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EDITORIAL

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Meier-Ewert Award of the German Society of Dental Sleep Medicine

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In October 2005, the German Society of Dental Sleep Medicine (German acronym DGZS) presented an award for the first time in its 5 years of existence. The award is to be bestowed upon persons who have advanced dental sleep medicine in Germany with their work. Given the criteria, the choice for the first recipient of this award was an obvious one: neurologist and psychiatrist Professor Dr. Karlheinz Meier-Ewert, who also happens to be the namesake of the award. He pioneered the use of a mandibular advancement device for sleep apnea, with the first publication in this field presented during the 7th European Sleep Research Society Congress in Munich in 1984.

On the evening of October 14, 2005 during the festive occasion of the 5th Symposium for Dental Sleep Medicine in Berlin, the DGZS board (Fig. 1) presented the Meier-Ewert Award for the first time. The laudation was held by Dr. Markus Heise, Herne, who is a member of the DGZS board. Professor Karlheinz Meier-Ewert (Fig. 2), the award recipient, subsequently portrayed the development of the Esmarch device (Fig. 3) 22 years ago in a speech that was both gripping and informative. On this occasion, we would once again like to convey our sincere gratitude to Professor Meier-Ewert, upon whom we have bestowed honorary membership in our organization, the DGZS.

Fig. 1 The board of the German Society of Dental Sleep Medicine with the award recipient (*from the left*): Markus Heise, DDS, Herne; Andreas Hauschild, DDS, Heilbronn; Susanne Schwarting, DDS, Kiel; award recipient Karlheinz Meier-Ewert, M.D. Ph.D.; Joerg Schlieper, M.D. DDS, Hamburg

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Fig. 2 Professor Karlheinz Meier-Ewert

Fig. 3 The original first Esmarch device

Karlheinz Meier-Ewert was born in Rheinfelden/Baden in 1933. He studied medicine in Basle, Heidelberg, Munich, Geneva, and Duesseldorf, after which he received his specialty training at the universities of Duesseldorf, Cologne, Tuebingen and Freiburg. He spent some time abroad in London (Maida Vale und Queens Square Hospital), Marseille (Centre Saint Paul), Montreal (McGill University), and the University of California, San Diego. In Marseille, he performed first polysomnographies with Professor Henri Gastaut in 1964. After 7 years as a senior physician at the Technical University in Munich, Meier-Ewert became head physician of the Hephata Clinic for Neurology and Psychiatry in Schwalmstadt-Treysa from 1974 to 1998. Within the scope of a research project supported by the German Research Society, Professor Meier-Ewert opened the first extra-universitarian clinical sleep laboratory in Germany in the mid-1970s.

Meier-Ewert's first publication on advancement devices consisted of a poster at the European Sleep Congress in Munich in 1984. Since their effect corresponds to that of the Esmarch maneuver, these devices were called Esmarch devices and this term is still known to many people today. Friedrich von Esmarch, 1823–1908, was a German physician and founder of the Samaritarian institution in Germany. From 1854 to 1898, he directed the surgical university clinic in Kiel and developed momentous procedures that are still employed today such as the Esmarch–Heiberg maneuver, which serves to keep the airways of unconscious patients free.

After Meier-Ewert's first publication in 1984 about the use of Esmarch devices in patients with sleep apnea, his workgroup produced numerous publications about this topic and the entirely new interdisciplinary field combining sleep medicine and dentistry. I would like to cite from the book *Sleep Related Disorders and Internal Diseases* (eds. Peter, Podszus, von Wiechert, Springer Publishing Group Heidelberg, 1987). In the chapter "Treatment of Sleep Apnea by Prosthetic Mandibular Advancement," Meier-Ewert and Brosig state: "Our results show that prosthetic mandibular advancement is an effective treatment for sleep apnea with immediate improvement in patients with and without retrogenia. It has little or no side effects. It has higher success rates than drug treatment and lower risks than surgery. It is less expensive and less cumbersome than continuous positive airway pressure."

Speech of the award recipient Professor Karlheinz Meier-Ewert, M.D. on the occasion of the bestowal of the first Meier-Ewert Award in Berlin on 14 October 2005

Dear Dr. Schwarting, dear Dr. Heise, Ladies and Gentlemen!

As Dr. Schwarting called me from Kiel several weeks ago and told me about her plan which has brought us here together today, this phone call took me back deep into the past that does not have much in common with my current life. So I went into the attic and I had to swallow quite some dust before I found the remnants of this period of my life.

