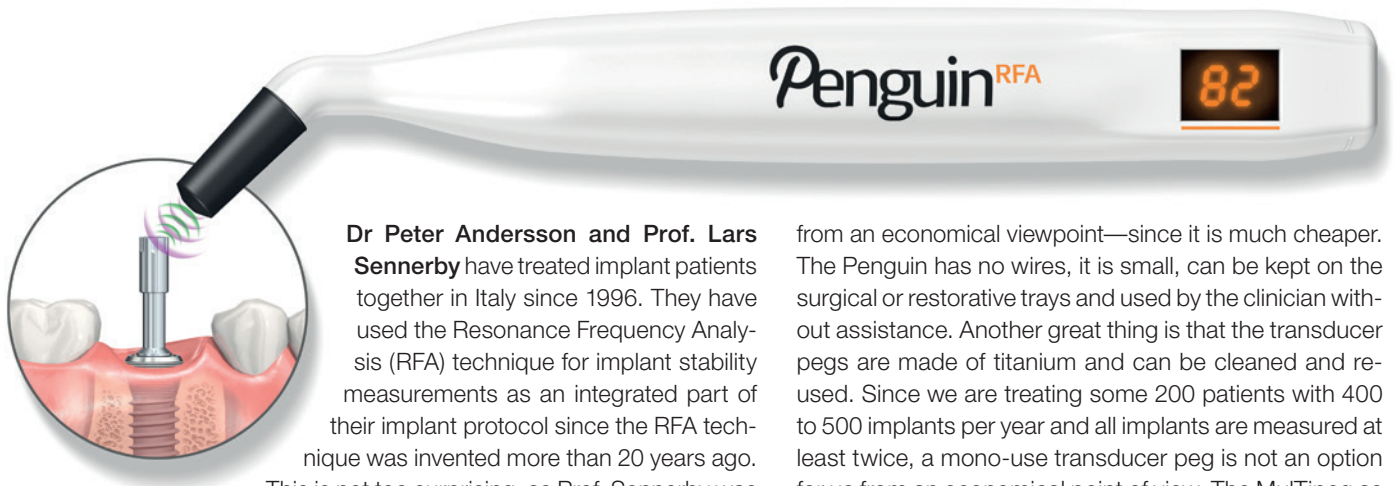


# Measuring implant stability



**Dr Peter Andersson and Prof. Lars Sennerby** have treated implant patients together in Italy since 1996. They have used the Resonance Frequency Analysis (RFA) technique for implant stability measurements as an integrated part of their implant protocol since the RFA technique was invented more than 20 years ago.

This is not too surprising, as Prof. Sennerby was one of the developers of the RFA technique. In this interview, however, Dr Andersson (Fig. 1) took the time to present his experience with the RFA technique and described how it is used in his clinic on a daily basis.

**Dr Andersson, what type of RFA instrument are you using today? And which are the advantages?**

We are using the PenguinRFA system, which has many advantages in comparison to the old system, not only

from an economical viewpoint—since it is much cheaper. The Penguin has no wires, it is small, can be kept on the surgical or restorative trays and used by the clinician without assistance. Another great thing is that the transducer pegs are made of titanium and can be cleaned and reused. Since we are treating some 200 patients with 400 to 500 implants per year and all implants are measured at least twice, a mono-use transducer peg is not an option for us from an economical point of view. The Multipeg as used with the Penguin has a long lifespan because it can resist at least 20 autoclavings. You can really tell that the PenguinRFA system is made for clinicians by clinicians.

**How is the technique used in your clinic?**

For us, the use of RFA is part of the routine documentation of our implant cases and we find it more useful than taking a radiograph of the implant site. Through the years we have learned that the risk for implant failure increases with low ISQ readings. As a general rule, all implants are

“You can really tell that the PenguinRFA system is made for clinicians by clinicians.”

measured after surgical placement and then again when commencing the restorative phase, which used to be after three months of healing.

We are now, however, using a different loading protocol based on RFA measurements. We always make measurements in mesiodistal and buccolingual directions and use the highest ISQ value. The readings are kept in the patient charts. In addition, we keep a simple computerised register of all implant patients, which are given a unique consecutive number. This is very handy, since we publish follow-up studies as part of our quality assurance work from time to time. In this way it is easy to find the documentation for different patient groups and different indications for implant treatment.

If we get readings below an ISQ of 65 at implant surgery, we try to improve the stability by either replacing the



Fig. 1  
**Fig. 1:** Dr Peter Andersson, Clinica Feltre, Feltre, Italy.

implant with a wider and/or longer one or by making a new osteotomy. A low reading is, however, often depending on soft bone density, which is difficult to manage. Prof. Sennerby prefers a tapered implant design in this bone situation and if the ISQ value is still low, the healing period is extended to four to six months, instead of three months. Moreover, if implants show low stability at the time of impression taking, I prefer to prolong the healing period until the ISQ value is above 70.

**What is your new loading protocol?**

Our experience is that the majority of implants reach high primary stability (>70 ISQ) and could actually be loaded immediately or at least early after placement (Figs. 2 & 3). This means that the treatment time can be reduced dramatically. However, in a busy practice immediate loading is a logistic nightmare, so we decided to apply immediate/early loading only on specific indications and to allow the majority of implants to heal for six to twelve weeks depending on the ISQ value.

