Dr. Pál Sztrilich, the innovative dentist

Dr. Sztrilich Pál az újító fogorvos

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Abstract
I am presenting the career of my dentist grandfather, Dr. Pál Sztrilich in my article. My grandfather lived and worked in the first half of the 20th century. A number of innovations are associated with his name, including the tooth crown remover called “strilich”, which is still in use in dental practices. In addition to his work as a dentist, he regularly published articles on practical issues of dentistry. He was a pioneer in dental X-ray procedures and in the training of assistants, which was rather underdeveloped in those days. His whole career was determined by pragmatism. Most of his articles deal with everyday tasks, e.g., how to run a patient-friendly dental office in the most efficient way.

Keywords
dentistry, historical, sztrilich tooth-crown remover, device

Kulcsszavak
fogászattörténet, sztrilich fogkorona-leszedő, eszköz

Anyone who knew my grandfather, Dr. Pál Sztrilich (1900-1960), will think of him as a scout. Ever since childhood, his life had been determined and filled by scouting. His more widely known works (Sztrilich 1939C), his inventions, (Sztrilich, 1933) and his works on organization are mainly related to scouting.

The Sztrilich Pál Scout Park is located in 2094 Nagykovácsi, Juliannamajor plot no. 0139/2, which is still a popular venue for scouting events. Many people did not know that besides scouting, he worked as a dentist and an assistant professor at the Budapest Stomatology Clinic and that he provided for his six children by working in his private practice in his apartment at 4 Baross Street. Perhaps it is unknown outside the profession that he was an innovator in the dental profession and that the spring-loaded crown-removing instrument he developed is still known as “strilich” by dentists, which, in the absence of patent protection, is still manufactured in this country and in many countries around the world, too.
He had a most pragmatic approach to work. In all his articles, as in his life, he was broad-minded and pragmatic and guided by common sense rather than by abstract, jargon-laden, ill-meaning "professionalism" His main focus was on everyday tasks and how to do them in the most efficient way. What follows is an attempt to describe this rich career.

Pál Sztrilich regularly published articles in the Dental Review. A common feature of his publications is that he attempted to pass on knowledge in a practical way and in a simple and understandable language. It was typical of his articles that they contained hardly any foreign, usually medical Latin terms, or only to the extent required by professionalism. As an author he apparently endeavored to be fully understood even by the most modestly educated reader.

His first publication which dates back to 1935 was written in German (Sztrilich, 1935B), and dealt with knots applied in everyday practice, which he illustrated richly. Later that year, he wrote an article about removable waste bins with lids, which were supposed to improve hygiene in the surgery. (Sztrilich, 1935A) In 1937, he started the column "Practical Advice" in the Dental Journal. His solutions which are of historical value for readers today were of enormous help to professionals in their daily work in conditions which are unimaginable today, and Sztrilich continued to publish his advice issue after issue, including how to "shoot" a fly which is flying around in the surgery - for the curious, the solution is 'shoot it with a syringe filled with petrol' (Sztrilich, 1935C). At the same time, he pioneered research into the novel technique of diamond cutting, and shared professional tricks of dentistry, as well as the most practical knowledge of the design, maintenance and use of instruments. (Sztrilich, 1937; Sztrilich 1938A) In 1939, he wrote about gold restorations, which were still widely used at that time and described new materials and associated procedures in a systematic article based on a very extensive literature review. (Sztrilich 1939A) This systematic approach can be safely called his trademark: In his article from 1941 on the most common problems with partial dentures and solutions how to fix them, he gave a list of possible problems in a tabular form, in a manner similar to the problem lists of modern household appliances and how to fix dental prostheses that are unstable, wobbly, cause nausea or even fall off. (Sztrilich, 1941)

During the war, his attention turned to dental X-ray procedures, which were not yet widespread at the time, and later he became one of the national authorities in the field. Ferenczy (1967) cites him in connection with radiation protection and practical operation in general in his book. In 1944 he introduced the use of X-rays as a "novel" method for dentists (Sztrilich, 1944A). In the same year, he published his first article that...
approached dental work from an "operational" point of view, rather than the immediate professional aspect, an approach that would become more and more dominant in his later career. It was then that he first shared his opinion with the dental community that the central element in a dentist’s work, in addition to a professionally impeccable attitude, is practical and rational organization. Later on, this new approach became more and more prevalent, i.e., effective and efficient operation depends on elements such as a good record-keeping system or avoiding unnecessary time losses. (Sztirlich, 1944B)