I am all the more pleased that our understanding of the usefulness of treating sleep apnea and snoring with a splint has finally found some support and that this treatment is performed all over the world today. After the skeptical and standoffish echo to our first publication this was not necessarily to be expected. One of my sons put his postpubertal protest against his father in the words that the Esmarch device would rather be a laughingstock. This is exactly what some colleagues thought of it, even

though they did not express their opinions that clearly to me.

To make it short, a neurologist who occupies his time with the treatment of snoring and propagates dental splints was at risk to not be taken seriously in his circle of colleagues. In order to be able to easily tolerate the sneer of the colleagues, a certain inner independence from other's opinions was required which I fortunately had.

It was also with respect to publications that I was sitting on the fence. All journals in which neurologists usually publish were not interested in any news on dental splints.

A major publication on therapy results of Esmarch device treatment, obtained from 58 apnea patients, was rejected even at the end of the eighties from the "Deutsche Medizinische Wochenschrift" and the German journal "Der Nervenarzt," as the editors were not able to see what dental splints might have in common with internal medicine or even with neurology or psychiatry.

So much for my past experiences with so-called "inventors' frustration." This expression is however misleading with respect to my person, as it was not the neurologist who invented the Esmarch device, but a member of your profession, my friend and co-author, the dentist Dr. Heinrich Schäfer.

And this is how it began:

Following the Japanese principle, in 1980, I founded a narcolepsy patient support group in Germany together with some interested patients. The main symptoms of this rare disease are episodes where patients experience the fleeting urge to fall asleep during the day. Consequently, many patients who were afflicted by daytime sleepiness were referred to us. Not all of them were narcoleptics, a great number of them suffered from sleep apnea, for which at that time there was no optimum therapy available. Drugs were more or less *sine effectu* and the first CPAP device we had imported from France was as big as a nightstand and as noisy as a medium-sized lawn mower.

So how were we supposed to treat our many apnea patients?

In this unfortunate situation Cartwright and Samelson published an article in 1982 that reported about the so-called tongue-retaining device with which the tongue is inserted in a kind of bottleneck and is advanced (in the bottleneck) by a vacuum. I was electrified and in the same hour I drove to my dentist and rotary friend Dr. Heinrich Schäfer, with a photocopy of the article in my bag. He had not heard about apnea until then and had also not thought about the dental treatment of snoring, however, he was a born innovator and therefore exactly the right man for my problem. Helpful and open-minded as he was, he listened carefully to my explanations and promised to think about alternative options of an intra-oral mechanic snore-preventing device and apnea therapy.

Some days later he phoned me and explained to me that it would actually also be possible to advance the root of the tongue with a protrusion splint. The option should at least be tested, as the pulling effect of the tongue-retaining device was disadvantageous: after several hours the tongue became sore in the vacuum and began to hurt.

I volunteered for the first trials involving mandibular advancement and after some days I received the original model of what became known as Esmarch device, individually made for me. The name Esmarch device (a reference to the Esmarch maneuver) was chosen upon my friend's particular request and is indicative for his personal modesty. He might as well, with all entitlements, have named it Heinrich Schäfer device.

Characteristic for the humane level of my friend was also his contemptuous disinterest in the monetary aspect of such intra-oral snoring treatment. For the early Esmarch device he accepted a symbolic minimum remuneration. As the demand eventually increased so much that he was not able to satisfy it alone he involved several younger local dentists, and the price augmented threefold within the shortest period of time.

Briefly, Heinrich Schäfer was one of a kind, a dentist that you do not meet every day, and he was a man the German dentists can be proud of. Without him I would not be standing here today. If I had approached another dentist, maybe the whole project would have come to nothing, since only the long years of our friendship could have helped to develop what finally proved to be the outcome.

For me, being 20 years his junior, a respectful friendship grew out of this collaboration, a friendship which, until his death at the age of 94, became closer and closer and which I still often rejoice.

But now back to the situation then:

The difficult question that was to answer was: Which side effects would nightly mandibular protrusion bring about for the mandibular joints and how much protrusion would be feasible without causing persisting damage?

Before I ventured on suggesting such an experimental therapy to my patients, a long-term self-experiment was mandatory. For the next nine months, every evening I therefore went to bed with my much-loved Esmarch device, rubbed my mandibular joints in the morning and listened to potentially conspicuous cracking or other signs of most severe side effects as they had been predicted to me by colleagues. Fortunately, such side effects did not occur.

Instead, there was a conjugal observation that snoring, usually caused by a-little-above-average alcohol intake, was successfully prevented by the splint; a fact that both trial subject and wife noticed with pleasure.

