Using lasers to tackle periodontitis

Author_Stefan Gottschalk, Germany

_Periodontal diseases are advancing. Above all adults and elderly patients are affected. In many cases their condition is chronic. Recurrent inflammations of the periodontium pose a significant challenge. On top of the effective therapy the intensive cooperation of the patient is necessary in order to achieve a stable long-term situation. With reference to a specific case dentist Stefan Gottschalk (Bensberg, Germany) describes how he treated a female patient suffering from progressive periodontitis with the aid of laser therapy and intensive preventive care.

When we set up our dental practice in Bensberg in 2005 we decided to concentrate on preventive care and periodontics in addition to restorative dentistry. During our time at university we had established, on the one hand that a growing number of patients suffer from gingivitis and periodontitis. On the other hand, there is a shortage of specially trained dentists to treat such patients. For this reason we acquired detailed knowledge of the periodontium and developed this knowledge during our university studies and clinical training. In 2006 we obtained a specialist qualification in periodontics under Professor Kleinfelder. Today we can say that an estimated 90 per cent of our patients suffer from gingival and periodontal disease. This condition frequently remains undetected for a long period; many cases show a correspondingly advanced progression. In spite of difficult initial situations we achieve a 90 per cent success rate now. This is due, firstly, to our effective array of instruments—we use a combination of laser and ultrasound devices—and, secondly, it is also a result of the intensive collaboration with patients in the area of preventive care and oral hygiene. Unfortunately, patients today have to pay themselves most of the costs of periodontal treatment and follow-up in Germany. For this reason intensive counselling must be provided in order to ensure their compliance. We give top priority to this in our dental practice. Good collaboration is a prerequisite not only for the reimbursement of therapy costs by the german health insurance funds, but also for the sustained success of periodontal therapy.

_Applying high-tech in the gum pockets

From a medical viewpoint the effective treatment of periodontitis requires great caution. We use

Fig. 1_Initial diagnosis on September 3, 2009.
Fig. 2_X-ray of the initial situation.

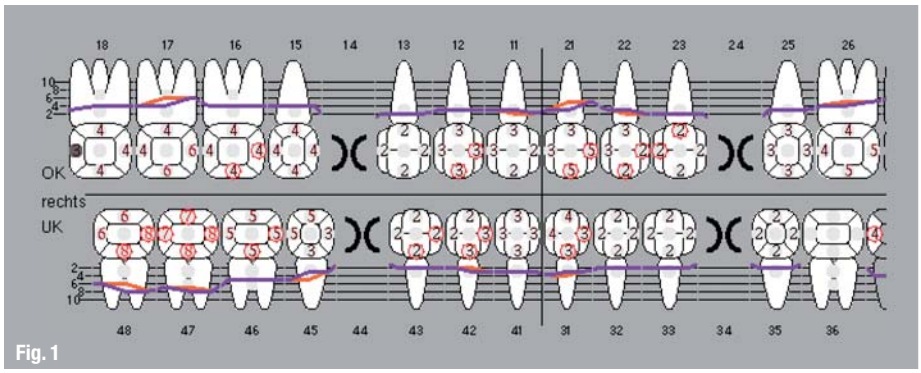
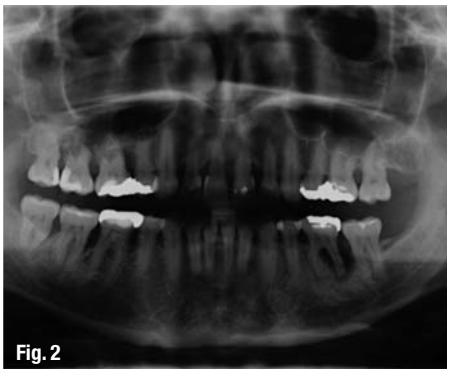


Fig. 1


Fig. 2

two high-tech devices made by the dental equipment manufacturer Sirona: the SIROLaser Advance and the PerioScan. In combination with each other these devices facilitate atraumatic and effective treatment. We started working with lasers during our clinical training. The potential of this technology was so convincing that we integrated laser therapy into our practice concept from the outset. Instead of a scalpel, we use the laser for the excision of inflamed tissue, as well as for effective and long-term bacteria management in the gum pockets. The 'smart' PerioScan ultrasonic system is used for root planning and scaling. In contrast to mechanical instruments the PerioScan can detect and remove calculus.