The war was a great break for the scout leader Sztirlich; but the dentist Sztirlich continued his work unchanged in the new system that was established after the war. The new system set out to transform society with strong expectations; among other things, by imposing “planned economy.” For a while, dentists were still working in their private practice; accordingly, in 1947, Sztirlich had an article published on the rationalization of dental practice, in which he argued for the basic entrepreneurial nature of dentistry (i.e., the dentist is primarily selling himself), so only rationalization could help him to not only hope but to know that his practice was profitable and optimized. For this purpose, he recommended that work units should be calculated, and the time required by a given task should be set and checked. (Sztirlich, 1947B)

This period was followed by a series of articles with a similar approach, focusing on work rationalization and organizational issues. Two articles in 1947 and one in 1948 dealt with issues such as the rational equipment of the dental surgery (Sztirlich, 1947C) and the allocation of a dentist's time. Sztirlich distinguished between overhead costs (which include raw material expenses) and overhead costs of work (the dentist's living expenses) and the "dentist's overhead costs", which include both the professional and human self-subsistence of the dentist, given that "... the dentist is a free-lance person, whose old age and family are not provided for unless he sets aside his earnings for this purpose in due time..." (Sztirlich, 1947A). The 1948 article analyzed the problem of time management – let me simply note here that the 21st century has still not found a solution for this problem. He stated that as a solution a mixed system should be applied (patients coming to the dental practice on an appointment and a non-appointment basis), but the two should be consciously separated because "...a full waiting room is the sign of a badly run practice" (Sztirlich, 1948A).

He published his views in a lengthy article (Sztirlich, 1948C - also published as a lecture). The basic idea of his article is that "...the dentist wants to know whether he can legitimately say that he is working in a modern, rational way and that his work performance, with due care, is equal to that of other colleagues? Is his time and material management up to modern standards?" The article took a strong stand against the quantitative approach that was dominant at the time, which was politically demanded and enforced in all areas and if it was not followed, it could be considered literally a life-threatening sabotage. Throughout the article, the qualitative, trust-based nature of dental work was emphasized and that "...the multi-patient system is inappropriate and irrational. The right solution is half as many patients, and twice or two and a half times as much work."

The article goes on to detail the reasons why a quantitative approach to dentistry does not work - findings that are simply too obvious for us today were a revolutionary contrast to official expectations at the time. He stressed that overworking, inflicting pain and "saving material" do not improve efficiency, but undermine it. Considering that communist work organization originated from the American scientific management, it is not surprising, but revolutionary for the period that he compared Hungarian data with American ones - there were probably no adequate statistical data available on the brilliant plan overachievements of Soviet dentists of the time. The article contains detailed timesheets, , a work unit system of expected and necessary time-spans for every dental job, stressing the importance of amalgam
scales and mercury measurement: in those days it had to be stressed that "...the common method of the dental assistant mixing "little", "medium" or "a lot" of amalgam is no longer up to date"

The crowning achievement of his work during that period (the year is not indicated; however, the text suggests that it was after the war, but before the full communist takeover) was the publication of his "MODERN FOGORVOSI RENDELŐ" (Sztrilich, n.d.). According to the foreword, the work "... is intended primarily for dentists ... ... to facilitate the maintenance of the practice and carrying out restorations ... ... to make the knowledge of the assisting staff more systematic and comprehensive, while at the same time highlighting the special needs of the practice."

The content, of course, is indicative of the state of the profession seventy years ago (the book describes a series of ways in which the dentist himself can make or modify instruments at home, using DIY equipment, but he warns that touching mercury amalgam by hand is not too fortunate). What is particularly characteristic of this work is system and thoroughness. The book goes through the tools and instruments, including the necessary office equipment, systematically according to their importance. It dwells upon topics such as sterilization, summarizes the tasks of assistants in a textbook manner which were not at all clearly defined at that time-. Practical "tricks of the trade" are also presented, without which you can do your job; however, they will largely contribute to working accurately and easily. He illustrates everything with detailed figures and practical advice, taking into account that his, readers, practicing dentists themselves, may not necessarily have 'up-to-date' knowledge in areas such as patient records or hygiene.

