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Editorial

In keeping with the trend of giving our readers an insight into situations, history and modern innovations in One Day Surgery, we bring you another issue of the Day Surgery Journal of India.

Dr. Beverly Philip, the Founder Director of Day Surgery Unit and Prof. of Anaesthesia at Harvard Medical School, has sent an article, which contains old data, and it is worth noting the changing trend and ready acceptance of ambulatory surgery in the US. A dynamic lady, enthusiastic and has much to share from her vast experiences in One Day Surgery.

Dr. Luc Van Outryve from Belgium, had the opportunity of being in the centre of all the activity in day surgery, which became the International organisation, the head office continues to be in Belgium. Though, language being a barrier, you can read the thrill and the reverence with which he writes about his predecessors. I have tried not to change much.

Dr. Andre Van Zundert, from the Netherlands, has written about the changes day surgery anaesthesia has seen over the years. It is inevitable that, more and more surgeries will be performed under regional anaesthesia and will continue to become more and more acceptable and popular. The details of the procedures and the anatomical description is like a handbook on regional anaesthesia, made easy even for a surgeon to follow!

The last article written by me is a presentation of possibilities of One Day Surgery and the far reaching consequences it will have. Diabetic foot as a Day Case, has been presented as a talk in ADSCON 2008, a poster to this effect was presented at the 8th International Congress on Ambulatory Surgery at Brisbane, Australia, on 3rd to 6th July, 2009, evoking wide interest. I have tried to put it in the form of an essay, so as to stimulate enthusiasm for the subject.

This issue of the journal has been delayed, purposefully, to include some highlights from the recently concluded 8th International Congress on Ambulatory Surgery, organised by the International Association of Ambulatory Surgery, in July 2009, at Brisbane, Australia.

Once again, we represented India by presenting several posters. Dr. Reena Wani and Myself, were invited speakers at the Congress.

I was also invited to participate in an Open forum discussion which focused on the World wide expansion of Ambulatory surgery and problems faced in Day Surgery. emphasis was on the safety of the patient, and training of our staff to be more receptive towards One Day Surgery. We were made to realise again and again the importance on One Day Surgery and the need to expand and popularise it for the benefit of our patients.

With a population of over a billion and growing, increasing cost of healthcare, especially in times of recession, it is but logical to think One Day Surgery. Hope, soon, we will see many more dedicated surgeons and centres.

Dr. T. Naresh Row

“ The Great thing a little lamp can do which the big sun cannot is to give light at night. No one is superior by size, but by purpose.”

Ambulatory Surgery and Anesthesia in the USA: What are the Trends?

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The practice of medicine is changing, and several general trends have emerged. These trends are an increased focus on efficiency and cost of care, and an increased focus on the patient and humanism in medical care. Ambulatory anesthesia practice reflects these same trends.

Trends: Location of Care:

Ambulatory surgical procedures represent a large and increasing fraction of surgery being performed. In the USA, the percentage of outpatient surgery grew from 20% in 1981 to 76% in 2001 [1]. This represents an increase in the total number of ambulatory procedures from 3.9 to 33 million operations per year. Projections for the next five years suggest additional growth to 83% of all USA surgeries, representing 41.7 million operations per year. Most outpatient procedures are being done in hospital-based ambulatory surgery units, 45% in 2001. In addition, there is dramatic growth in the number of ambulatory surgery procedures being performed in non-hospital settings. Procedures done in freestanding ambulatory surgery centers increased to 17% in 2001. The newest segment of ambulatory surgery growth has been in procedures performed in the surgeon's office, 14% in 2001, and projected as 20% in 2006. We are seeing the continuing shift of more complex operations and procedures from the inpatient hospital to the outpatient settings in all the various forms.

Trends: Patient-Focused Approach:

Anesthesia that is specifically tailored for ambulatory surgery involves a multi-component integrated approach [2,3]. Our approach to these patients must change to meet their specialized needs, so that they can continue with their lives as usual with minimal disruption. This approach may be condensed into a Philosophy of ambulatory surgical care, with two major tenets: 1) The ambulatory surgery patient is not sick; and 2) The patient is the most important person in his/her health care team [4]. Selection of appropriate patients involves both medical and psychosocial stability. Information about patients is

primarily acquired through a thorough history and physical examination, but only minimal screening laboratory tests. Evaluation of the information must be done in advance to avoid last minute delays and cancellations, whether or not the patients are seen in the facility before the day of surgery.

