FAST TRACK surgery

'The term fast track surgery refers to a combination of findings from current, high quality studies of anaesthetics, surgery and perioperative care for a certain medical indication,' explained Professor Schwenk. 'The evaluation of these findings is then transformed into a certain path of treatment followed through all the treatment stages, i.e. from admission to a hospital, all the way to out-patient aftercare. In short, fast track surgery is a procedure specific, evidence based and inter-professionally optimised course of therapy.

'Although there is already an established procedure for a certain indication, the initial reason why such a treatment path should be developed can be explained using colon surgery as an example. With traditional treatment, postoperative general complications such as pneumonia or cardiovascular complications, tend to occur in every third or forth case. Obviously the question arises as to how these postoperative problems can be minimised. This is the basic question that must be dealt with by all the medical disciplines involved - in this case surgery, anaesthetics, nursing care and physiotherapy. Having looked at medical findings from all over the world, they research and define what can be classed as evidence based and what can then be implemented in hospital. Results are then summarised in a catalogue. In the case of colon surgery, the treatment path is as follows: A patient can drink up to two hours prior to surgery, no colon preparation, regional abdominal anaesthesia via thoracic peridural catheter, additionally general anaesthetic, minimally invasive surgery or transverse opening of the abdominal wall. The patient is aggressively mobilised out of bed by the evening of the day of surgery. There is no infusion or drainage and the patient can eat normally the next day. On the second day after surgery the patient is fully mobilised, and from the fifth day onwards the patient can be discharged. With this treatment plan we have been able to lower the rate of complications in colon surgery to only 10% and have cut the length of individual hospital stays by half.

'As this treatment plan has resulted in standardisation of processes, even though there are still individual aspects for each patient, it is easier to calculate treatment costs. Deviations from the "normal course" are significantly lower than those occurring with traditional methods, which is particularly important for planning integrated care with doctors in surgeries outside a hospital. Moreover, the treatment path ensures a streamlining of procedures and prevents, for example, redundant examinations. Finally, the lower rate of postoperative complications results in lower follow-on costs.

'Of course fast track methods require investments, such as intensive staff training, so that the methods can be successfully implemented in practice. Often the structures required for successful implementation must be created, such as the setting up of acute pain services. All in all, these investments pay off in the medium term, particularly for patients.'

So why is 'fast track' still infrequently used?

'The exact number of surgeions fast-tracking patients in Germany is unknown. Only 24 hospitals in Germany are undergoing a joint internal quality assurance programme offered by the Charité. On a European level a working group represents the fast track principle, which is known as Enhanced Recovery After Surgery (ERAS), and hospitals in Denmark, Sweden, Scotland, Norway and The Netherlands are participating in that programme.

'We mustn't forget that there are probably some hospitals already using this method without being aware of it and without having a specific term for it. I believe fast track surgery will gain more importance in the future and that it will also be implemented for other medical indications. But, whoever opts for fast track needs to be aware that the method has to be continuously advanced. Once developed, any treatment path must be checked regularly to include any relevant new findings. Fast track surgery is a continuous process that adapts to new medical findings.'

Although everyone talks of 'fast track surgery', in most cases the term is not correctly used. The name might appear to be a reference to speed but, in this case, 'fast track' refers to therapy optimisation. The fact that patients recover 'faster' due to optimised therapy is really just a very positive 'side effect'. *Meike Lerner*, of European Hospital, discussed the method with **Professor Wolfgang Schwenk** (below), Associate Clinical Director at the Clinic for General, Visceral, Vascular and Thoracic Surgery, at the Charité University of Medicine Berlin, and one of the pioneers of fast track surgery.

Knowing the right procedure

DGCH promotes studies for evidence-based medicine (EbM) in surgery to establish guidelines

Research from the USA and The Netherlands has shown that 30-40% of patients do not receive the scientifically proven best treatment for their condition, and about 25% of patients receive unnecessary treatment. Evidence-based medicine (EbM) serves to evaluate the use of diagnostic and therapeutic services. In an ideal case it ensures patients always receive the best possible medical treatment, the DGCH points out. 'Researchers also identify ineffective or less effective therapies through relevant studies. All of which could save patients receiving unnecessary, ineffective or even damaging treatment and cut costs for healthcare systems.