For the past five years we have deployed the SIROLaser and its successor SIROLaser Advance (diode laser devices designed to treat soft tissue) for periodontal therapy purposes. Its features convince us again and again as this laser allows us to remove diseased tissue gently and thoroughly without having to surgically open the treatment site. In addition, we are able to combat existing infections and prevent new infections. Handling the laser is very simple. The user inserts the tip into the gum pocket and vaporizes the dark-pigmented inflamed tissue—gently and with only minimal discomfort and bleeding. The light-coloured healthy tissue absorbs the laser radiation only to a very limited extent and hence remains unaffected. The laser technology is so 'smart' that the user can work precisely and effectively even without a direct view of the treatment site. With a certain amount of practice the user knows exactly how to move the laser in the gum pocket for a perfect result and when the pocket is practically free of infected tissue. At the beginning infected tissue adheres to the laser tip. After two or three passes the intensity of vaporization decreases significantly. Correspondingly less tissue adheres to the tip. If the tip is clean when withdrawn from the gum pocket it is safe to assume that the infected tissue has been completely removed. A further advantage is that all four quadrants can be treated during a single appointment. This is not possible in the case of surgical procedures due to their invasive nature and the resultant stress on the patient. So typically only one quadrant is treated per treatment session. By contrast, laser therapy is quicker, less invasive and less painful. This benefits older patients in particular who frequently suffer from chronic diseases.


Fig. 3a


Fig. 3b


Fig. 3c

Figs. 3a–c_Extracted tooth 36 showing strong calculus deposits.

_Case study

In the following case we used the SIROLaser Advance to treat progressive periodontitis in a 40 year old female patient. She visited our practice in September 2009 suffering from severe periodontitis. The patient stated that she had been undergoing periodontal treatment for ten years—but without success. During the first treatment session we diagnosed that eight teeth displayed pocket depths of five to eight millimetres. A further 11 teeth had an attachment loss of three to four millimetres. Due to the severity of the periodontitis we were unable to save teeth 17, 36 and 48; they were extracted a week later. During two subsequent appointments at an interval of one week we removed all the supragingival calculus and instructed the patient in the use of interdental brushes and dental floss. Thanks to the patient's cooperation, she was free of supragingival calculus and infection after three weeks.

In the middle of October we then performed a complete periodontal procedure on the upper and lower jaws during a single appointment. In addition to curettes and scalers we used the SIROLaser Advance and PerioScan. After administering an

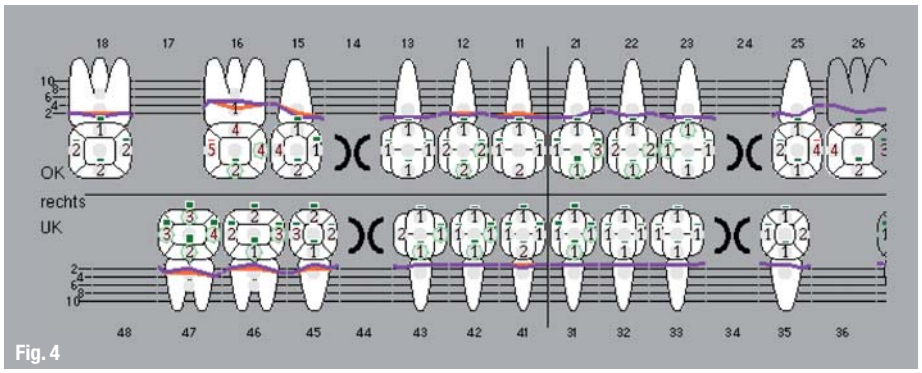


Fig. 4


Fig. 5

Fig. 4_Diagnosis on 4 January 2010.
Fig. 5_X-ray after periodontal treatment.



anaesthetic we deployed the laser device to reduce bacteria and germs in the pockets, remove inflamed tissue and dry out the root surface. In our experience lasered calculus are easier to be removed with the aid of curettes and the PerioScan than concrements that are not lasered. A further reason for deploying the laser first is to minimize the number of pathogens that enter the patient's bloodstream. This is of particular benefit to cardiac patients and allows the dentist to dispense with prophylactic antibiotic coverage. The patient in our case study was not impaired by surgical incisions or sutures. After a brief follow-up examination the following day she was able to return to work.

