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Orhan Abdi (Kurtaran) (1877-1948) and chapters related to orthopedic surgery in Ameliyât-ı Cerrâhiye [Operative Surgery] in its centennial

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Objective: The aim of this study was to review the chapters related to orthopedic surgery in Dr. Orhan Abdi (Kurtaran)'s book Ameliyât-1 Cerrâhiye [Operative Surgery] published in 1913 and to examine Orhan Abdi Bey's biography to explore the roots of orthopedic education in Turkey through Orhan Abdi Bey's tenure in university.

Methods: Dr. Orhan Abdi Bey's biography and tenure in medical school were reviewed. Chapters related to orthopedic surgery in Ameliyât-1 Cerrâhiye were scanned and compared to practices of the present-day. Sections of the book were translated to provide examples of its content.

Results: Dr. Orhan Abdi Bey received surgical training, consisting mainly of orthopedic surgery and taught the first systematic orthopedic surgery classes in the medical school where he worked for 28 years before being dismissed with the 1933 University Reform. Topics related to orthopedic surgery in Ameliyât-1 Cerrâhiye was classified under three headings; amputations and disarticulations, arthrotomies, and bone and tendon operations. Surgical techniques, including corrective osteotomies, tenoplasties, and tendon transfers, were explained in detail and many are still in use today.

Conclusion: It is possible to obtain information about the orthopedic practices of the period by investigating the scientific studies of the physicians of the same period. Orhan Abdi Kurtaran and his book Ameliyât-1 Cerrâhiye have contributed to the training of many physicians for many years and many of the orthopedic interventions described in the book are still in use today.

Key words: Education; Orhan Abdi Kurtaran; orthopedics.

Akif Şakir Şakar, in the preface of volume 2 of his 1941 textbook Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri [Pediatric Surgery and Clinics in Orthopedics], wrote that the first pediatric surgery and orthopedics lessons in Turkey were given by Dr. Cemil (Topuzlu) Pasha and that Dr. Rıza Nur later translated a book related to orthopedics by Schulthes into Turkish in 1907.[1] How-

ever, the first systematic orthopedics lessons started in 1905 with Dr. Orhan Abdi Bey.^[2]

Dârülfünun-ı Şâhâne [His Majesty's University] was reopened in 1900 for the second time and renamed Dârülfünun-ı Osmanî [Ottoman University] in 1908 under the declaration of the Second Constitutionalism Period in the Ottoman State. Many faculty members of

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the university were fired in 1909. During these reform actions, Dârülfünun Tıp Fakültesi [University Medical School] was founded in 1909 by the merger of two already existing schools, Mekteb-i Tibbiye-i Mülkiye-i Sâhâne [His Majesty's Civil Medical School] located in Kadırga and Mekteb-i Tıbbiye-i Askeriye-i Şâhâne [His Majesty's Military Medical School] located in Haydarpaşa. There were a total of 185 faculty members in the two preceding schools. In the new founded school, however, only 28 muallims [associate professor] and 2 muallim muavini [assistant professor] were employed and the rest were discharged and accused of being behind the times.^[3] Muallim Dr. Orhan Abdi Bey, among those re-employed by the new university, began teaching Ameliyât-1 Cerrâhiye [Operative Surgery] alone and Seririyat-1 Hâriciye [surgical clinics] with two of the most famous surgeons of the age, Muallim Dr. Cemil (Topuzlu) Pasha and Muallim Dr. Kerim Sebati (Gürgün) Bey.[3] Before the foundation of orthopedics and traumatology clinics in Turkey, orthopedic disorders and musculoskeletal trauma were practiced in general surgery clinics. Orhan Abdi Bey published his book Ameliyât-1 Cerrâhiye in 1913 (Fig. 1).[4]

In this study, chapters related to orthopedic surgery in one of the most significant textbooks of the period *Ameliyât-1 Cerrâhiye* were scanned and compared to the knowledge and practices of the present-day. Furthermore, Orhan Abdi *Bey*'s biography and the university reforms carried out in 1909 and 1933 were reviewed and the roots of orthopedic education in Turkey explored.

