensive coverage of the topic, with an emphasis on pathophysiology, diagnostic evaluation, and evidence-based management protocols.

It is my firm belief that the strength of this book lies not only in its clinical relevance but also in its pedagogical clarity. The content is structured in a manner that promotes easy navigation, conceptual reinforcement, and practical application—qualities essential for both academic excellence and effective patient care.

I am profoundly grateful to Dr. Pragashini Pratheepan for her invaluable assistance in editing and compiling this manuscript. Her

contributions have been instrumental in ensuring the clarity, consistency, and integrity of the content throughout.

This textbook represents more than an academic resource; it is a testament to a shared dedication to improving surgical outcomes in children through knowledge dissemination and continuous learning. I sincerely hope that readers will find this volume both enlightening and inspiring as they progress in their journey within the field of paediatric surgery.

Dr. B. Sayanthan

Acknowledgements

The successful completion and publication of the “Textbook in Paediatric Surgery” would not have been possible without the support, dedication, and contributions of several individuals and institutions to whom I express my deepest gratitude.

First and foremost, I wish to extend my heartfelt appreciation to Dr. Paramanathan Sajeevan, Consultant Paediatric Surgeon, for graciously accepting the invitation to write the foreword for this book and his review will inspire others to benefit from it as well. His distinguished presence and insightful perspective have greatly enriched the academic value of this volume.

I am sincerely grateful to Dr. Pragashini Pratheepan for her unwavering support in editing and compiling this work. Her meticulous attention to detail, editorial acumen, and steadfast commitment have been instrumental in shaping the clarity and coherence of the final manuscript.

I also wish to acknowledge the dedicated team at Kumaran Printers Private Limited for their exceptional effort and professionalism in the production of this book. Their commitment to quality and tireless work has played a pivotal role in bringing this project to fruition.

Finally, I am indebted to all my colleagues, students, and mentors who have continually inspired me to pursue excellence in paediatric surgery and academic scholarship. It is my sincere hope that this textbook will serve as a valuable resource for the next generation of clinicians and scholars in the field.

Dr. B. Sayanthan

Contents

<i>Foreword</i>	v
<i>Preface</i>	vii
<i>Acknowledgements</i>	ix
A. Neonatal Surgery	1
1. Esophageal Atresia	1
2. Congenital Diaphragmatic Hernia	5
3. Pyloric Stenosis	11
4. Necrotizing Enterocolitis	15
5. Intestinal Atresia	19
6. Hirschsprung's Disease	22
7. Intestinal Malrotation	26
B. Hepatobiliary System	31
1. Jaundice	31
2. Choledochal Malformation	35
3. Biliary Atresia	38
4. Gallbladder Disease	41
5. Pancreatic Disease	44
6. Portal Hypertension	49

C. Urology	52
1. Exstrophy-Epispadias Anomaly	52
2. Hypospadias	55
3. Vesicoureteric Reflux	58
4. Posterior Urethral Valve	62
5. The Ureter	67
6. Cryptorchidism	74
7. Inguinal Hernia	77
8. Hydrocele	81
9. Urinary Tract Infection	83
10. Acute Scrotum	86
 D. Neurosurgery	 88
1. Spina Bifida	88
2. Hydrocephalus	91
 E. Oncology	 95
1. Neuroblastoma	95
2. Wilm's Tumor	99
3. Teratoma	102
4. Other Tumors	105

F. Gastrointestinal System	112
1. Gastroesophageal Reflux Disease (GORD)	112
2. Acute Appendicitis	116
3. Intussusception	120
4. Constipation	123
 G. Head and Neck	 125
 H. Trauma & Resuscitation	 130
1. Trauma Management	130
2. Head Injury	136
3. Thoracic Trauma	139
4. Abdominal Trauma	145
 I. Orthopedic Surgery	 150
 <i>Reference</i>	 154
<i>Index</i>	155

A. Neonatal Surgery

1. ESOPHAGEAL ATRESIA

1.1 Background

- 1 per 2500-3000 live births.
- M=F.
- Isolated (80%).
- Associated anomalies (20%).

Vary in severity & number, 2 non-random associations are recognized as a distinct component - VACTERL & CHARGE.