Trends: Patient Education:

Patients' cooperation is essential in all stages of the ambulatory surgical experience, from preparation through recovery at home, and patients' expectations about what will happen must be appropriate so that they are satisfied with their care [5]. This requires good preoperative and postoperative education. Education must address the patients' educational needs and informational needs (what they want to know). The patient has become the focus of the ambulatory surgical experience, and should be invited to participate in all decisions that are not truly medical judgment issues.

Trends: Anesthetic Approaches:

Most importantly, the growth of ambulatory anesthesia is tied to anesthesiologists' desire to improve the quality of patient care [5]. We need to identify what is high quality, effective ambulatory anesthesia. Such an anesthetic must provide a smooth onset and have good intraoperative conditions. All phases of recovery must be rapid, starting with early wake-up, continuing through the intermediate recovery phases that lead to patient discharge from the facility, and continuing with late recovery which culminates in the patient's return to normal function. From the patients' perspective, these attributes are important whether or not they will be leaving the facility in an hour or in days. Therefore, the new anesthetic approaches developed for ambulatory anesthesia which facilitate prompt return to normal function are important for all patients.

Trends: Anesthetic Drugs and Techniques:

The anesthetic drugs used for ambulatory patients must

have consistent onset and offset times, permitting rapid changes in levels of drug effect and rapid awakening. In addition, the anesthesiologist must specifically focus on minimizing the postoperative side effects of anesthetic drugs. Premedication may be used to aid in the reduction of fear and anxiety, but psychologic support is very effective and has no adverse effects [2]. Our choice of anesthetic agents and techniques should aim for a high quality of recovery, looking to optimize postoperative side effects. Each of our newer, and future, drugs has particular attributes, and anesthetic techniques should be utilized to take advantage of these attributes. Often, there are unappreciated system-based impediments that impact recovery more than the differences between specific anesthetic drugs.

Specialized ambulatory anesthesia also includes an increased awareness of the cost of the entire patient care visit. This includes but is not limited to the acquisition costs of the anesthetic drugs. Cost-effectiveness is the value obtained for the money spent, and this has become one of the central concerns of modern anesthesia practice [6].

Trends: Recovery and Discharge:

The two major recovery problems that limit our ability to reach patient goals are pain and nausea. Management of these problems requires a multimodal approach, which begins with the anesthetic plan and continues into the recovery period. Pain management encompasses local anesthetic infiltration, nonsteroidal antiinflammatory drugs, and supplemental bolus opioids given near the end of surgery. Nausea management encompasses adequate patient hydration, avoidance of solid foods postop, and a nonemeticogenic anesthetic considering induction agent and minimized opioid. These are supplemented by antiemetic drugs as indicated.

Recovery and discharge care can be enhanced by the use of routine orders, forms and checklists to reduce unnecessary work. Standardized, outcome-based recovery

criteria should be used to assess and document readiness for both PACU Phase 1 (medical discharge) and Phase 2 (physical discharge) [3]. The final phase of ambulatory anesthesia care is postdischarge patient followup, to assess medical outcome and patient satisfaction. While major adverse outcomes are rare, minor side effects are common after ambulatory surgery and anesthesia (86%) [5]. These side effects are not complications but rather occur commonly enough to be expected. Drowsiness is the most common effect persisting after discharge. Aches and sore throat are common in intubated patients. Headache and dizziness also occur, but nausea and vomiting after discharge are less common. Patients may take 2-3 days before being able to resume their usual activities. Intraoperative awareness occurs. Information about these known side effects should be incorporated into the preoperative patient education and into an anesthesia consent form. Patient satisfaction also needs to be assessed, and our care should focus on what is important to them [7].

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Belgium and the concept of Day Surgery

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Introduction:

Belgium is not the first country where surgery was done in “one day setting”, but, we must say that the enthusiasm of Dr. Claude Delathouwer, from the Brussels One Day Clinic, was the start of international contacts, and finally, to the foundation of the International Association for Ambulatory Surgery (I.A.A.S.).

The I.A.A.S. is an International Non-profit Association with its registered office in Belgium.

Belgium and Day Surgery

About the Belgian situation, in terms of Day Surgery, I wanted to start as early as 1963. But, a law on hospital organisation, described below, prevented us from doing so.

