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# Nerve Ultra- sound Opens Up Completely New Perspectives

**D**r. Möller, why are you offering nerve sonography?

Nerve sonography can be useful, for example, to determine the exact location in case of suspected nerve damage - and to make a faster diagnosis. With the classical examination, the electrophysiological measurement of the nerve conduction velocity, I obtain indications of a changed or disturbed function.

In addition, I may obtain rough indications of where the nerve is damaged, inflamed or pinched. However, I can not clarify the cause of the damage with the electrophysiological measurement. High-resolution ultrasound imaging with one of the most advanced devices, such as the Aplio i800, in the hands of an experienced and well-trained examiner is, in my opinion, the ideal form of investigation to visualize the cause of a nerve disorder.

To what extent has the ultrasound changed your practical work?

Nerve sonography is a relatively new method, which offers far-reaching additional possibilities for neurological diagnostics. Until the 1990s, we had no other method than the electrophysiological measurement. So, above all, we worked with the patient's clinic and the curves of nerve conduction velocity. But we had no idea what a damaged nerve looks like, we did not have a picture. Thanks to high-frequency probes, I can now see and assess even the smallest peripheral nerves noninvasively, three-dimensionally and in real time. That's a great advantage.

What additional information does the three-dimensional image provide?

The three-dimensional insight into the body using the Aplio i800 takes on a whole new dimension, giving us a new perspective on the nerves. You can imagine it like a theater

in which a great curtain stands closed before us. Although we can look at the wonderful fabric, its colors and how nice it is - it is only when the curtain opens that the images, actors and scenes that make up the play open up to us.

#### *What does the theater have to do with sonography?*

With nerve ultrasound, the curtain opens into the three-dimensional reality of the nerve plexus and its surroundings. On the one hand, I get a look at the individual structures. But the ultrasound has changed even more: I can see in real-time a three-dimensional network where one nerve is there, the next one somewhere else. There are also individual variants, each person has a different anatomy.

Through the imaging of, for example, an irritated nerve, one can generally better understand how, for example, irritation develops and which processes take place. So it's not just about the picture we see when we're sitting in front of the device. It's about the entire pathological process, which we understand better through ultrasound. For us, today nerve ultrasound is a significant modern building block in neurological diagnostics.

#### *How do patients react?*

From our practical experience, visual nerve sonography, in addition to traditional examination methods such as nerve conduction velocity measurement, is also immensely important for patients. Because they get additional information by looking at the screen, they can better imagine where their pain comes from and how to best treat it. The patient sees his illness and gets a clear idea of it. And the ultrasound offers him or her more security in the treatment due to the clear instructions for the diagnosis.

## *“With nerve ultrasound, the curtain opens into the 3D reality of the nerve plexus and its surroundings.”*

#### *Can you name typical indications?*

The ultrasound can even make small peripheral nerve structures and muscles visible. The investigation can clarify whether a nerve is only pinched as in a nerve constrictor syndrome, whether it is irritated or inflamed. A typical indication is discomfort and tingling in the hands. The ultrasound provides indications as to whether the problem is peripheral or, for example, in the area of the cervical spine. In addition, the nerve ultrasound helps us to weigh up for or against surgery. Preoperatively, however, it can also be revealing, for example, about where to incise - or prepare for anatomical variants.

#### *Nerve sonography fell behind normal ultrasound for a long time.*

The technology and development of the sound probes took a long time. But now that the devices are on the market, new improvements are constantly being added. The structures that we can detect with the nerve ultrasound become smaller and more detailed. Nature opens up to us completely differently again. Here with the Aplio i800 Canon offers the best device on the market. We've been working with Canon for years.

#### *Why are you and Canon so close?*

We are extremely satisfied with the company in many ways. As Canon offers a service that we rarely find today. For sales, we have such a good contact, I've never experienced that with any other manufacturer. In case of problems, the technicians are immediately accessible, the customer care is excellent. I've experienced that with Canon over the years. The company even provided us with a loaner device very quickly when we had problems with the equipment of another company. We chose the Aplio i800 because it's the first choice in terms of imaging, quality and resolution.