The objective of this study was to obtain information about the orthopedic practices of the period by investigating contemporary scientific studies of physicians working in general surgery clinics and shed light on the history of Turkish orthopedics.

Materials and methods

Dr. Orhan Abdi Bey's biography and his period of tenure in medical school were reviewed. An original copy of the textbook Ameliyât-1 Cerrâhiye and its chapters related to orthopedic surgery were scanned onto a computer and compared to the knowledge and practices of the present-day. Sections of the book were translated to provide examples of its content.

Results

Dr. Orhan Abdi (Kurtaran)[2,5,6]

Orhan Abdi Bey was born in 1878 in Bitola, Albania and studied at Eyüp Askeri Rüştiye Mektebi [Eyüp Military Junior High School], Çengelköy Tibbiye İdadisi [Çengelköy



Fig. 1. Inner cover of Ameliyât-ı Cerrâhiye.

Medical High School] and Mekteb-i Tibbiye-i Askeriyei Şâhâne [His Majesty's Military Medical School]. He graduated in 1898 with the rank of captain and began work at the Gülhane Seririyat Hastahanesi [Gülhane Clinics Hospital], which was founded to provide internships for the military doctors. Orhan Abdi Bey was sent to Germany by the state in the year 1900 and worked with Max Schede at Bonn University. Later, Orhan Abdi Bey worked with orthopedic surgery professor Albert Hoffa at Würzburg University and Professor C. Sick at the Eppendorf Hospital in Hamburg University, and returned to Istanbul in 1905 as a specialist. His specialization thesis was in the field of orthopedic surgery; A Case with Chronic Ankylosing Spondylitis: Cauda Equina Injury After Spinal Fracture. [5] The thesis reported the autopsy details of a patient with iatrogenic spinal fracture with ankylosing spondylitis in which manipulation to obtain range of motion for the bilaterally ankylosed hip joints and laminectomy was performed to relieve the cauda equina compression. The patient developed decubitis ulcers in the following days and was lost. Autopsy was performed on the patient and findings of ankylosis of the spine, the pathological condition of the hip and knee joints, and the damage in the spinal cord in the area of the spine fracture were reviewed in details in the thesis. Radiographic findings of the major joints and the spine were also mentioned.

After his return to Istanbul, Orhan Abdi Bey worked at Gülhane Seririyat Hastahanesi [Gülhane Clinics Hos-

pital] between 1905 and 1909 as a *muallim* teaching orthopedics and war surgery, included in the curriculum for the first time. Meanwhile, he taught operative surgery both in the military and civil medical schools until, in his words, "the declaration of Liberation", or the declaration of the Second Constitutionalism Period in 1908. He then began working in the recently founded University Medical School and taught clinics in orthopedics and operative surgery and became a *müderris* [professor]. Meanwhile, the chief of the Second Surgery Clinic and Dean of the school Dr. Cemil (Topuzlu) *Pasha* resigned and Orhan Abdi *Bey* was promoted to the position of chief of the Second Surgery Clinic.

Orhan Abdi Bey kept this position until his departure from the university in 1933 when the İstanbul Darülfünunu was abolished and the new Istanbul University was founded. A law dated 31 May 1933 stated that "İstanbul Darülfünunu and all institutions related to it including the staff and organization were abolished starting from 31 July 1933."[7] Istanbul University was established on 1 August 1933, although only 59 of Darülfünun's 151 teaching staff were enrolled in the new university. [3,8] Orhan Abdi Bey, amongst many others, was obliged to retire from the university and practiced medicine for fifteen years until his death in the private German Hospital in Taksim, where he had previously worked parttime. Orhan Abdi Bey acquired the last name Kurtaran (savior in Turkish) in 1934 with the newly established surname law. He died following abdominal surgery on 22 February 1948.

