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Historical insights into pediatric surgery: The first comprehensive textbook of Türkiye by Professor Akif Şakir Şakar

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Abstract

Objectives: This article focused on the historical development of pediatric surgery in Türkiye, emphasizing the contributions of Prof. Dr. Akif Şakir Şakar and his groundbreaking textbook *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri* (1936-1941).

Materials and methods: A historical-archival methodology was employed, utilizing primary analysis of Şakar's two-volume textbook. Content analysis was conducted to evaluate the pedagogical style, thematic coverage, and visual illustrations. Comparative references to contemporary and earlier international pediatric surgery texts were included.

Results: Şakar's textbook, featuring over 570 original illustrations and detailed case-based discussions, stands as the first comprehensive Turkish-language work on pediatric surgery. The book covers a broad spectrum of conditions, including testicular torsion, inguinal hernia, cleft lip, and congenital malformations. Its narrative style integrates clinical reasoning with educational clarity, aligning with modern pedagogical standards. Visual documentation enhances the textbook's educational impact.

Conclusion: *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri* is not only a milestone in Turkish medical history but also a pioneering contribution to global pediatric surgical education. It predates the formal recognition of pediatric surgery in Türkiye and deserves broader scholarly recognition for its visionary approach to child-specific surgical care.

Keywords: First textbook, medical history, pediatric surgery textbook, Türkiye.

The emergence of pediatric surgery as a distinct medical specialty is a relatively recent but profoundly significant development within the broader history of medicine. Rooted in the recognition that children are not merely miniature adults but possess unique anatomical, physiological, and pathological characteristics, pediatric surgery has evolved into an independent field with its own educational foundations, institutional structures, and clinical methodologies.[1] In Türkiye, the institutionalization of pediatric surgery took shape during the 20th century, following a trajectory both shaped by the country's rich medical heritage and influenced by international milestones in surgical science. Despite this relatively late formal recognition, the origins of pediatric surgical thought in Anatolia can be traced back centuries, attesting to a long-standing awareness of child-specific health concerns.[2]

This study aimed to explore the historical development of pediatric surgery in Türkiye, with particular emphasis on the contributions of Prof. Dr. Akif Şakir Şakar, a pioneer in the field. His seminal work, *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri*, published in two volumes between 1936 and 1941, represents the first structured textbook on pediatric surgery written in Turkish. At a time when no separate residency programs or institutional frameworks

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for pediatric surgery existed, Şakar's textbook served as both an educational cornerstone and a visionary declaration that children's surgical needs warranted focused and specialized attention. His detailed case-based discussions, accompanied by hundreds of anatomical and operative illustrations, predated many of the international efforts that would later define pediatric surgery as a distinct specialty.

The historical context within which Turkish pediatric surgery emerged is marked by a convergence of ancient medical practices, Ottoman surgical documentation, and early Republican healthcare reforms. The surgical atlas Cerrahiyyetü'l-Haniyye, authored by Şerafeddin Sabuncuoğlu in the 15th century, features illustrations and case descriptions of pediatric conditions such as congenital anomalies, anal atresia, and complications of circumcision, early indicators of an awareness that children required tailored surgical approaches.[3] Furthermore, legal-medical documents from the Ottoman era, such as the hüccet, functioned as rudimentary consent forms, indicating a progressive legal consciousness about the surgical treatment of minors.[2]

Institutional strides in pediatric healthcare began to materialize in the late Ottoman period, most notably with the founding of the Hamidiye Etfal Hospital in 1899 by Sultan Abdulhamid II. Established in memory of his daughter, the hospital housed one of the earliest pediatric surgery units in Europe and laid the groundwork for subsequent developments in pediatric surgical care in the Republican era.[4]

The first pediatric surgery textbook written in English was published in 1860 by Forster[5] under the title The Surgical Diseases of Children. This book also addressed topics such as pediatric anesthesia and nursing care.[6] Some sources credit Ladd and Gross[7] with writing the first pediatric surgery textbook with Abdominal Surgery of Infancy and Childhood.[8] However, considering the book published in 1860, this claim is not accurate. It is possible that Ladd and Gross's work has been labeled as such because it focused solely on abdominal surgery, excluding orthopedic topics. In this sense, Şakar's work represents not only a critical step in Türkiye's medical modernization but also a noteworthy contribution to the global history of pediatric surgery.