EbM also can be used as a record of the effectiveness, or superiority, of an operative procedure.' However, Professor Bauer, secretary general of the DGCH in Berlin, points out: 'Essential progress in surgery has so far rarely been achieved through methods used in evidence-based medicine.'

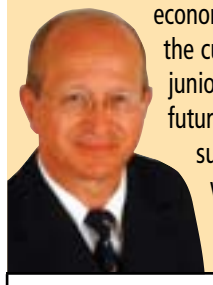
Researchers mainly obtain scientific evidence through examinations of different, randomly distributed patient groups - so-called randomised controlled studies (RCTs). These are generally carried out 'blind': Neither doctors, nor patients, are aware which medication is being tested, which produces constant test conditions and forms the basis for meaningful comparisons. In 2000, a survey of clinical studies of surgery showed the percentage of RCTs to be only 2.8%. Of course, in surgery it is almost impossible to 'blind' patients and doctors. What can be achieved in drug trials using placebos can hardly be replicated as 'pretend' surgical operations. That would be unethical.

With its study centre (SDGC) and linked network of five regional centres (CHIR-Net) the DGCH promotes large, multicentre clinical studies in surgery. 'The necessary repeatability and comparability of procedures require a high degree of standardisation, not only for the surgical operation but also for the entire peri-operative treatment regime,' Professor Bauer explains. The SDGC is able to meet these complex scientific, methodical and ethical requirements by carrying out national studies. In this way, the DGCH promotes patient-oriented research in Germany and contributes to the realisation of treatment procedures with proven effect and evident benefit for patients.

Source: www.dgch.de

Changing operations and work patterns

Under the banner *Surgery and Changing Systems,* the 124th Congress of the German Society for Surgery (1-5 May. ICM Munich) promises to be a stimulating programme. According to its President and Secretary General, respectively **Professor H U Steinau** (left) and **Professor H Bauer**, the focus will not only be on current operating procedures, interdisciplinary problem cases, and troubles with surgical provision under changing economic conditions, but the current situation for junior surgeons and future prospects for surgeons in Germany will come under scrutiny.



Along with advanced training courses, a training laboratory, video presentations, careers advice, satellite symposia to simplify the collation of clinical data, the forum will present a platform for young scientists.

The new forum-panel also will define the ethical basics of experimental and clinical research.

On 2 May, the congress will merge with the Congress on Accident and Emergency Medicine, organised by regional branches of the Professional Medical Associations in Saxony and Bavaria, to present and discuss aspects of rehabilitation, MRSA and particularly nosocomial illnesses acquired by operating theatre staff.

NB: For those who could not attend the congress the contents of the clinical and experimental sessions will be presented on the Society's website (www.dgch.de), and in publications from the DGC and the BDC.

New device leads airway management evolution

i-gel, a new single-use, supraglottic airway device designed for quick, easy insertion, also comes ready to use. Intersurgical, its UK-based manufacturer, reports that the device '…. accurately positions itself over the laryngeal framework to provide a reliable perilaryngeal seal without the need for an inflatable cuff'. For greater safety, it also incorporates a gastric channel; an integral bite block to reduce the possibility of airway occlusion, and a buccal cavity stabilizer to aid rapid insertion and eliminate the potential for rotation.

'The **i-gel** is a truly unique airway device. It represents the culmination of years of extensive research and development,' says Intersurgical, which is inviting EH readers to see the device at Stand 20 in *Euroanaesthesia 2007*, 9-12 June, in Munich, Germany.
Details: www.igel.com