Dr. Orhan Abdi Kurtaran published seven known publications in addition to his specialization thesis and *Ameliyât-1 Cerrâhiye*. One such publication was related to orthopedic surgery and published with the title *Sû-i Eşkâl Hakkında Fikr-i Umumî*^[9] [General Information About Deformities].

Ameliyât-1 Cerrâhiye

Dr. Orhan Abdi's single book, *Ameliyât-ı Cerrâhiye* [Operative Surgery], was published in 1913 by Kader Publishing, Istanbul, and included topics that are addressed today under general surgery, plastic and reconstructive surgery, urology, and neurosurgery, as well as diseases and their relevant surgical treatment related to orthopedics.

On the cover page of *Ameliyât-ı Cerrâhiye*, the publishing date was indicated as 1329 according to the Julian calendar [1913]. The book has 294 pages and contains illustrations. It was stated on the cover page that the book contains 235 illustrations. The author was introduced on the cover page as *Muallim* of Surgical Clinics

and Operative Surgery in the Medical School and Surgeon in the German Hospital, Muallim Doctor (Fig. 1).

In the preface of the Ameliyât-1 Cerrâhiye, Dr. Orhan Abdi Bey wrote: "Operative surgery, by containing the major part of the treatment modalities and operative practices, constitutes the most important section of surgery. Among many books related to this subject, I have chosen the most basic and useful book of Doctor Oberst in German and created this classic work by, when needed, integrating the recommendations and explanations of the methods which I always prefer and it will serve as a textbook for the lesson operative surgery which I am teaching and a guide for the physicians who practice surgery. I will call myself fortunate if this book serves as guide for the students in the dissection room and the physicians in the operating theater."

As understood from these sentences, the book is not an original work and benefitted largely from Oberst's book in German. Nevertheless, the book contained a systematic approach to some orthopedic disorders and was easily understood with detailed explanations and drawings. The book contained no X-rays or an explanation about this issue.

In the introduction section following the preface, the concept of surgery was described: "The science of surgery is a science which teaches the way to help the patients who need surgical interventions and perform surgery... with surgery, the action of the physician should be understood, in which he cuts the flesh with a knife... Surgery is a bloody war fought against diseases to defend life."

Primarily, the book explained in detail the applications of general, local, and spinal anesthesia; chloroform and ether utilization in general and cocaine utilization in local anesthesia were reviewed, and anesthesia apparatuses were described. In the following section, the concept of asepsis and antisepsis was discussed, the importance of its application in all surgical interventions was emphasized and the fact that its application had decreased complication rates was mentioned.

Chapters related to orthopedic surgery in Ameliyât-1 Cerrâhiye

A 67-page portion of the book, including 51 relevant figures, is directly related to orthopedic surgery. All figures are simple drawings and no photographs or X-rays were included. Although the book was written in the now abandoned Ottoman Turkish with Arabic letters, some concepts and names of foreign physicians were written with Latin letters. Topics related to orthopedic surgery were classified under three headings; Amputations and Disarticulations, Arthrotomies, and Bone and Tendon Operations.

Amputations and Disarticulations

Under the heading of 'Amputations and Disarticulations', amputations and disarticulations of the upper and lower extremities in various levels were described (Fig. 2). Additionally, surgical incisions and the surgical tools used are shown in figures and the practice of stitching nerve endings using the Bardenheuer method to prevent subsequent pain was described. Specific amputation techniques such as those described by Chopart, Lisfranc, Pirogov, and Gritti were discussed (Fig. 3).

Arthrotomies

In the 'Arthrotomies' chapter, arthrotomies for each joint were explained, with tuberculosis arthritis as the primary surgical indication. Surgical incisions and exposures for the shoulder, elbow, wrist, knee, hip and ankle joints were demonstrated with figures.

Bone and Tendon Operations

The chapter on 'Bone and Tendon Operations' included the two subtitles; 'Osteotomies and Bone Fenestrations' and 'Tendon Operations'.