It may have been also due to the author's determined, if not "western", but certainly not communist attitude that the publications by the respected dentist, who had previously held a responsible editorial position, became sporadic in later years, and that after 1948 he did not publish any comprehensive articles arguing for rationalization of the profession. Out of necessity, he returned to practice and, following the principles he had previously advocated, he developed innovations that helped the work of dentists to a great extent.

The dental innovation which bears our surname was presented, along with several other innovations, at the 1st Medical Innovation Exhibition on 30th May, 1950. Of the 260 innovations presented, the staff of the Budapest Stomatology Clinic represented dentistry with sixty-two innovations, of which thirty-five were awarded. The professional quality of the Exhibition is illustrated by the fact that Professor Károly Balogh and Adjunct Professor Imre Földvári were among the innovators.

My grandfather alone was credited with twenty-one of the sixty-two innovations, eighteen of which were awarded the Innovation Prize. At the opening of the exhibition, the leaders of the Innovative Committee of the Medical Faculty of the University and other speakers at the event pointed out "... the importance of the innovative movement, which has contributed significantly to the realization of the Stalinist Five-Year Plans in the great Soviet Union and which is an unquenchable source of socialist accumulation. “ (Sztrilich, 1950) My grandfather's crown-removing instrument was exhibited under number 7 with the following description: "A weighted hammer device which can be hooked into the edge of a crown fitted for test and struck axially". (Sztrilich, 1950) However, this innovation did not win any awards at the Exhibition or later, although it is the one and only of all the devices still in use by dentists. Among other innovations that received an Innovation Award at the exhibition, I would like to present those of my own choice to illustrate the innovative spirit which was so characteristic of my grandfather’s dental professionalism. One of them is the eye-fixation procedure for taking dental radiographs, presented at the exhibition under number 14, which is
described as follows: "The patient looks at points on the wall or at lamps of different colors, thereby automatically positioning the head in the correct way and ensuring that the patient remains still" (Sztrilich, 1950).

The other one was the Economical rinsing equipment for dental X-rays (number 15 at the exhibition). It is described as "a spherical vessel in which water is in a constant flow without a funnel by means of a constricted washing tube." (Sztrilich, 1950)

Similarly to the previous two devices, number 27 was also awarded the Innovation Prize. It was a manual to facilitate the compliance of prosthesis patients with the following recommendation: "A manual of fifty practical tips to help patients care for, use and get accustomed to their prostheses, to be handed over at the same time as the prosthesis." (Sztrilich, 1950)

The simplicity of Sztrilich's crown-removing device, which has been known and used ever since, has made a significant difference in the simplicity, safety and ease of the crown removing process. Since industrialization, our teeth, like our bodies, have been under constant strain from modern lifestyle and the food we eat, while, similarly to our other organs, their good condition is maintained in a more and more sophisticated way. Damaged teeth that can no longer be filled have long been fixed with dental crowns, providing a solution for many years both aesthetically and functionally.

Crowns do their jobs for many years, but not forever: over time, as the anatomy of the mouth changes, the crown gradually becomes incapable of it. Then you cannot help removing the crown: what appeared to be a good solution once turns out to be a big problem. It is certainly not an easy task to remove the excellent fixation from an already damaged tooth that has been ground below the crown.