A hospital was defined as an institution where one was accepted for surgery or for another treatment and where everything was organised to give the patient a good stay or journey. Even the mentality amongst the patients and the people was “you better stay 2 or 3 more days in the hospital because of the good after-care, the good food, the warmth in winter, because of the visits of your family and friends.....”.

The functioning of the hospital was based on “charity” and the nurses did the after-care during the hospital-stay. The bill had to be paid when leaving the hospital and patient got refund by the National Insurance under condition of overnight stay.

Few years later, there was some change in the refund system, and we had to wait until 1985 for a law, changing the definition of “hospital” and allowing refund of surgeon’s fee and hospital cost even without overnight stay.

Finally, in 1997, the Government formulates the rules, terms and conditions for the organisation of Day Case Surgery. However, in the mean time, most hospitals in Belgium already had their Day Surgery Centre and some specialists, like, Ophthalmologist, Plastic Surgeons,

started practice in free-standing centres.

From then on, different initiatives were taken by the Government to stimulate the implementation of the day surgery concept. The financing system for the hospital changed in favour of the day surgery concept for a certain category; and also the surgeons were stimulated to treat their patients on an out-patient base, by paying them a bonus (but a very little one!) when using the day surgery facilities.

Day Surgery evolution:

The situation in the countries around Belgium is different because of the lack of hospitals and hospital beds. Long waiting lists were created. And this is then the story of Dr. J. Nicoll , paediatric surgeon at the Sick Children’s Hospital, Glasgow, Scotland and called “the founder of the modern day surgery” (Prof. P. Jarrett, UK).

At that time (1880) in Glasgow, poverty was widespread and child mortality was high. At the Sick Children’s Hospital, they could treat only 500 children a year and there were always cases waiting for admission. Therefore, the hospital opened a dispensary as an out-patient department. Initially with two trained nurses, working independently from the inpatient hospital: in the morning working in the dispensary and in the afternoon visiting the patients at their homes.

From 1889 on, Nicoll started to follow up the results of the outpatient treatment and gave a presentation at a meeting of the British Medical Association with his successfully results.

In Belgium, it was Dr. Delathouwer, who was the man after the initiative to establish ambulatory surgery in the national forum. As stomatologist and director of the Brussels One Day Clinic, he organised the first Belgian and European Congress on Ambulatory Surgery (Brussels, 1991). This congress was very successful with 600 delegates from 25 countries, all interested in the concept of ambulatory surgery.

Also, it was decided to create an organisation called “Belgian Association of Ambulatory Surgery (BAAS)”

to stimulate the organisation of ambulatory surgery and research in this field, to organise congresses and to give support to all kind of activities promoting ambulatory surgery. Anyone, interested in the concept could become a member.

The IAAS was founded on the 15th of March, 1995 and Dr. Delathouwer, was elected as the first President. In 1996, IAAS was officially constituted.

In 1999, during a Nicoll Memorial Lecture, at the 3rd International Congress of Ambulatory Surgery in Venice, Italy, Dr. Claude Delathouwer observed: "How it is possible that the following 50 – 60 years no reports are available relating to ambulatory practice.....it seems that modern ambulatory surgery was reinvented approximately 30 years ago....", commenting on the lack of publications or presentations on Ambulatory surgery.

In the mean time he organised the 2nd European Congress (Brussels, 1993), 3rd European and 1st International Congress (Brussels, 1995).

Belgian Congresses organised were: 2nd Belgian Congress, Brussels 1997, 3rd Belgian Congress, Brussels 1998, 4th Belgian Congress, Brussels 2000, 5th Belgian Congress, Leuven 2003, (Joint Congress with the Department of Anaesthesiology, University Hospitals, Catholic University of Leuven, International Winter Symposium on "Anaesthesia for Day Case Surgery".

From 2005 on, the B.A.A.S. vzw-asbl participates in the

new structure of the Royal Belgian Society of Surgery (RBSS) and the Board decided to organise his own Congress every second year.

So the next Congresses were organised as follows: 6th Belgian Congress, 2005 Gent, 7th Belgian Congress, 2007 Neder-over-Heembeek, and 8th Belgian Congress, 2009 Neder-over-Heembeek.

In 2002, 2004, 2006 and 2008 the BAAS participated in the Belgian Surgical Week (BSW) , organised by the Royal Belgian Society of Surgery (RBSS), with a session, dedicated to the ambulatory concept.