Under the subtitle 'Osteotomies and Bone Fenestrations', corrective osteotomies for extremity deformities and bone interventions for the surgical treatment of osteomyelitis were reviewed in detail. Under the 'Tendon Operations' subtitle, tenoplasties, tendon lengthenings, and tendon transfers were described. In the following example from the text, indications for corrective osteotomies and surgical techniques are narrated:

"In the case of deformities of bone originating either as a consequence of a disease, especially rickets, or from maltreatment, cutting the bone may be necessary. The surgical indications for cutting the bone usually occur as curvatures at the knee joint (genu varum et valgum). Location of bone curvatures may be above the knee joint, in the hip or thigh, or below the knee-joint in the tibia. For this reason, we cut the bone in these locations and with these planned cuts redirect the bone to its natural direction. After applying the blood removing device, the hip is laterally deviated and on the medial side of the thigh above the condyles, the skin and muscles are cut longitudinally until the bone is reached and the bone is released free. Periosteum is cut and pushed back. With a wide stonemason's chisel the bone is cut partially and transversally. While the bone is being cut, wide periosteum elevating devices protect the soft tissues. Opposite to the direction in which the bone was cut, we leave an uncut part. This part can be easily broken while redirecting the bone and with this method the fragments keep in touch and a big displacement never occurs. We either cut the bone transversally with a stonemason's chisel or in the case of bone curvatures we perform a cut in the form of a wedge. Naturally, the base of the cone is placed on the convex side. After correction was done, the wound is closed and the extremity was immobilized in a plaster-of-Paris" (Fig. 4).

"We also perform cuts in the form of wedges distal to the major trochanter. We perform this for treating the disability and defects in functions originating from the sequelae of hip joint infections, arthrosis, or shortening of the extremity.



Fig. 2. Below-the-knee amputation and recommended surgical incision on the opposite page.

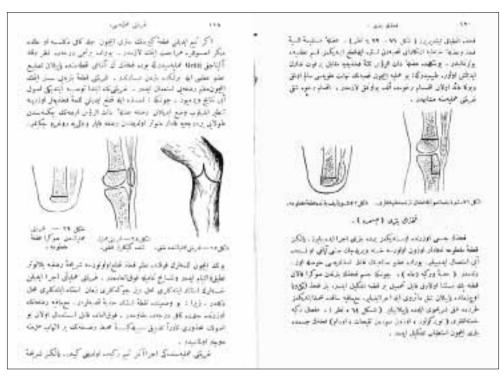


Fig. 3. The abandoned Gritti (left page) and Sabanejeff (right page) amputations.

Again with cone-shaped cuts, we can fix the extraordinary disorders and some shortening. Besides, if the bone is cut from below to above and from outside to inside in an inclined fashion and pulled strongly in the downward direction we would succeed to correct the shortening or even lengthen the limb (Fig. 4). We sometimes perform bone cuts in severe curvatures of bone in rickets."

Also under the subtitle 'Tendon Operations', tenoplasties, tendon lengthenings and tendon transfers were described. Open and percutaneous tenotomies were reviewed and the Z-plasty lengthening method was explained with figures:

"Underdeveloped muscles can be lengthened by cutting the tendons (tenotomy). The state of joint stiffness resulting from the underdevelopment can be resolved, so we perform this minor operation with a curved knife in the shape of a sickle called 'tenotome'. Usually, the tendo Achilles is cut in conditions in which the feet are plantar flexed (Spitzfuss). Here we will describe it briefly: The surgeon makes an assistant press the feet backwards, so that the tendo Achilles is stretched. Thereupon he feels the tendon. And a little above the mentioned tendon, he brings the tip of the tenotome knife -with the cutting edge of the knife in the direction of the tendon-behind the tendon. And he penetrates the knife in a fashion parallel to the tendon only as far as the subcutaneous tissue. Then, he turns the cutting edge of the knife to the opposite direction of the tendon and with short, back