NEW

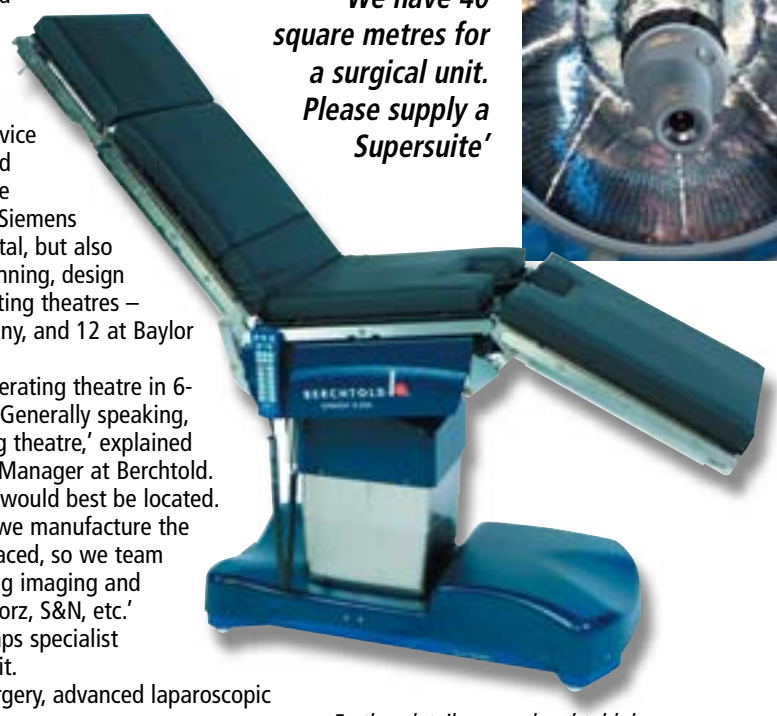
With a power range up to 200 W, Bowa's new electrosurgical unit, ARC 200, is equipped with the well-recognised ARC Control, which regulates power output to just the necessary minimum, unrelated to tissue type, cutting speed and surface.

When combined with the Argon beamer ARC Plus, the ARC 200G becomes a superior

HF-workstation, with reliable ignition even below 10 W: 'A great addition for any endoscopic tower,' Bowa says.

Bespoke operating theatres

'Supersuite' describes a valuable service provided by Berchtold, specialist manufacturer of operating theatre lights (e.g. Chromophare), camera systems, monitor arms, surgical tables (Operon) and equipment management systems (surgical and anaesthesia booms, but not the device control units). For the company not only sells and installs its individual products, such as the simple anaesthetic pendant soon to be installed at the Siemens Radiography suite in Kent and Canterbury Hospital, but also runs the Supersuite service to undertake the planning, design and installation of integrated, customised operating theatres – notably the 10 in use at Krefeld Hospital, Germany, and 12 at Baylor Regional Medical Centre in Plano, Texas.



'We have 40 square metres for a surgical unit. Please supply a Supersuite'

Supersuite can produce an up and running operating theatre in 6-15 weeks, depending on size and other factors. 'Generally speaking, Berchtold supports the structure of the operating theatre,' explained Judith Szarmach, Marketing & Communications Manager at Berchtold. 'We design where our lights, tables, booms, etc. would best be located. We don't manufacture device control units, but we manufacture the system where the device control units can be placed, so we team up with partners for integrated services, including imaging and device control and visualisation, such as from Storz, S&N, etc.' Additionally, should a hospital want other, perhaps specialist equipment, Berchtold also sources and supplies it.

Supersuite specialities include orthopaedic surgery, advanced laparoscopic surgery, general and neuro surgery and cardiac surgery.

Further details: www.berchtold.de

Pioneering vertebral procedure

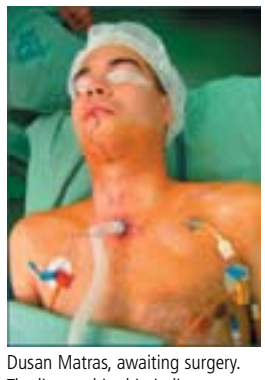
By Rostislav Kuklik

Czech Republic - In 2001, when doctors at the Motol Faculty Hospital first saw Dusan Matras, he was diagnosed with a thyroid gland problem. However, they later found he had a tumour. Six years later, Dusan has become the first in the world to undergo a unique surgical procedure on the vertebral column in the neck area.

Dr Jan Stulík, who heads vertebral surgery at Motol, explained that the patient originally had thyroid gland neoplasm, and this had been removed. However, five years later a vertebral metastasis was found in the second cervical vertebra. After lengthy discussions, then planning, the Motol team decided to remove the entire C2 vertebra (axis) – a risky procedure. All previous efforts to do this have resulted in partial brain damage because C2 protects two large brain vessels, one of which had to be sealed off.