By comparing these parallel developments, this article sought to contextualize Türkiye's journey in pediatric surgery within the broader international framework, thereby offering valuable insights to both Turkish pediatric surgeons and global medical historians. It emphasizes that the evolution of pediatric surgery in Türkiye is not merely a derivative of Western progress but a locally rooted, intellectually rich, and historically layered phenomenon. In doing so, it sheds light on the unique path carved by Turkish practitioners in acknowledging and addressing the surgical needs of children, a path that continues to influence the discipline to this day.

MATERIALS AND METHODS

This study was designed as a historical and descriptive archival analysis focusing on the earliest structured pediatric surgery textbook written in Turkish: *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri*, authored by Prof. Dr. Akif Şakir Şakar. The primary source material for this research consisted of the first edition of the two-volume work, originally published in 1936 and 1941, respectively.

To ensure accuracy and authenticity, a physical copy of the first volume in 1936 and a physical copy of the second volume in 1941 was accessed. The original copy, printed in Latin script, was examined in person by the researchers. Each page was reviewed and cataloged to identify the scope, structure, and illustrative content of the work.

The methodological approach included qualitative content analysis aimed at identifying major surgical topics covered in the textbook, the language and terminology used, and the pedagogical style employed by the author. Special attention was given to case-based narratives, visual illustrations, and the structure of clinical discussions to evaluate the educational framework adopted in the early stages of pediatric surgical training in Türkiye.

Furthermore, the historical context of the publication was reconstructed by consulting secondary literature on the development of pediatric surgery in both Türkiye and internationally.

Comparative analysis was performed between Şakar's work and contemporaneous or earlier international pediatric surgery textbooks, such as John Cooper Forster's The Surgical Diseases of Children (1860) and William E. Ladd and Robert E. Gross's Abdominal Surgery of Infancy and Childhood (1941), to highlight unique features of the Turkish textbook.

Ethical approval was not required for this study, as it did not involve human or animal subjects. All historical materials used are publicly accessible through academic or institutional archives.

RESULTS

The first edition of *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri*, or Leçons de clinique chirurgicale infantile et d'orthopédie (Clinical Lectures on Pediatric Surgery and Orthopedics), published in 1936 by Prof. Dr. Akif Şakir Şakar, comprises 770 pages divided into two separate volumes. The work is written in Turkish, using the Latin script with Arabic numbers, and features 210 original illustrations in the first volume and 366 in the second. The text presents case-based clinical narratives, each followed by detailed discussions encompassing etiology, clinical presentation, differential diagnoses, diagnostic approaches, and surgical treatment options.[9,10] A second edition was released in 1949, reflecting updates in medical terminology and simplification of language to improve readability for a newer generation of medical professionals.

Thematic analysis of surgical topics

The content analysis revealed that the textbook covers a broad spectrum of pediatric surgical conditions, many of which remain central to the field today. Table 1 shows pediatric surgical topics addressed in the textbook.

This comprehensive list underscores the textbook's function as a proto-curriculum for pediatric surgical training during a period when no formal pediatric surgery residencies existed in Türkiye.

Language, style, and case-based pedagogy

The textbook's narrative style is notably didactic, combining clinical detail with literary expression reflective of early 20th-century medical writing. A distinctive feature is the integration of full-length case reports, which serve as both educational tools and clinical records. Below is a translated excerpt from a case description concerning testicular torsion, showcasing the textbook's approach to clinical reasoning and operative decision-making:

"A boy of 12 years, having returned from his scholastic labours, did sit to dine, when he was suddenly afflicted with a severe pain in the right hemiscrotum. So intense was the torment that he could not partake of his meal. His mother, seeking to relieve him, did apply warm compresses, albeit to no avail, for the pain did persist.

Upon examination, the right hemiscrotum was found to be swollen and erythematous, and the testis therein was fixed and adherent to the scrotal wall. The boy's temperature was recorded at 38.2 degrees Celsius. Palpation failed to distinguish the testis from the epididymis, the two being inseparable.