and forth movements he cuts the tendon. Meanwhile, he presses the tendon towards the knife with his thumb and cut slowly until the pieces move away from each other. Separation of the pieces shows that the tendon has been cut completely and of course the skin is not cut (percutaneous tenotomy). If the knife is kept very close to the tendon, it is possible to cause injury to the artery and the tibialis posterior nerve, which are not away from the tendon. A plaster-of-Paris which is set in the adjusted position will secure the obtained result. Later on, the gap between the two pieces fills up regularly with the accumulated tissue; this tissue then gains tendon specifications and reunites the pieces." (Fig. 5).

"...If we want to render possible the function of a paralyzed muscle to another physiologically intact muscle, we act like this: We stitch the tendon of the non-paralyzed muscle to the tendon of the paralyzed muscle in a fashion which is not very tight. Or we separate a part of tendon from the healthy muscle and stitch this part to the tendon of the paralyzed muscle. In this way, a part of the muscle with normal function replaces the paralyzed muscle."

Discussion

The traditional literature on the history of medicine is composed of texts, usually biographic sketches, of groundbreaking physicians, which are written by physicians for other physicians. In Turkish texts, the theme is



Fig. 4. Closed-wedge corrective osteotomy and oblique lengthening osteotomy.

usually how hardworking, ethical, affectionate, etc. the *Hoca* [teacher] was. The second popular theme, as in the case of tuberculosis, is the historical advancement in war of a certain disease. These texts are usually composed of chronologic lists of positivist/modernist views of the progress obtained in the war with the mentioned disease without a social analysis. The few studies on the history of orthopedic surgery in Turkey were also similarly shallow. As the boundary between the history of medicine and social history becomes increasingly blurry, this deficiency gains importance. There is no single satisfactory Turkish text on the founder of orthopedic surgery in Turkey, Akif Şakir Şakar.

The majority of posthumous articles written about Orhan Abdi Kurtaran are biographies that mention his positive characteristics, surgical talent, industriousness and kindheartedness. Only one contains a criticism: "Orhan had an immense authority in surgery in an age when new specialty areas were not established yet... This art had got over the age of empiricism when Orhan Bey had started surgery... New biological issues leading to surgical indications and innovations in techniques were all being deducted from animal experiments and operating theaters were enriching their materials and work with the results of these experiments... For a talented surgeon with the lancet in hand, it was possible to relieve the suffering of humanity in the beginning of the twentieth century relying on these

fundamentals, this was what Orhan Abdi Kurtaran had done; and in the strict sense... However, a twentieth century surgeon could bring on novelties in the experimental field. Unfortunately, we are far from claiming that Orhan Bey could have done this." [8] In our opinion, this is a correct, but unfair critique when taking into consideration the reality of the age.

The first textbook in the field of orthopedic surgery in Turkey was Akif Şakir Şakar's Çocuk Cerrahisi ve Ortopedi Kliniği Dersleri [Pediatric Surgery and Clinics in Orthopedics]. The first volume was published in 1936^[10] and the second volume in 1942.^[1] The first establishment of an independent orthopedics clinic in Turkey was in 1931. Orthopedics was practiced by general surgeons before and even long after this date. Information about the orthopedic practices of the age can be obtained by reviewing the scientific publications of the general surgeons of the period.