It may sound incredible today, but in the past, dentists used to apply screwdrivers of DIY quality for this purpose, and wrenching off the crown was rather an embarrassing procedure - and not only for the doctor. The crown was made of metal and, as it was much harder, significant damage was not uncommon due to the misaligned force, mostly not parallel to the axis of the tooth, and due to the pressure caused by tension. Even in those days, then, the lack of a prosthesis would pose an obvious problem in terms of quality of life and aesthetics, not mentioning possible speech disorders, impaired chewing function and psychological damage caused by stress, aesthetic problems and persistent pain. It was therefore of great importance to have a suitable instrument that could remove the crown with as little damage as possible. In the years prior to the introduction of the dental crown remover in 1950, the buccal part of the crown or the bridge was cut
off with a crown-cutting circular saw, the occlusal surface was polished with a Vulcanized carbon disc, and then the crown was removed by folding the edges. Dentists used to apply Black's extractors for this task, although others found it much better and safer to use the Vajna extractor. (Sztrilich, 1939C) Before my grandfather's invention of the "Strilich" crown remover, which was invented during his career as a dentist and then introduced in 1950, various crown removers had already existed and applied, as is the case today. A dentist's instrument is usually visualized as a huge, electric machine; however, the "strilich" looks more like the product of a skilled mechanic. The essence of its operation is to replace the previous stretching approach. This is how my father, Dr. Péter Sztrilich, dentist recalled its background:

"The purpose of the crown removing instrument is to facilitate the removal of the crown or bridge, without damaging the tooth and the gum. This was usually done by doctors at the time when they used their own instruments made for other purposes (e.g., a dental scaler, a chisel or even a screwdriver). The instrument is hooked into the gingival margin of the crown that has been drilled through, cut or split for permanent removal, and then by exerting force parallel to the axis of the tooth, the crown or the bridge is removed in a way that any fracture of the tooth is prevented ... the necessary and adjustable force is exerted by a weight falling on the 25 cm long stem of the instrument requiring no external help or assistant. As an instrument like this could only be used for upper teeth due to the laws of gravity, Dr. Pál Sztrilich's innovation was fitted with a spiral spring. The instrument thus completed was now capable of removing crowns of all shapes and positions. As long as I can remember he first experimented with a spring of spiral notebooks. The instrument was first presented as an innovation and then mass-produced. Unfortunately, it was not patented, so domestic and foreign manufacturers are producing it in various sizes even today)."

The instrument was not only an innovation in itself, but also in its principle; the principle of the spring hammer has been used in many instruments since then. It works by applying a vertical tension force to remove the crown that has been cut off, leaving the tooth or gum intact and allowing the new crown to be fitted properly.

However, the fact remains that the method is not revolutionary at all. You could say it is simple, or even obvious. However, it took some time until it was invented, but it has been used ever since because of its practical, simple operation. In my opinion this is mainly due to my grandfather's attitude that "Dental work, apart from training, knowledge of materials and manual skills, consists of hundreds of thousands of small tricks, all of which are suitable to make our work better, easier and faster. Every dentist can find out a good man practical tricks for himself." (Sztrilich, 1939B)

As an instrument, the "strilich" does not even require instructions how to apply it, and any dentist can use it with ease. For almost a century, it has been used to remove crowns, even crowns made of modern materials. The instrument is a perfect example of how a major problem can be solved with some practical sense in a simple way that benefits everyone, doctors and patients alike. Commissioned by Professor Károly Balogh in 1945, the first three-month training course for practicing dental assistants, was an innovation of training and was attended by 33 dental assistants. From the data gathered during the course, organizers received valuable feedback on what changes should be implemented in the training of the 40 or so assistants trained by the Stomatology Clinic each year. (Sztrilich, 1947B)

Throughout the years to come, he wrote only two articles, both of which were characterized by the detailed, meticulous approach we have already seen from him, aiming for completeness and listing potential problems and their causes in a tabular form. The first is on avoiding injuries caused by rotating equipment
(Sztrilich, 1953), the second and more mechanical one is on optimizing the rotational speed of drilling machines, where we learn that "with conscientious maintenance ... the rotational speed of drilling machines has been increased by 38%". (Sztrilich, 1959)

As a dentist, my grandfather never forgot the third point of the Scout Law: "A Scout’s duty is to be useful and to help others." - a basic moral principle even doctors who are not familiar with the Scout Law. My grandfather treasured the values of scouting all through his life: both in his family life and during his career as a dentist. Until the last day of his life, he did everything within his power to make patient care better, more responsible and more humane, to make the theoretical and practical foundation of the dentist’s job more solid, and he gave inspiration to others to follow in his footsteps. His life, which was dedicated to scouting and dentistry, ended in a heart attack in his home on 7th November, 1960, but his surname is still known to every Hungarian dentist thanks to his crown-removing instrument.

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