#### *Will the importance of nerve sonography change in the future?*

Like me, my colleagues are convinced that nerve sonography will continue to grow in importance in the future. Because most people work on the computer, fine motor, detailed work is becoming increasingly important. We need to be able to help patients quickly and effectively with disorders even of the smallest peripheral nerves. So, diagnostics, for example with the Aplio i800, will make a major contribution in the future. //

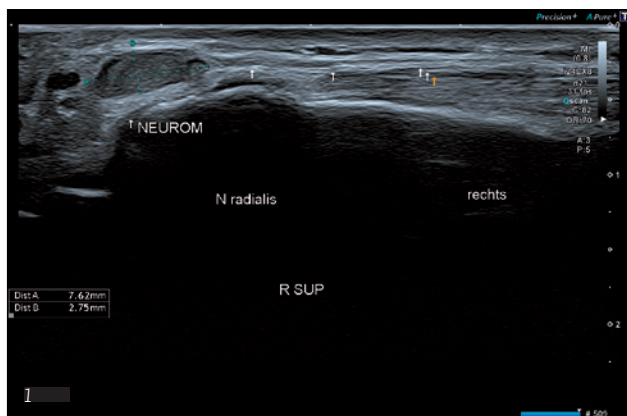


Fig. 1: Here a neuroma after injury in the area of the distal R. superficialis of the N. radialis is shown.

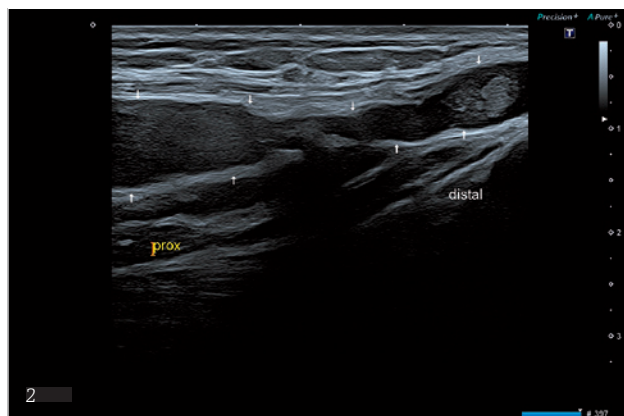
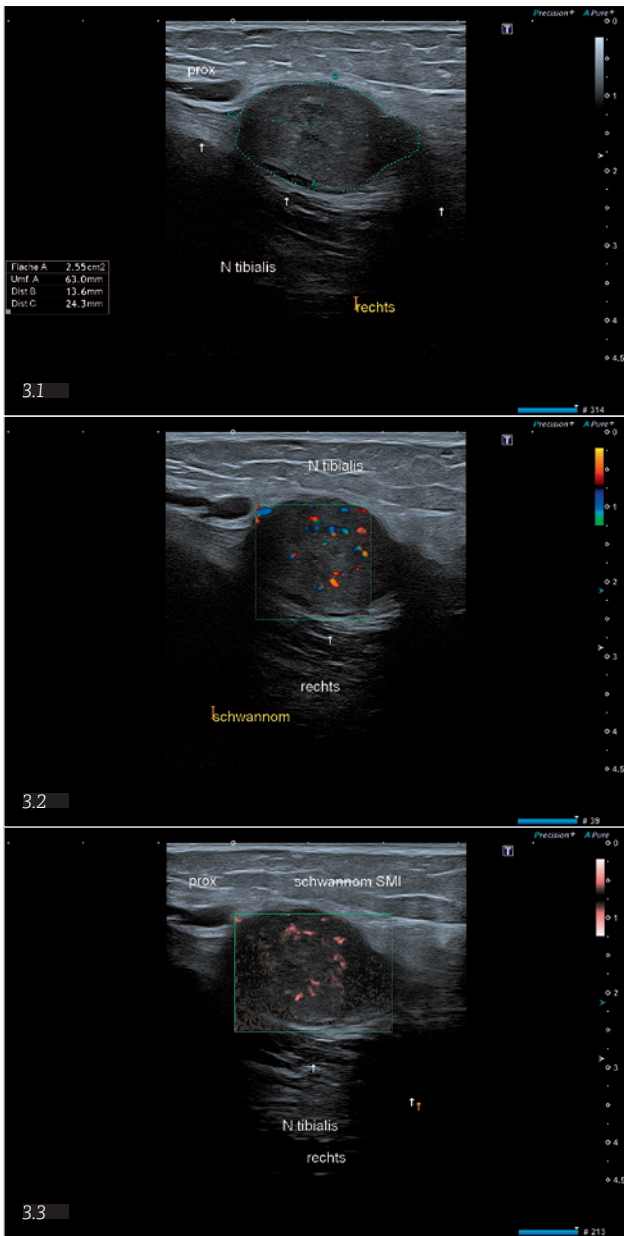
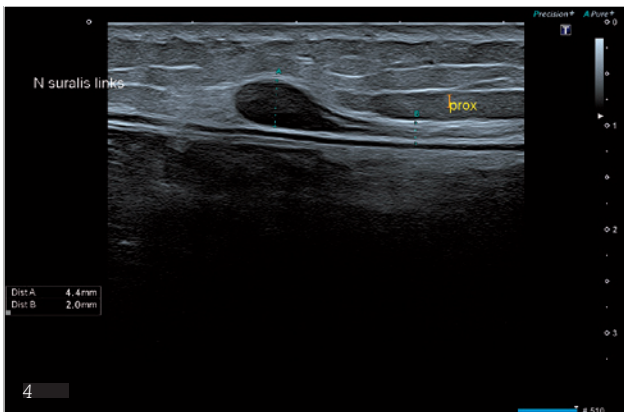


