

Zacharias Zachariou (Ed.)

Pediatric Surgery Digest

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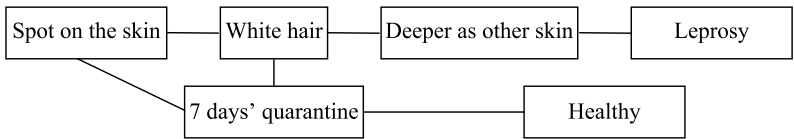
Preface

A discipline for childcare must remain young, responsive, and flexible. This flexibility has to be sustained in order for pediatric surgeons to establish their position, which lies in the fields of both pediatrics and surgery. The concept of this book is to break down barriers and to enable young physicians to look up everyday questions concerning diagnostic measures, therapeutic regimes, postsurgical care, and prognostic values during rounds, in collaboration with pediatricians. It also offers a solid and quick overview of the European Pediatric Surgical curriculum.

And the priest shall look on the plague in the skin and when the hair in the plague is turned white, and the plague in sight be deeper than the skin of his flesh, it is a plague of leprosy: and the priest shall look on him and pronounce him unclean. If the bright spot be white in the skin of his flesh, and in sight be not deeper than the skin, and the hair thereof be not turned white; then the priest shall shut up him, that hath the plague seven days.

Leviticus 13, 3–4

This bible quotation brings a step-by-step solution to a problem. Leprosy is excluded or confirmed following the guidelines in this formula, as for each condition an individual proposal is suggested. An algorithm is set up using the words “when,” “it is,” “if” “then ,” etc. However, the mass of words is confusing to the reader, who constantly has to refer to prior information in the text. The essentials in this communication icon are lost due to the lack of abridgement. By enlarging the “blank areas” the specific information is enhanced, providing the same information much quicker in the overview.



The user follows just the path that indicates the actual findings, omitting those that are of no interest in that specific case. Time saving is not the only benefit of this approach: much more information can be concentrated as well in this concise form of text.

Despite the fact that this book cannot substitute for a tutorial-type textbook, it can be utilized well by someone who is proficient in the fundamentals of pediatric surgery. It is divided into four parts. Following the introductory Part I, Part II deals with pre- and postoperative guidelines, surgical principles, and emergencies in childhood. Part III deals with diagnosis, therapy, and the prognosis of pediatric surgical diseases, while Part IV reflects normal laboratory values and the dosage regimens of pharmaceuticals in childhood. It may be that a reader thinks that the book would benefit from the addition of further appendices, in which case the editor would welcome their suggestions, and gaps can then be filled in a future edition.

I wish to thank all the distinguished authors, from nearly all the European countries, for their contributions in order to promote pediatric surgical knowledge. A lot of the figures were kindly placed at our disposal by Professors Prem Puri and Michael Höllwarth, from Professor Ahmed Hadidi and Professor Klaas Bax. For their skillful secretarial work I would like to thank Ursula Gueder and Remus Vezan. Special thanks also go to Dr. Vera Pedersen for proofreading this manuscript, considering both grammatical and medical aspects. Finally I would like to thank the editorial staff of Springer-Verlag, especially Mrs. Gabriele Schröder and Mrs. Stephanie Benko, for their valuable support.

Berne, June 2008
Zacharias Zachariou



Synopsis

The contents of this manual offer a praxis-orientated and up-to date overview of all subjects in paediatric surgery according to the European Paediatric Surgical Curriculum. Additionally interdisciplinary aspects concerning pediatrics, adult surgery, obstetrics and other disciplines working with children were considered.

The tables presented enable quick access to indications for the operative and conservative therapy with schematic step-by-step illustrations of nearly all surgical procedures. Practical information on child-adapted dosages for pharmacotherapy as well as age-specific injury patterns from scalding in young children to spleen rupture in teenaged vehicle users are also taken into consideration. The surgical role in modern pediatric oncology is also presented according to the guidelines of SIOP.

European paediatric surgeons, experts in their fields, write this book not only for students and trainees but also for anybody who treats children surgically.



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PART I
INTRODUCTION

1.1 What is Pediatric Surgery?

The easiest answer to this question is the semantic interpretation of the words pediatric and surgery, meaning surgery on a child. Is pediatric surgery, however, the transposition of surgical procedures to a smaller human being? The main difference between an adult and a child is the fact that the child is growing and throughout the time between its birth and entrance to adulthood – about 18 years – this child never stays the same. Considering this fact, the surgical procedure in pediatric surgery has to be adapted to the child's age, something with which an adult surgeon is not confronted. This philosophy was best expressed in the nineteenth century by the British novelist Charles Dickens who wrote the following statement:

“It is not enough, that a wise physician, who succeeds in curing an adult with a medicine, reduces this prescription in order to treat a child. Some diseases occur only in children and some others, that afflict adults also, develop in other forms in children that diverge from each other as a child and an adult. Children are not miniature adults.”