TABLE 1
Major pediatric surgical topics in Şakar's textbook

Appendicitis (in children)
Intussusception (in children)
Testicular torsion
Ileus
Empyema (in children)
Congenital neck fistulas/cysts
Undescended testis
Meckel's diverticulum
Cleft lip
Torticollis
Chest wall anomalies
Inguinal hernia
Umbilical hernia
Hydronephrosis
Malignant kidney tumors
Hirschsprung's disease
Hypospadias
Anorectal malformations
Rectal prolapse
Colon polyps (in children)
Urinary stones
Bladder exstrophy

In the differential diagnosis, one did consider such afflictions as smallpox, scarlet fever, measles, typhoid fever, mumps, and even self-abuse as possible origins of orchitis.

Nevertheless, the suspicion did arise of torsion of the testis, a condition which had been described by Professor Ombredanne in the city of Paris, in the year 1913. Said torsion may be intravaginal or supravaginal in nature.

In certain instances wherein the patient was operated upon under such a diagnosis, the hydatid of Morgagni (appendix testis) was found to be twisted. This occurrence was reported to produce milder pain, less redness, swelling, and fever, as compared to the torsion of the testis proper.

It was noted that the majority of these patients recovered with but five to ten days of bedrest. However, in some cases, the development of a scrotal abscess did necessitate surgical intervention.

Should the physician be confident in the diagnosis of appendix testis torsion, an operation was deemed unnecessary; yet, if doubt persisted, surgical exploration was recommended. If, during such an operation, a necrotic appendix testis was observed, it was to be excised.

In cases of testicular torsion, if the torsion be supravaginal, detorsion was to be followed by fixation of the tunica vaginalis to the scrotum. If the torsion be intravaginal, the testis itself was to be affixed unto the tunica vaginalis following detorsion.

Such measures were believed to prevent testicular atrophy or suppuration in a number of cases.

Furthermore, tuberculosis of the testis was regarded as a rare malady, one which oft found improvement through sunbaths, ultraviolet rays, and rest.[10]"

This passage illustrates not only the depth of clinical analysis but also the awareness of evolving international literature, referencing Ombredanne's 1913 work in Paris.

In a similar fashion, another case was presented concerning invagination of the bowel in infancy, wherein the descriptive style intertwines clinical presentation with therapeutic instruction:

"An infant of eight months, for two days deprived of defecation, was brought forth with complaints of intermittent crying, vomiting, and refusal of nourishment. On rectal examination, the physician discerned both fullness and the presence of blood. With such history and findings, the diagnosis of intestinal invagination was entertained, and urgent operation advised.

Subsequently, the causes of ileus in the child were expounded upon, invagination being noted as a prominent etiology. It was stressed that whenever blood be found in the rectum concomitant with ileus, invagination must be foremost in the physician's mind.

The malady was described as one that may, in rare circumstance, reduce of its own accord, or be resolved by means of an enema, and yet more rarely by expulsion of the invaginated segment in the stool through auto-amputation. Nevertheless, the first recourse in treatment was said to be the barium enema.

This was to be undertaken with the child sedated, in the Trendelenburg position, and a balloon catheter introduced; thence, 500 to 800 mL of barium were to be instilled from a height of 1 to 1.5 m. Gentle massage of the abdomen may be applied, and after a period of 30 to 40 min, if the bowel loops are observed to fill and the barium advances on X-ray, the reduction is considered successful. If, however, doubt remained as to persistence of the invagination, recourse to operation was declared necessary. It was remarked that perforation might, albeit seldom, ensue from the enema, and that its employment could at times occasion delay in operative relief.

When surgical intervention was required, the incision was made above the umbilicus, and the invaginated bowel segment was carefully reduced by gentle milking. If resection was necessary, anastomosis was performed without hesitation. Following the procedure, the infant was allowed only sweetened water for the first 24 h. It has been noted that operations performed within the first 18 to 24 h of symptom onset were associated with an excellent prognosis, with approximately 93% of patients discharged in good health."

A further illustration is found in the discussion of Meckel's diverticulum, where symptomatology

and intraoperative decision-making were presented in narrative form:

"A seven-year-old child, whose mother had a history of appendectomy and whose own medical history included measles and whooping cough, presented with a two-month history of bloody stools, occasionally passing in large amounts. On the day prior to presentation, he experienced severe pain in the right lower quadrant, accompanied by vomiting and the passage of approximately one cup of blood-stained stool. Physical examination revealed a rectal polyp, yet the localized right lower quadrant tenderness raised suspicion for appendicitis, and surgical intervention was decided upon. During the operation, free intra-abdominal fluid was encountered, but the appendix appeared normal. Further exploration of the small intestine, beginning at the cecum, revealed a thumb-sized lesion approximately 45-50 cm proximally, which was excised, and the bowel was repaired with a double-layer closure without placement of a drain. Histopathological examination confirmed the presence of gastric mucosa, establishing the diagnosis of Meckel's diverticulum. The embryology of the anomaly was subsequently discussed. It was emphasized that in a child presenting with colicky abdominal pain and bloody stools, when bleeding is significant and neither hemorrhoids, angiomas, nor polyps are identified, Meckel's diverticulum should be strongly considered. In this case, however, the presence of a rectal polyp and the relatively modest volume of blood initially obscured the diagnosis, which was ultimately revealed only during surgery."

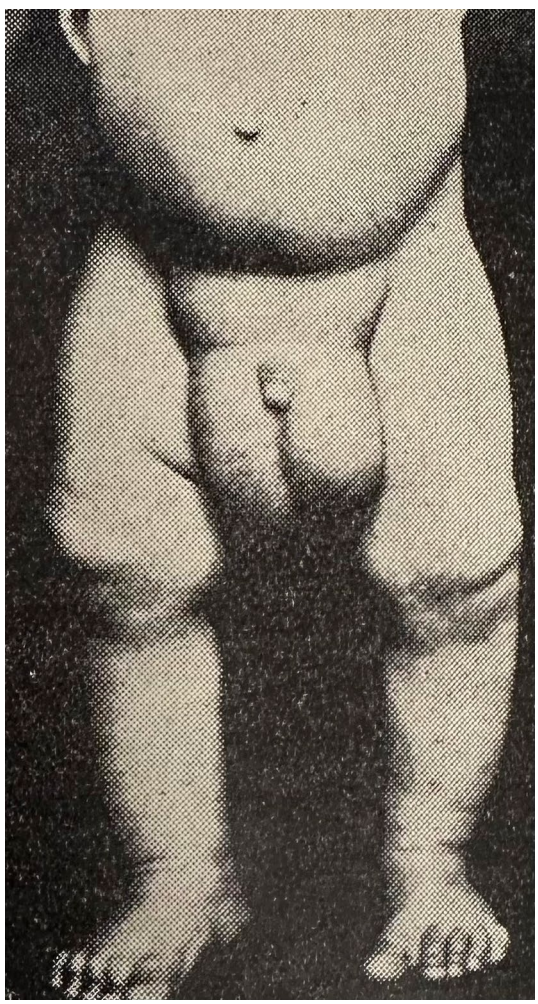

Figure 1. A photo of a child with a scrotal hernia (clinical example figure).

Visual documentation

The illustrations included in both volumes are anatomically detailed and pedagogically rich, serving as visual aids for understanding surgical anatomy and technique (Figures 1-3). The figures span topics from congenital neck anomalies to complex abdominal pathologies. Many drawings appear to be original works, likely commissioned or authored under the supervision of Prof. Şakar himself, adding further historical value to the volumes.

Historical and pedagogical significance

Despite predating the formal separation of pediatric surgery from general surgery and

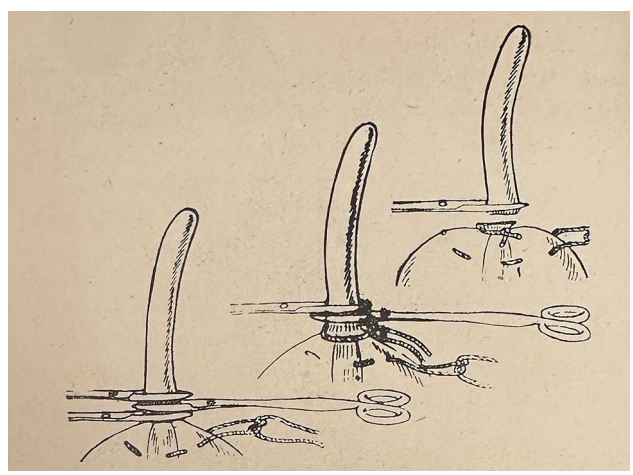

Figure 2. An illustration depicting the appendectomy procedure (surgical technique figure).