One week later we once again lasered all the periodontal tissues in order to remove any remaining bacteria. This procedure was painless due to the fact that all the infected tissue had been removed. The patient did not require an anaesthetic. In January 2010 the patient was recalled for a checkup. The laser was once again deployed to remove bacteria. This was followed by professional tooth cleaning (PTC). The gum pockets showed a significant improvement. Isolated bleeding from tooth 16 (distal) and 47 (mesial) was curetted under local anaethsthetic and then treated with the aid of the laser.

The overall periodontal status of the patient has significantly improved. There are very good chances that her situation will continue to improve and then remain stable in the long term. The patient responded very positively to our counselling efforts, the atraumatic treatment method and the measurably good results.

_Conclusion

The laser plays an indispensable role in periodontal treatment. It makes the therapy process easier, faster and more efficient. From the patient's viewpoint laser therapy is gentler, less painful and much less stressful. Elderly patients benefit from this in particular since many of them suffer from various chronic health issues. Thanks to its intuitive user-friendly features, the SIROLaser Advance is easy to learn. The SIROLaser Advance in our dental practice is in constant use and has more than paid for itself. _

_contact laser

Zahnärztliche Gemeinschaftspraxis
Gottschalk & Kreft
Stefan Gottschalk
Friedrich-Offermann-Straße 5
51429 Bensberg, Germany
Tel.: +49 2204 51616
E-Mail: info@zahnarzt-bensberg.de
Web: www.zahnarzt-bensberg.de

Figs. 6a & b_Clinical status after the last laser treatment procedure and professional tooth cleaning (January 2010).


Fig. 6a


Fig. 6b

32nd ASIA PACIFIC DENTAL CONGRESS

32nd APDC COLOMBO - 2010

Theme

CLINICAL EXCELLENCE IN DENTISTRY

Through Knowledge, Evidence & Technology

12th - 16th May, 2010 – Colombo, Sri Lanka



Register now ! Call for Paper

32nd APDC Congress Secretariat:

C/o Sri Lanka Dental Association
275/75, Prof. Stanley Wijesundera Mawatha, Colombo 07, SRI LANKA.
Tel/Fax : 0094 11 2595147
Email : slda@sltnet.lk, slda@slda.lk
www. slda.lk

Organizers:

Sri Lanka Dental Association

Asia Pacific Dental Federation

www.apdc2010.com

Venue

BMICH SIRIMAVO BANDARANAIKE MEMORIAL CONVENTION & EXHIBITION CENTRE

Date

12th – 16th May, 2010

Program Highlights

- Hands on Workshops – Endodontics, Implants, Aesthetic Dentistry, Othodontics
- Aesthetic Dentistry
- Endodontics - Non Surgical Endodontic Re-treatment, Root end surgery
- Periodontics - Non surgical periodontal management, Periodontal surgery
- Orthodontics - Cortical Anchorage with Mini implants, Lingual Orthodontics
- Implants - Anatomical aspects in implant dentistry, Mini Implants, Post Trauma implants, peri implantitis and related infections
- Fixed & Removable Prosthodontics
- Symposiums - OPMD / Oral Cancer, Facial Aesthetic Surgery
- Orthognathic surgery and profile improving procedures, Bone augmentation
- Practice management
- Defence Seminar

List of Invited Speakers

Professor Thomas von Arx (Switzerland)
Professor Lim K Cheung (Hong Kong)
Dr Andrew P Dias (Australia)
Dr George A Freedman (Canada)
Professor Mithran Goonewardene (Australia)
Dr Wock Hallermann (Switzerland)
Dr S Illankoovan (United Kingdom)
Professor L J Jin (Hong Kong)
Professor Andrej M. Kielbassa (Germany)
Dr Rohana Kumara (New Zealand)
Professor Niklaus P Lang (Hong Kong)
Dr BjÖrn Ludwig (Germany)
Dr Ratnadeep Patil (India)
Dr Wolfgang Richter (Austria)
Professor Lakshman Samaranayake (Hong Kong)
Professor D Y D Samarawickrama (United Kingdom)
Dr Kevin Seymour (United Kingdom)
Dr Harris Sidelsky (United Kingdom)
Professor Saman Warnakulasooriya (United Kingdom)
Dr Sushil Koirala (Nepal)
Dr How Kim Chuan (Malaysia)
Dr Muzaffar Hamirudin (Malaysia)

Signal ORAL HEALTH SERVICE
Principal Sponsor