1.2 Embryology

1. On the 22nd day of gestation, the trachea arises from the primitive foregut. This then invaginates into the ventral mesenchyme. Then the tracheoesophageal folds arise from lateral mesenchyme.
2. At the 32nd day, the trachea separates from the esophagus. Incomplete fusion causes a defective tracheoesophageal septum & abnormal connection between the trachea & esophagus.

1.3 What are the congenital anomalies associated with esophageal atresia.

Associated anomaly	Incidence (%)
Cardiac	35
Renal	23
Vertebral	22
Anorectal	20
Limb	14
Chromosomal	11

1.4 Anatomical classification of esophageal atresia.

Type	Description	Frequency (%)
1	EA alone	7
2	EA & proximal fistula	1
3	EA & distal fistula	87
4	EA & proximal & distal fistula	1
5	H type fistula no EA	4

1.5 What are the clinical features of esophageal atresia.

- Prenatal period.

Maternal USS shows a small or absent stomach associated with Polyhydramnios.

- Postnatal period .

The classical features are excessive salivation & frothing, attempting to feed leads to choking & respiratory distress.

To confirm the diagnosis, nasogastric tube or replogle 3 tube insertion & chest X-Ray should be done.

1.6 Investigations for EA

- Chest X-Ray.

» In Distal TEF we can see air in the stomach.

» Gasless appearance suggests pure EA.

» Associated duodenal atresia suggested by an overlarge stomach and duodenal bubbles.

- Echocardiogram

» Define cardiac anatomy & right-sided aortic arch (abnormal silhouette suggestive of right-sided aortic arch in chest X-Ray).

**Type 5 (H Type) Typically Presents after Neonatal age,
Diagnostic Options are Bronchoscopy, Esophagoscopy,
Tube Esophagogram**

1.7 Management

- Pre-operative management – upper pouch should be kept empty by continuous low-pressure suction via a replogle tube.
- Preoperative endoscopy.
 1. Bronchoscopy
 2. Esophagoscopy

1.8 Surgical management

1. Esophageal atresia & Distal TEF.
 - » Divide TEF close to the trachea & then close with non-absorbable sutures End-to-end anastomosis of both ends of the esophagus.
2. “Long Gap” Esophageal Atresia.
 - » The gap is usually >4 vertebral bodies.
 - » Methods are.
 - a) Cervical esophagostomy.
 - b) Delayed primary anastomosis.
 - c) Lengthening by traction.
- If the gap is > 6 vertebrae or failure of the above maneuvers we go for ESOPHAGEAL REPLACEMENT.
 - a) Gastric transposition.
 - b) Jejunal conduit.
 - c) Colon interposition.
- Thoracoscopic repair is being practiced.

1.9 Complications of surgery

- Anastomotic leak (<5%).
- Recurrent fistula (<5%).
- Stricture (10-30%).
- Gastroesophageal reflux (40%).
- Tracheomalacia (10%).

1.10 Long term outcomes

- Swallowing –Because peristalsis is impaired or absent.
- Respiratory morbidity-Recurrent chest infections, intermittent food-related choking, characteristic seal-like bark.
- Barrett's esophagus- long-term malignancy potential during adulthood.

2. CONGENITAL DIAPHRAGMATIC HERNIA (CDH)

2.1 Epidemiology

- 1 in 3000 live births.
- 1 in 2000 at 20 weeks of gestation, there is increased fetal loss over the pregnancy.
- M=F.
- Predominantly left sided (80%) & bilateral (<2%).
- Isolated (usually) if live-born.
- In late presenters we can see an excellent prognosis.

2.2 Associations

- Chromosomal defects – trisomy 13, 18, 21.
- Fryns syndrome.
- Pallister-Killian syndrome.
- Cantrell syndrome or sequence.
- Cardiac defect (VSD).

2.3 Embryology

- Diaphragm is derived from 4 sources (4 to 8 weeks of gestation).
 1. Septum transversum.
 2. Pleuroperitoneal membranous fold.
 3. Thoracic body wall mesoderm.
 4. Oesophageal mesenchyme.
- There is a posterior connection between the pericardial & peritoneal cavities. Failure in the growth of the pleuroperitoneal membrane causes typical postero-lateral CDH.
- **Morgagni hernias** occur in the anterior part of the diaphragm on either side of the xiphisternum.
- The size of the defect varies among patients.