The Prague surgeons became the first to successfully complete such an operation without destroying any arteriae vertebrales or damaging the patient's brain. The team first worked from the back of patient's neck, removing the arcus posterior vertebrae. Three weeks later they removed the remaining C2, by centrally splitting the lower jaw (mandibula). They fixed C1 (atlas) and C3 together using a metal fitting enclosed in bone implants taken from the patient's pelvis. At the same time, to support the nerves and large vessels, they replaced the missing C2 frontal area with a titanium inlay.

Thus the surgeons removed the whole vertebra without harming the vital structures running through the spinal canal and secured almost the full physiological movement range of patient's head - 11 hours after surgery. 'I have just slight difficulties turning my head to the furthest left and right positions, but otherwise everything is absolutely perfect,' 27-year-old Dusan told the waiting press.
Details (no translation): http://www.fnmotol.cz/html/zdravotnicka_pracoviste/zp.php?lang=cz&id=17



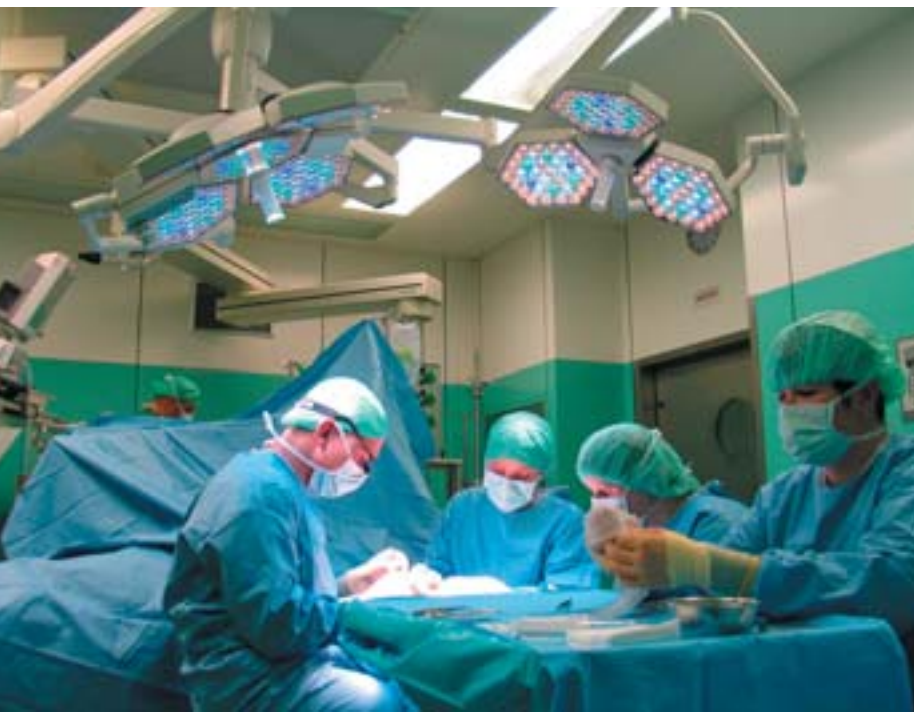
Dusan Matras, awaiting surgery. The line on his chin indicates entry area to reach the lower jaw bone

Patient's open mouth reveals the mandibula split in two and a metal staple that joins C1 and C3

See saw blades on the Web

Komet Medical has developed rotating and oscillating instruments since 1923. In its 'Evolution' range the various sized, hardened, stainless steel saw blades are compatible with common drive systems, and suit both knee and hip endoprosthesis: 90mm length for knee; 50mm-70mm for hip. A varying material thickness makes vibration in the saw blade template impossible, Komet points out.

To provide the obligatory evidence these reprocessable blades are in fact clean after cleansing and disinfection, with an independent company Komet developed a validated reprocessing method. These individual reprocessing steps can be viewed at: www.kometmedical.de.



Studies confirm adjustable colour temperatures benefit surgeons

After their debut at the 2005 Medica trade show, the first LED lamp made by Trumpf Medizin Systeme (iLED) found new users worldwide. In the USA, the light also received two prizes at the *Healthcare Facilities Symposium & Expo*, which recognises extraordinary innovations in the health industry. However, it was even more important for their inventors to scientifically prove the quality of the iLED.