Fig. 2 shows an elongated neuroma / neurinoma in the area of the left ulnar nerve in the upper arm after a long-standing trauma.



[1] Figs. 3.1 to 3.3 show a schwannoma in the area of the right tibial nerve in the area of the distal lower leg.



[1] Fig. 4 shows a neuroma formation after injury of the left sural nerve.

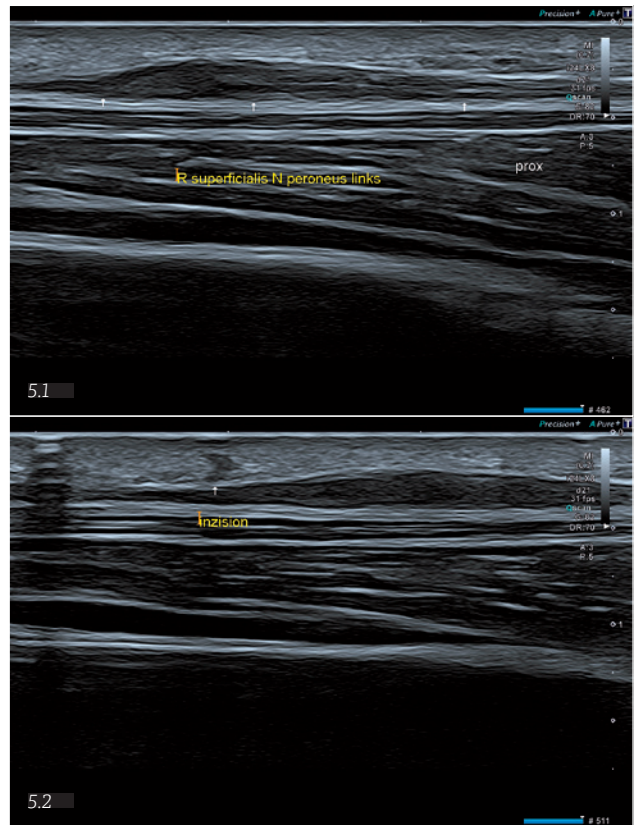


Fig. 5: Incision of the R. superficialis of the N. peroneus.

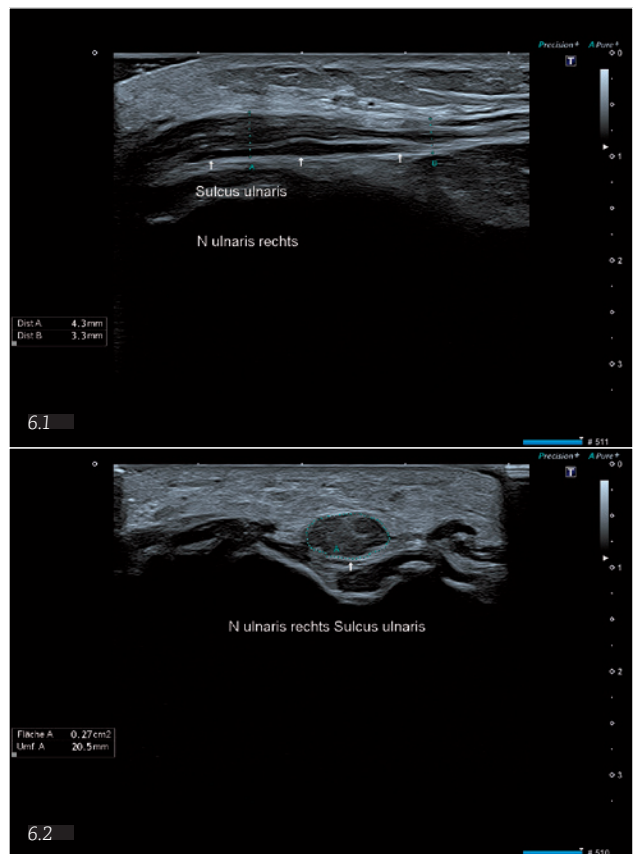


Fig. 6: Ulnariskompression in the area of the sulcus ulnaris right.