In order to rationalise the restorative part of implant treatment, all impressions are taken digitally in conjunction with surgery. This way the dental technicians have sufficient time to plan and manufacture a framework or even a readymade prosthesis. Depending on the primary sta-

bility, the implants are allowed to heal with a healing abutment for six weeks (> 70 ISQ), eight weeks (65–70 ISQ) or twelve weeks (> 65 ISQ) before the first prosthetic appointment. In this way we can save a lot of appointments and time, which is good for both the patients and the practice.

**What are indications for immediate and early loading?**

In our clinic, immediate loading is mainly made in aesthetic cases, where the patient presents with a fractured or lost incisor, canine or premolar—provided that

“In this respect, the Penguin is our best friend.”

we reach an ISQ value of at least 70. Otherwise we follow the protocol as described above. With the digital impression technique, we can give these patients a laboratory made temporary crown the same day, which is very much appreciated.

In addition, we have developed an early loading protocol for partially edentulous patients where the best treatment option is extraction of the remaining teeth and simultaneous placement of four to five implants in the

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Fig. 2



Fig. 3a

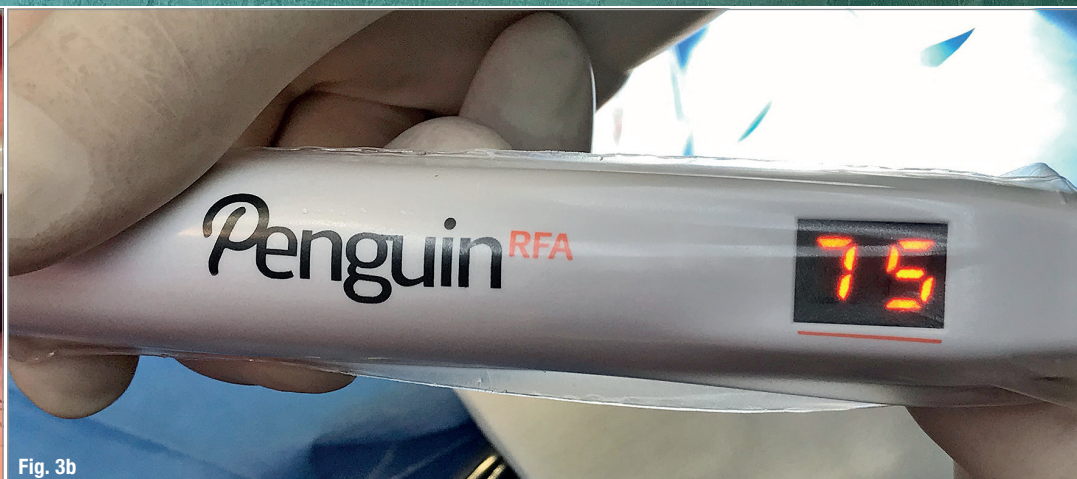


Fig. 3b

**Fig. 2:** Surgical tray with PenguinRFA in a sterile pouch. **Figs. 3a & b:** Measurement after implant surgery shows an ISQ value of 75.

mandible and five to seven in the maxilla for a full provisional bridge. In these cases, the patients receive a provisional bridge after three days if the majority of implants have shown an ISQ of 70 and above.

**Dr Andersson, what are the results with your new RFA-based protocol?**

In a retrospective analysis the overall survival rate was 98.7 per cent after one to five years of loading. The majority of implants, 75 per cent, could be restored within six weeks after implant surgery with excellent clinical outcomes. The remaining 25 per cent of implants were placed in soft bone or in bone augmentation procedures and required a longer healing period or even a two-stage procedure. With our protocol and the use of the Penguin instrument we can minimise the number of surgical interventions and appointments without compromises

regarding outcomes. In this respect, the Penguin is our best friend.

*More information can be obtained by visiting the Integration Diagnostics Sweden booth (B44) at EAO in Vienna in October.*

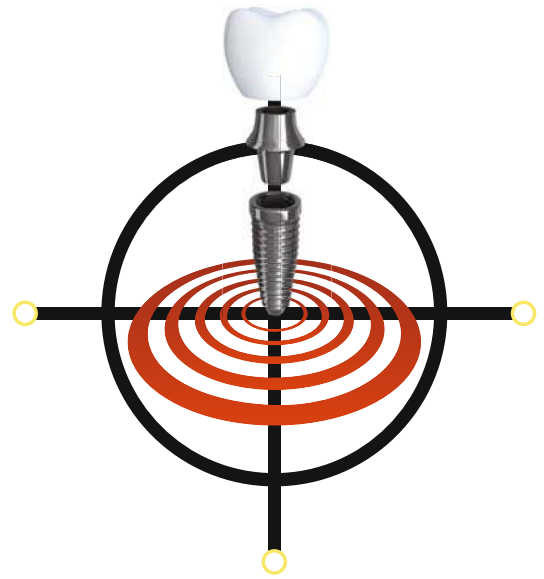
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