Trumpf decided to commission two studies, to ascertain the degree that adjustable colour temperature influences our visual performance and also whether its iLED sufficiently meets hygiene standards for the operating theatre (OT).

Colours for more vision

Currently, the iLED is the only operating light that can have its colour temperature adjusted to any OT situation – from warm red 3,500 Kelvin to cool blue at 5,000 Kelvin. An independent lighting institute conducted a study in which 30 test subjects had to identify standardised vision test characters on a colour background under both the iLED 5 and gas-discharge lamps. Results: Under the iLED, the characters were considerably clearer with weak colour contrasts. In most cases, the test subjects had the best vision at 4,000 to 4,500 Kelvin and, with a blue background, at 3,500 Kelvin. In addition, they preferred the iLED, even when the colour temperatures of both lamps were the same (4,000 Kelvin) – because the iLED's light was more evenly distributed. For surgeons, this means that the iLED helps them to better distinguish between healthy tissue and diseased tissue that is slightly off colour. For a red wound location the surgeon's eyes are relieved by a high colour temperature, for a blue wound location, a low colour temperature.

Best ratings for hygiene

Professor Seipp, at Germany's Centre for Hygiene and Technical Public Health, tested how well the iLED met the hygiene regulations in the OT under real-life conditions and in strict compliance with EU directives. His findings: The iLED 3 is one of the best lamps that is compatible with an air-handling ceiling that he has ever tested - because it generates very little turbulence that would disturb the irrotational, laminar flows in the OT and thereby impair the room's cleanliness. This means that the light is also well suited for sensitive medical disciplines, such as orthopaedics and bone surgery, in which absolute sterility is top priority. The iLED's excellent ratings come from an open, compact form, low laminar flow surface and minimal temperatures on the lamp body.

The iLED underwent many tests. The manufacturer reports that its vital features include variable colour temperature (3,500 to 5,000 Kelvin) for greater colour contrast and better tissue differentiation; even light field with almost no shadows on the surface and at depth without refocusing; minimum 20,000-hour life cycle of LEDs due to a new optical light system; very good depth illumination and spatial perception; sterile operation for dimming, colour temperature, endo light and camera functions; cold, infrared-free light despite high light output of up to 160,000 lux, and finally, optimal outage prevention thanks to a new optical light concept.

Electron intra-operative therapy

Developed by Professor Umberto Veronesi, breast cancer specialist and former Minister of Health in Italy, in certain cases electron intra-operative therapy (ELIOT) could become a substitute for postoperative radiotherapy. As the new method undergoes clinical tests at the Breast Centre, Milan, *Meike Lerner* of European Hospital spoke with radio-oncologist **Professor F-J Prott** about current results and ELIOT's potential future in oncology

'ELIOT means that single-fraction radiation of 21 Gy is delivered directly to the tumour bed during a surgical intervention, to a depth of about 3 cm,' Professor Prott explained. 'Due to this procedure the procedure takes about 30 minutes longer than usual, but post-operative radiation therapy is no longer needed. Consequently, for most patients, the treatment is complete, with hospital discharge, and they don't have to undergo out-patient radiation therapy, which could take up to six weeks.

'Since post-operative radiation of the entire breast and the surrounding tissue is no longer indicated, ELIOT is suitable only for a clearly defined group of patients. These parameters must be present: the patient is older than 50 years; the tumour is not larger than 2 cm (T1) and no lymph nodes are affected (N0). The histological degree is maximum G2 and there must be no indications of metastases. The surgeon has to be extremely careful to remove any traces of tumour-carrying tissue.

'Due to today's advanced diagnostic methods, the number of early detections and thus of T1/N0 tumours is increasing constantly. However, many women with such early detected tumours are under 50 years old, so are not eligible for this kind of intra-operative radiotherapy.

'Despite these limitations, the first clinical results are very promising. A study at the Milan Breast Centre, involving 1,600 patients, showed that only 2.8 % of the women suffered fibroses and the recurrence rate was 1.6 %. That means, compared with conventional methods, ELIOT showed 1-2 % less fibroses and even 2 % less recurrences. However, these figures are only valid for Milan. It remains to be seen whether other hospitals will be able to achieve similar results.