When my mandibular joints still functioned properly after nine months, I finally dared offer this experimental therapy to a patient. The first patient to whom I suggested such a therapy approach for his severe sleep apnea came from Berlin. He was snoring the whole night through, with long apneas, and he slept continuously during

the day, so that he was to be woken up for meal times. It was easy for him to consent to my experiment, after he had seen and heard the alternative treatment in form of our French lawnmower-like CPAP device.

For him, a second Esmarch device was individually made, and after only one or two nights with the splint the patient was alert during the day and waking him up for the meals was no longer necessary. I was excited, but the patient's wife considered the outcome rather normal, after all she had traveled from Berlin to Treysa, which, in her eyes, more than justified prompt and complete healing.

After this phenomenal success I became more confident and when the registration forms from the 7th European Congress on Sleep Research in Munich in 1984 arrived, we had in the meantime recorded 6 patients in the sleep laboratory with and without Esmarch devices and had compared data from the nights with and without splint in terms of duration of apnea episodes and total time spent in apnea. In 4 of 6 cases apnea time in percent of total sleeptime was reduced by 60%–87%.

We presented this result in Munich in July 1984 and ,with increased numbers of patients, at the 8th European Congress on Sleep Research in Szeged (Hungary) in September 1986, without anyone taking serious notice of the matter.

When I presented our results at the American Sleep Convention in Columbus/Ohio in June 1986, the picture of our Esmarch device was cut out of the poster with a sharp knife when we returned the next morning. The interest in Japan was equally keen, however, decisively more polite, when I was invited to Kurume on the southern island of Kiushu in the fall of 1986 and afterwards visited several universities.

In June 1995, when I was invited once more to Kurume on the occasion of the 20th annual meeting of the Japanese Society of Sleep Research to hold the keynote address, the protrusion splint was already introduced as alternative to CPAP and widely used in Japan.

At the 2nd congress of the World Federation of Sleep Research in Nassau/Bahamas in September 1995 a so-called focus group was organized on the topic "orthodontic treatment of sleep apnea"; here I met with Ms. Cartwright, Mr. Lowe, Mr. Schmidt-Novara, Mr. Ferguson and other pioneers of this alternative apnea therapy.

In the USA, this treatment alternative was organized, patented and commercialized very quickly and so the therapy with a mandibular advancement device returned to Germany as many other inventions with a detour over the USA; nevertheless, the return is to be welcomed.

As you all know, snoring combined with apnea is widespread in men over 50 and is intensified with alcohol intake. Millions of men and women on this globe would doubtlessly benefit from treatment with a splint and I can imagine a time when people will carry a protrusion splint as naturally as a toothbrush in their toiletries bags. Personally I have no doubt that this would promote public health.

Ladies and Gentlemen,

Before I reach the end of my speech, please allow me to address a few words of thanks to my associates and assistants:

If you want to do research at a rural hospital, you first of all have to find colleagues who are willing and able to support you. And you have to create an atmosphere in which research can prosper at all. In Treysa I succeeded at least for some years. At that time there were posters in German, English and Russian on the walls of our sleep research laboratory.

Many people were also involved in testing the Esmarch device, in particular Wolfgang Kloβ, Burkhard Brosig, Frank Leu, my senior physician for many years and my successor as head of clinic, Professor Geert Mayer and last but not least my Japanese visiting physicians, above all Dr. Mizuma and Professor Soichiro Miyazaki, who is meanwhile head of clinic himself and who was elected congress president for next year's congress of the Japanese Society of Sleep Research. To all these people I would like to express my gratitude. Without their help the effortful documentation on the effects of the Esmarch device would not have been possible.

Today, I am pleased to see that our efforts from the eighties have left some marks in the sands of time.

I would like to thank the German Society of Dental Sleep Medicine for this honour, for which due credit is to be given to my late friend, the dentist Dr. Heinrich Schäfer, my associates and assistants, our Japanese visiting physicians and my former clinic, the Hephata Clinic in Schwalmstadt-Treysa.

Publications concerning the Esmarch device

1. K. Meier-Ewert, H. Schäfer, W. Kloβ. Treatment of sleep apnea by a mandibular protracting device. 7th Europ Sleep Res Soc Congress. Munich, Sept. 3–7, 1984, Abstract
2. K. Meier-Ewert, H. Schäfer. Behandlung des obstruktiven Schlaf-Apnoe-Syndroms mit einer mechanischen Bissklemme. Prax Klin Pneumol 39, 372 (1985)
3. H. Schäfer. Das obstruktive Schlaf-Apnoe-Syndrom. Aufgabe für Neurologe und Zahnarzt. Zahnärztl Mitt 76, 1540–1541 (1985)
4. K. Meier-Ewert, B. Brosig, H. Schäfer. Treatment of obstructive sleep apnea. The Esmarch-prosthesis. 8th Europ Congr Sleep Res, Szeged (Hungary) Sept 15 1986, Abstract
5. K. Meier-Ewert, B. Brosig. Prosthetic treatment of obstructive sleep apnea syndrome. Columbus