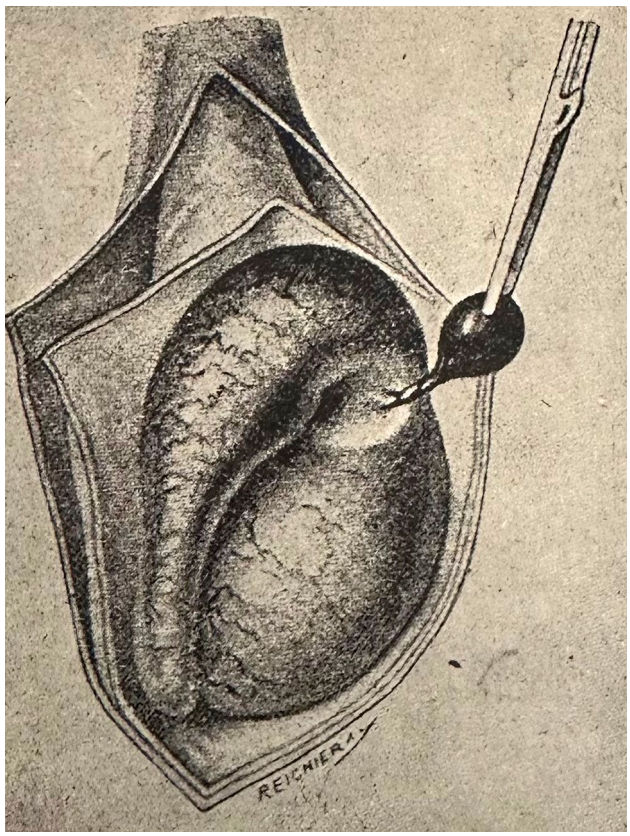

Figure 3 . An illustration of appendix testis torsion taken from the literature.

orthopedics in Türkiye, Şakar's textbook laid the foundation for structured pediatric surgical education. Its case-based format and illustration-supported pedagogy position it as a seminal work in the history of Turkish medical education.

DISCUSSION

The historical lineage of pediatric surgical thought in Türkiye extends even further back, as illustrated by the inclusion of Şerafeddin Sabuncuoğlu's Cerrahiyyetü'l-Haniyye (15th century) in the background analysis. This surgical atlas, which includes illustrations of pediatric conditions such as anal atresia and congenital malformations, reflects an enduring sensitivity to child-specific pathology within the Anatolian medical tradition.[3,11] The continuity between Sabuncuoğlu's surgical depictions and Şakar's 20th-century clinical cases represents not only a scientific progression but also a cultural one, wherein Turkish surgeons increasingly advocated for the unique needs of children in both practice and pedagogy. Despite its historical value, Şakar's work has remained underrecognized in the broader history of medicine. This may be partly due to linguistic barriers, limited dissemination beyond national borders, and the late formal establishment of pediatric surgery as a specialty in Türkiye (1960s). Nevertheless, this study suggests that *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri* deserves reconsideration as a pioneering contribution to pediatric surgical education, not only within Türkiye but also in the global history of the discipline.

One of the most striking features of Şakar's textbook is its case-based format. Unlike many early 20th-century medical textbooks, which were organized as encyclopedic references, Şakar's narrative emphasizes case reports, complete with differential diagnoses, historical context, and surgical decision-making. This pedagogical strategy aligns closely with modern problem-based learning methods, which prioritize clinical reasoning over rote memorization. Furthermore, his inclusion of contemporary international references, such as Ombredanne's classification of testicular torsion, shows an awareness of, and dialogue with, European surgical discourse.

The inclusion of detailed illustrations in Şakar's volumes further reflects a commitment to surgical education. These visual aids not only clarify anatomical relationships and operative steps but also underscore the importance of visual learning in surgical training. Given that medical photography was not yet widespread in Türkiye at the time, the use of detailed anatomical drawings reflects both resourcefulness and a didactic vision.

The historical evolution of pediatric surgery reflects not only advancements in medical science but also a transformation in societal perceptions of childhood and pediatric care. The first English-language pediatric surgery book, The Surgical Diseases of Children, published in 1860 by John Cooper Forster, laid the foundation for a specialty that would take nearly a century to be formally recognized. This 334-page, 20-chapter volume initiated a crucial conversation on the administration and benefits of anesthesia in

children, highlighting the critical importance of nursing care. Forster emphasized that both proper anesthesia and attentive nursing were decisive for the success of surgical procedures. His detailed descriptions of trauma and lesion examination through inspection and palpation indicate a high level of clinical observation. However, his omission of references to the heart and lungs, and his claim that much of the digestive system was within the surgeon's domain, reflect the limited understanding and scope of pediatric internal medicine at the time. Nevertheless, the book addressed numerous surgical issues, including orthopedics, suggesting an early interdisciplinary approach.[5]