Currently, ELIOT is only used for research. In view of its apparent advantages, when might it be clinically introduced?

'It's without a doubt a very interesting method and there is a clear trend towards ever more targeted and precise radiation therapies, moving away from large area radiation. However, we must acknowledge that the conventional method – breast-conserving surgery followed by about 30 radiation sessions – is also very successful. Moreover, we were able to reduce side effects, particularly skin changes on the breast, so we have a method that's tried and true and which has been constantly improved. As far as the current status of ELIOT is concerned, I'd rather go for "never touch a running system". Having said that, I also want to point out again that ELIOT means there is only intra-operative radiation. As a boost, I mean an addition to whole-breast radiation therapies, intra-operative methods are allowed and may be applied outside studies. That means, during surgery a boost of about 10 Gy is applied and a conventional breast radiation therapy of about 46-50 Gy follows. This procedure reduces the post-operative radiation by one week, that's five sessions.

In short, I look very optimistically upon ELIOT and I think it's an important goal to make breast cancer therapy as stress free as possible. Nevertheless, we must not act prematurely, that means long-term and large-scale studies are needed before the method is introduced in to everyday practice. In my opinion that will take another few years of intensive research before we might be able to use ELIOT without reservation in every day oncological work.'

Professor F-J Prott, Director of the RNS Clinic, St Josefs-Hospital, in Wiesbaden, Germany

Ultrasound-guided regional anaesthesia and pain therapy - a painstaking technique

Watching an ultrasound-guided needle move towards a nerve can help an anaesthetist and a pain therapist, as well as increase their success rate. Nonetheless, few physicians use this option in interventional pain therapy. *Meike Lerner* of European Hospital spoke with **Dr Urs Eichenberger**, hospital consultant and director (ad interim) of pain therapy at the anaesthesiology polyclinic, University Hospital Bern/Inselklinik, and asked why this technique is so rarely used in interventional pain therapy and what the future holds for this technique

'Ultrasound-guided interventional pain therapy originates in ultrasound guided regional anaesthesia,' Dr Eichenberger explained. 'The traditional method for partial anaesthesia – that is, detecting the nerve with electricity and then injecting anaesthetic – has a drawback. It shows only if the needle tip is close to the nerve. But what you really want is to transport the drug to the nerve, not the needle. With ultrasound we can visualise and localise nerves and guide the needle all the way to them, thus reducing the risk of damaging the nerve and neighboured structures. Obviously, as an anaesthetist you know where the nerves should be, but there are anatomical variations that can only be recognised with ultrasound. Moreover, you can watch the anaesthetic spread live, so to speak, and see whether it reaches the target. With the traditional method the success rate of very experienced physicians is up to 95%. With ultrasound I'm sure we can increase that rate.

'The method was transposed to pain therapy from regional anaesthesia, and the advantages are obvious: With chronic pain patients we usually diagnostically block nerves to localise the source of the pain. Before, we did this blindly - we injected large doses of anaesthetic, up to 10 ml. With the help of ultrasound we can reduce that dose to about 1-2 ml because we can target certain nerves and don't have to spread anaesthetic over a large area. For a patient this hopefully means better diagnosis. Furthermore, dose reduction in regional anaesthesia – where larger doses are used – means a lower risk of side effects and allows us to block several regions of interest at the same time, both arms, for example. With a dose of 40 ml per side we cannot do this – as that dose would be toxic.

'Ultrasound-guided pain therapy is particularly interesting for very sensitive regions, such as the cervix. Very close to the targeted nerves you find a lot of different vulnerable structures. Today ultrasound can visualise small nerves down to a diameter of 1-2 mm. One example is the possible visualisation of the nerves innervating the cervical facet joints. Consequently, we can position the needle right next to the targeted nerve. The traditional method to block these nerves is based on X-ray images, which show only the neighbouring bone structure. While this gives an indication of the nerve pattern you do not recognise anatomical variations, both of the nerves and of surrounding structures you don't want to damage.'

Why is this apparently successful method so rarely used?