Orhan Abdi Bey, though very industrious and enthusiastic as a surgeon, was not very productive in terms of publishing, [11] having only seven publications in addition to his specialization thesis and the textbook Ameliyât-1 Cerrâhiye. One such publication was published with the title Sû-i Eşkâl Hakkında Fikr-i Umumî [General information about deformities]. [9] Since this topic was reviewed thoroughly in Ameliyât-1 Cerrâhiye as well, it might be concluded that Orhan Abdi Bey had a special



Fig. 5. Percutaneous achillotomy and the tenotome.

interest in this topic. His specialty thesis which was published in Germany was on a spine fracture that occurred in a patient with ankylosing spondylitis. In addition, in chapters related to neurosurgical topics in *Ameliyât-1 Cerrâhiye*, spine infections, tumor resections, decompression in spine fractures and posterior rhizotomy via laminectomy were reviewed under the heading of *Küşad-1 Kanat-1 Nuha-i Şevkî* [Opening of The Spinal Canal]. [6,10]

Whether Orhan Abdi Bey performed these and the other orthopedic operations mentioned in the book can be questioned. [6,10] However, keeping in mind the frequency of tuberculosis osteomyelitis, arthritis and poliomyelitis in that era, we can assume that he performed many orthopedic operations. In addition, although fracture treatment was not mentioned in the book, it is known that Orhan Abdi Bey performed fracture surgery. [12] The wrestler Himmet Pehlivan sued Orhan Abdi Bey in 1933 after a complication occurred following an operation for an arm fracture. When the expert witness Akif

Şakir Şakar delivered an opinion that the treatment performed by Orhan Abdi *Bey* "was not in accordance with science," Orhan Abdi *Bey* sued Akif Şakir Şakar with the accusation of misconduct.

As understood from the preface of Ameliyât-1 Cerrâhiye, even though Orhan Abdi Bey supplemented the text with his observations and experience, the book is essentially a translation of a German surgery textbook and is not an entirely original work. Nevertheless, it is obvious that it was a useful textbook in its time.[11] In an era when books and journals in Turkish (Ottoman) were scarce, it provided a significant contribution to surgical education. Interestingly, many of the surgical techniques described are still in use today, including; techniques and surgical incisions recommended for amputations and disarticulations, specific amputations such as those described by Lisfranc and Chopart, arthrotomies for the treatment of infection, sequestrectomy, percutaneous achillotomy, tenoplasties and tendon transfers, and osteotomies for deformity correction. On the other hand, some surgical techniques such as the Gritti amputation have been abandoned. One subject that may be criticized is the lack of X-ray images or a discussion of the subject despite the presence of a Roentgen machine at the Gülhane Seririyat Hastahanesi [Gülhane Clinics Hospital] since 1898 and Mekteb-i Tibbiye-i Askerîye-i Şâhâne [His Majesty's Military Medical School] since 1900,[13]

The most influential event in Orhan Abdi Bey's life was his dismissal from the university following the 1933 university reform. This reform, which created a tremendous impact throughout the country in its day, was a correct movement in essence. At the time, two main accusations were leveled at Darülfünun.^[7,8] First, that Darülfünun did not contribute to the republican revolutions and either resisted the reforms or remained indifferent to them and secondly, that no serious work was being performed by Darülfünun and it could not exhibit expected scientific and social progression. Scientific publication in Turkish was lacking, the academic staff did not produce original scientific work and the few books that were published remained poor translations of foreign languages. At the opening ceremony of the newly established university, the Minister of Education Reşit Galip Bey stated, "With a Darülfünun where only classes are taught, where scientific and technical study and research lack, science that is Turkish in essence can never be produced, and the Turkish nation can never be saved from the dependence to the scientific comprehension belonging to the foreigners."

When viewed from this perspective, there isn't much to say. Orhan Abdi Bey published Ameliyât-ı Cerrâhiye in

1913 and published only two additional scientific papers in the period between the establishment of the Republic and his departure from medical school.^[10] Also, during this time, he worked at the private German Hospital and was therefore unable to devote all his working hours to the medical school.

Nonetheless, Orhan Abdi Kurtaran made great contributions to medicine in Turkey. Foremost of these services was his work for the adoption of aseptic surgery, which was then a new and foreign concept. [11] In addition, he performed surgery on thousands of patients and contributed to the training of many students and surgeons. His book, of which only a few original copies remain in our day, has without doubt been an inspiration for many physicians.

Conflicts of Interest: No conflicts declared.

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