This visionary statement reflects the quintessence of pediatric surgery. Malformations of the gastrointestinal tract for instance are only found in children. Then again, acute appendicitis takes a very different course in children compared to adults, with perforation occurring much earlier. Bone fracture treatment is the best example showing that any therapy applied to a growing organism has to consider the child's growth potential.

Pediatric surgery is not the mere application of surgical procedures to a child but requires special knowledge about embryology, pediatrics, growth

pathophysiology, and specific therapy principles. Pediatric surgery is a specialization on the growing organism.

Medical knowledge has grown enormously in recent decades. This fact has led to the subspecialization of medicine on the basis of organs. Pediatric surgeons are perhaps the only remaining physicians who treat the whole organism and not simply an individual organ. This task is very difficult, as it is impossible to be the best in all fields. The pediatric surgeon is, in my opinion, the “manager” of the surgically ill child. Indeed, pediatric surgery offers the infrastructure in which the medical specialist can come to the child, in a child- and family-friendly environment, to offer her/his great expertise. The pediatric surgeon puts the child in the center and cares for them with the best possible treatment. If this treatment is not offered by pediatric surgery, then, according to the local setting, adult surgeons from the institution, from elsewhere in the country or from other parts of the world may provide the solution. The pediatric surgical “bull’s eye” (Fig. 1.1) illustrates the solution providing optimal treatment.

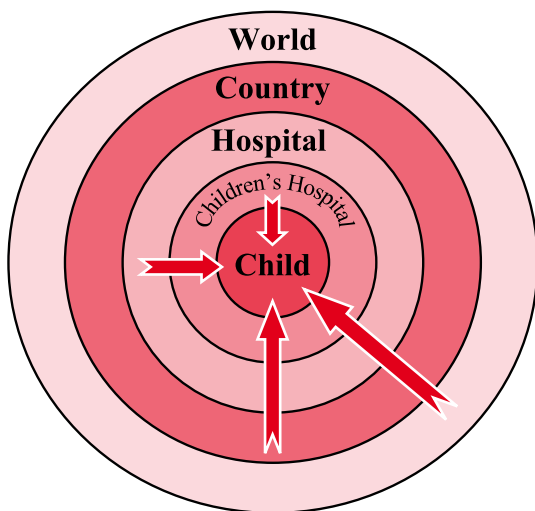


Fig. 1.1 Pediatric Surgical “Bulls eye”

1.2 Timing of Operations in Pediatric Surgical Patients

General

The following considerations are necessary before the indication for operation is set (see Table 1.1 for proposed ideal age for elective operations):

- Is the patient compromised due to the disease? (i.e., intrauterine bowel perforation)
- What risks for the patient could occur due to the operation? (i.e., premature newborn)
- Is the operation at this point technically possible? (i.e., hand malformations)
- Is a spontaneous healing possible? (i.e., umbilical hernia or hydrocele in the newborn)
- What are the psychosocial aspects of the therapy and the hospitalization? (i.e., intersex)

Table 1.1 Proposed ideal age for elective operations in pediatric surgery

Malformation	Age	Hospitalization
Craniosynostosis	1st to 3rd month	2 weeks
Meningocele	3rd to 6th month	2 weeks
Lip, cleft	3rd to 9th month	1 week
Palate, cleft	18th to 36th month	1 week
Prominent ears	5th to 6th year	Day surgery
Thyroglossal fistula, cyst	As from the 3rd month	5 days
Torticollis	6th to 12th month	4 days
Inguinal hernia	After diagnosis	3 days
Umbilical hernia	After the 12th month	Day surgery
Testicular position anomalies	18th to 24th month	4 days
Varicocele	Grade III and according to signs	2 days
Phimosis (medical indication)	3rd to 5th year	Day surgery
Hypospadias	6th to 12th month	4–14 days

Table 1.1 (continued) Proposed ideal age for elective operations in pediatric surgery

Malformation	Age	Hospitalization
Bladder exstrophy		
▪ Turn-in	Newborn period	2–3 weeks
▪ Epispadia repair	3rd year	2–3 weeks
▪ Continence repair	4th to 5th year	2–3 weeks
Kidney and descending urinary tract	3rd month	2–3 weeks
▪ Ureteropelvic- junction obstruction		
▪ Vesicoureteral reflux		
Hirschsprung's disease (definitive)	3rd to 6th month	3 weeks
Anorectal anomalies	3rd to 12th month	1–3 weeks
Hexadactyly	3rd to 6th month	1–2 weeks
Syndactyly	6th to 24th month	1–2 weeks
Funnel chest	8th to 10th year	2 weeks
Exostosis	With hitting puberty	3–7 days
Bone cysts	As from the 5th year	3–7 days
Hemangioma	According to signs, 6th to 18th month	2 days/day surgery
Ambiguous genitalia	As soon as possible –18th month	3 weeks

1.3 Preoperative Management

Medical history

- Pre-, peri- and postnatal anamnesis
- History of the surgical disease
- Anamnesis of pediatric diseases
- Risk factors (diabetes, hemophilia, asthma, heart malformations, etc.)
- Time of last food ingestion