'In regional anaesthesia the method is used quite often, and in a lot of hospitals. In pain therapy the targeted nerves are smaller and therefore more difficult to detect by ultrasound. In ultrasound you recognise the very small nerves only if you have excellent anatomical knowledge and know where these nerves run. You need an experienced eye to correctly interpret the images. And we should not forget: With the exception of cardiac anaesthetists, the anaesthetists and pain therapists using this method often lack experience in reading ultrasound images. This is an entirely new field for the discipline.

'There is also another problem in pain therapy. There are so many anatomical regions we have to deal with. In pain therapy we have too few cases for special interventions, so it's more difficult to build up experience.

'In some ways, ultrasound-guided work is a paradox: it facilitates the therapy, but only if you already have the necessary know-how. So, as a physician, you have to master your trade perfectly. Ultrasound will not automatically turn a physician into an excellent pain therapist – you have to be an excellent physician to begin with. Handling the technology is something that has to be learnt and exercised in seminars and workshops. In anaesthesia particularly, there's currently a huge demand for training, and a trend towards ultrasound-guided methods, which will increase over the next few years.

'The next step is obviously to spread the method. We are currently one of only a few centres to offer this pain therapy. In anaesthesia the situation is somewhat different. Here the method is better known, and I expect, in the future, it will be a normal procedure in all regional anaesthesia applications for which it is suitable and the rate of success could be augmented and complications could be reduced significantly.

Further details: urs.eichenberger@insel.ch

Telemedicine

Systems for today and tomorrow

core
complete operating room endoscopy

'New communication technologies are gaining increasing influence in medical engineering, within the context of the continuous further development and refinement of surgical treatment methods,' software firm Richard Wolf points out. 'One of these modern communication standards is video-conference/telemedicine. Here, video-conference equipment represents the communication platform of physicians and specialist medical departments. It facilitates live communication from clinic to clinic, the exchange of specialists' experience and provides support in the education and training of the medical practitioners of tomorrow.'

When integrated in the teleconference system, it permits '… intra-operative, bidirectional communication of specialists (e.g. surgeon-histologist) for high-quality patient treatment with at the same time cost-oriented clinic management,' the firm continues, adding that the key factor in the ***core*** integration solution, which it develops, is '… the simple, intuitive menu guidance for the routine use of this technology. Rational use in the operating room workflow is possible only by this interactive operation'.

Details: core.info@richard-wolf.com

FDA clears sale of patient-controlled ventilator

Neurally adjusted ventilatory system promotes spontaneous breathing

The US Food and Drug Administration (FDA) has given 510(K) clearance to Maquet Critical Care of Solna, Sweden, to market its Servo-i ventilator with the NAVA (Neurally Adjusted Ventilatory Assist) option. Sales of the system, which aims to treat and monitor neonatal, infant and adult patients, should begin this year. In addition, current Servo-i users can upgrade their system with NAVA.

In this new approach to mechanical ventilation, to improve synchrony between patient and ventilator the patient's own respiratory centre can control the ventilator. Signals from the brain's respiratory control centre are transmitted through the phrenic nerve to the diaphragm, where a catheter captures the electrical activity (Edi) and feeds it to the ventilator. The ventilator responds by providing the requested level of support to the patient. As the ventilator and diaphragm work with the same signal, the coupling between the two is virtually instantaneous.

In addition to being a distinct mode of ventilation, NAVA also enables a complete evaluation of the neural respiratory control by capturing the electrical activity of the diaphragm (Edi). The Edi signal can be used as a unique monitoring tool, as it provides information on respiratory drive, volume requirements, the effects of ventilatory settings, and to gain indication for sedation and weaning.

Christer Ström, Director Ventilator Program, Maquet Critical Care, said: 'We are proud to introduce the most progressive advancement within respiratory therapy since the introduction of mechanical ventilation 30 years ago.'

Details: www.maquet.com

SURGERY UPDATE

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Contact: EUROPEAN HOSPITAL
Höherweg 287, 40231 Düsseldorf, Germany
Phone: +49 (0)211 7357 532
e-mail: info@european-hospital.com

Editor-in-Chief Brenda Marsh
Art Director Mary Pargeter
Executive Directors Daniela Zimmermann, Reiner Hoffmann
Managing Editor Denise Hennig
Journalist/Editor Meike Lerner
Founded by Heinz-Jürgen Witzke

www.european-hospital.com