During the mid-20th century, before pediatric surgery was acknowledged as a separate specialty, many mentors believed that one should first become a general surgeon and later specialize in children. By the early 1950s, the absence of neonatal intensive care units and the widespread misconception that children were merely small-scale adults hindered proper pediatric care. It was eventually recognized that many conditions unique to children (e.g., Wilms tumor, neuroblastoma, Hodgkin's lymphoma, intussusception, midgut volvulus, pyloric stenosis, and hereditary spherocytosis requiring splenectomy) were not only distinct from adult pathologies but also potentially fatal without timely surgical intervention.[1]

Among the early figures who deeply influenced the formalization of pediatric surgery was Dr. William E. Ladd. His career trajectory was significantly impacted by the Halifax Explosion of December 6, 1917, in Nova Scotia, Canada. Often cited as the most powerful nonnuclear explosion in human history, this disaster resulted from the collision of the French munitions ship S.S. Mont-Blanc and the Norwegian relief vessel S.S. Imo. Approximately 4% of Halifax's population perished, including over 500 children and infants, while around 300 children were left orphaned. In response, medical aid, including trains carrying supplies, doctors, and experienced nurses, was dispatched from the USA. Dr. Ladd volunteered to assist, and the sight of injured and burned children left a profound impression on him. This experience catalyzed his decision to dedicate his time, skill, and energy exclusively to the surgical care of children.[8,12] Even prior to this event, Ladd had shown growing interest in pediatric surgery through his research and publications. Alongside several notable colleagues, he founded the pediatric surgery department at Boston Children's Hospital in 1910. By 1937, he had completely transitioned away from adult surgery. In 1941, Ladd and Gross co-authored Abdominal Surgery of Infancy and Childhood, the first comprehensive textbook presenting pediatric surgery as a distinct specialty.[8] The book, consisting of 453 pages and 36 topics, focused on core pediatric surgical conditions rather than orthopedics.[7] Through this work, Dr. Ladd not only achieved respect and recognition at Harvard University but also had a profound impact across North America. His textbook became a foundational reference in the newly emerging specialty of pediatric surgery. As such, he earned the title "the father of pediatric surgery."[8]

Akif Şakir Şakar, serving as an assistant to Dr. Aime Mouchet of the French Occupation Army,[13] became Türkiye's first pediatric surgery resident. In the preface of this textbook, it is noted that pediatric surgery and orthopedics had been taught in Europe for approximately 40 years. Additionally, it is mentioned that pediatric surgical services were provided in France, at Leipzig University in Germany by Professor Sivers, and at Munich University by Professor Drachter. With the establishment of the Republic of Türkiye, university reforms were implemented, and pediatric surgery and orthopedics were added to the curriculum of İstanbul University, Faculty of Medicine, with Şişli Children's Hospital chosen as the teaching hospital. Following this, it is stated that this textbook was written by Akif Şakir Şakar.

In conclusion, this study highlights the historical significance of *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri*, published in 1936 by Prof. Dr. Akif Şakir Şakar, as the first comprehensive textbook on pediatric surgery written in Turkish. Through a detailed review of its content, structure, and illustrative material, the textbook emerges not merely as a clinical manual, but as a visionary document that anticipated the formalization of pediatric surgery as a distinct medical specialty in Türkiye. Despite its historical value, Şakar's work has remained underrecognized in the broader history of medicine. This may be partly due to linguistic barriers, limited

dissemination beyond national borders, and the late formal establishment of pediatric surgery as a specialty in Türkiye in the 1960s. Nevertheless, this study suggests that *Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri* deserves reconsideration as a pioneering contribution to pediatric surgical education, not only within Türkiye but also in the global history of the discipline. The textbook by Prof. Dr. Akif Şakir Şakar represents a significant milestone in the development of pediatric surgery in Türkiye. Its early publication date, comprehensive scope, detailed illustrations, and case-based format indicate a level of sophistication that rivals or precedes international works of the same era. The findings of this study reinforce the notion that the roots of pediatric surgical care in Türkiye run deeper than previously assumed and reflect an intellectual tradition deserving of greater scholarly attention.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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