Sleep Convention, Columbus, Ohio, USA June 1986, Abstract
6. B. Brosig, K. Meier-Ewert. Measuring treatment efficacy in obstructive sleep apnea. Europ Soc Resp Pathophysiol (SEPCR) Working group Sleep and Respiration Paris Sept. 3–6, 1986, Abstract
7. K. Meier-Ewert, B. Brosig. Prosthetic treatment of obstructive sleep apnea syndrome. Sleep Res 15, 179 (1986)
8. W. Kloβ, K. Meier-Ewert, H. Schäfer. Zur Therapie des obstruktiven Schlaf-Apnoe-Syndroms. Fortschr Neurol Psychiatr 54, 267–271 (1986)
9. K. Meier-Ewert, B. Brosig. Treatment of sleep apnea by prosthetic mandibular advancement. In: P. von Wichert (Ed.): Sleep related disorders and internal diseases. Springer Verlag, Heidelberg, 1987
10. K. Meier-Ewert. Narkolepsien und Schlaf-Apnoe. In: H. Hippius, E. Rüther, M. Schmaus (Hrsg.): Schlaf-Wach-Funktionen. Springer Verlag, Heidelberg, 1988
11. K. Meier-Ewert. Tagesschläfrigkeit. Ursachen, Differentialdiagnose, Therapie. (Praktische Neurologie Bd. 9) Edition Medizin VCH, Weinheim 1989
12. S. Miyazaki, K. Meier-Ewert. Prosthetic treatment of sleep apnea. 10 Congr. Europ Sleep Res Soc, Straβburg, Mai 20–25, 1990. Abstract
13. S. Miyazaki, K. Meier-Ewert. Cephalometric indications for successful prosthetic treatment of sleep apnea. Sleep Res 19, 260, 1990
14. G. Mayer. Efficacy of Esmarch prosthesis and cephalometric analysis. 10th Congr Europ Sleep Res Soc., Straβburg 1990. Abstract 281
15. S. Miyazaki. Prosthetic devices in the treatment of obstructive sleep apnea. Operat Techn Otolaryngol - Head Neck Surg 2, Bd. 2 (June) 96–99, 1991
16. Nannette Deutsch. Die prothetische Behandlung des obstruktiven Schlaf-Apnoe-Syndroms. Dissertation. Technische Universität München, 1991
17. Y. Nakazawa, T. Sakamoto, R. Yasutaka, K. Yamaga, K. Kotoril, T. Miyahan, Y. Ariyoshi, T. Kameyama. Treatment of sleep apnea with prosthetic mandibular advancement (PMA) Sleep 15, 499–504, 1992
18. K. Meier-Ewert, N. Deutsch. Prothetische Behandlung des obstruktiven Schlaf-Apnoe-Symdoms. In: K. Meier-Ewert, E. Rüther (Hrsg.) Schlafmedizin. G. Fischer Verlag, Stuttgart 1993
19. F.R. Leu, K. Jakobsen, K. Meier-Ewert. Behandlung eines Schlaf-Apnoe-Syndroms mit Esmarchschiene bei Lippe Kiefer-Gaumenspalte. In: K. Meier-Ewert, E. Rüther (Hrsg.) Schlafmedizin. G. Fischer Verlag, Stuttgart, 1993
20. Konrad Jakobsen. Die Esmarchschiene. Eine Untersuchung über den Einfluβ der Schneidekantendistanz und der Protrusion des Unterkiefers bei der Behandlung des obstruktiven Schlaf-Apnoe-Syndroms. Dissertation, Freie Univ. Berlin, 1993
21. G. Mayer, K. Meier-Ewert. Caphalometric predictors for orthopaedic mandibular advancement in obstructive sleep apnea. Europ J. Orthodont 17, 35–43, 1995
22. Jörg Thumm. Untersuchungen zum obstruktiven Schlaf-Apnoe-Syndrom. Grenzen und Möglichkeiten des Zahnarztes in Diagnostik und Therapie Hilfe der Esmarchschiene. Dissertation, Freie Univ. Berlin, 1995
23. Birgit Berger-Engel. Langzeiteffekte bei oraler Behandlung des obstruktiven Schlafapnoe-Syndroms. Dissertation, Techn. Univ. München, 1997