Since the beginning the BAAS organised different surveys amongst the Ambulatory Surgery Centres in Belgium: one about "Patient's satisfaction" (1998) and another about "Nurse's satisfaction" (1999). A register of the existing Ambulatory Centres was published in 1998 and a new volume is foreseen in 2009.

Conclusion

Many things are changing in the acceptance of the ambulatory surgery concept. Government, hospitals, surgeons, anaesthetists, nursing staff and administrators are convinced that this concept is a good one. The hot topic on our last Congress (2009) was the shift to office based surgery. This means that more surgery will be done in outpatient setting and in these, we all will have to take up our responsibility to take care of the safety of our patient.

Where is regional anaesthesia going to?

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Seventy-five percent of all surgical procedures in the USA are performed on an ambulatory basis and many countries follow the same way. However the overall patient still show severe postoperative pain (visual analog scale scores above 5), hindering mobilization, confining patients to bed, triggering functional impairments, while muscle mass loss, cognitive dysfunction, pulmonary impairment and venous thrombosis may be responsible for poor outcome. Postoperative pain acts as an additional insult to body reserve, especially in the ill-defined patient with co-morbidities. Reducing pain within the peri-operative period is one of the most rewarding goals for anesthesiologists, whereby regional anesthesia (RA) certainly is the most efficient technique to attenuate sufficiently the pain and stress response.

As surgery is moving toward minimally-invasive procedures, making a clear shift toward more selective blockades and better tolerated techniques, the anesthesiologist is faced with a real and dramatic growth in the number and complexity of ambulatory surgery, and is challenged to find a good solution to provide optimal care for his patients in hospitals who are consistently faced with cost savings each year. Indeed, strategies based on efficiency, safety, feasibility and costs should all be implied.

Central and peripheral nerve blocks should be performed in an (adjacent and fully monitored, equipped and staffed) regional block room rather than in-between operations, in the operating theatre itself. As such RA hardly consumes any intra-operative time, which is essential, especially in a high volume – fast turn-over surgical unit with many short procedures.

The use of RA is spreading as advances in the understanding of pain physiology, better technical skills, the development of new devices and the wide-spread development of ultrasound nerve localization will increase the number of patients who can benefit from RA, improving its success rate. The question arises whether to use central neuraxial blockade or peripheral nerve block for patients undergoing surgical interventions on a day

case basis. Central neuraxial blockades are associated with side-effects, not seen with peripheral blocks (e.g. hypotension, bladder retention). Spinal anesthesia is one of the options for outpatient surgery. Thanks to the introduction of non-traumatic pencil-point needles with small gauge a fast, reliable and deep surgical block with simple injection of very small doses of local anesthetics can be obtained. Of course it has its problems in the outpatient setting: recovery of motor blockade after the block, bladder function, postdural headaches and transient neurologic symptoms (a benign syndrome commonly seen following spinal lidocaine in outpatients who were operated in the lithotomy position). Reducing the dose of local anesthetic (lidocaine, ropivacaine or bupivacaine) and the addition of intrathecal opioids (e.g. 20 µg fentanyl or 2.5 µg sufentanil) produces good results. This method can even be used to restrict the local anesthetic to one side: unilateralization of spinal anesthesia.

However the major disadvantage of both single injection techniques of central neuraxial and peripheral nerve blockade is, that after resolution of the regional blocks, the patient feels excruciating pain, which is difficult to manage and is often inadequate in the outpatient setting.

Peripheral nerve blocks (PNB) with long-acting anesthetics are attractive alternatives for outpatient surgery. They are site-specific, have few side effects, provide better surgical conditions and superior analgesia than systemic opioids, reduce the stress response to surgery, enhance patient satisfaction and improve patient outcome. PNB are often not contra-indicated in patients receiving anticoagulation. Peripheral catheter placement further adds on the quality by prolonging intra- to long lasting postoperative analgesia.

Anatomy

Anatomy is the key of success for all RA techniques. Knowledge of the relevant plexus anatomy and its relations, as well as the distribution of its sensory and motor innervations of the upper and lower extremities, is crucial for understanding the resulting distribution of

sensory and motor blockade in PNB. Correct identification of superficial bony, muscular and vascular landmarks and profound structures are fundamental to achieving consistent success and minimizing complications with peripheral nerve blocks. Since the application of ultrasound, it has become obvious that anatomical variations within the plexus are extremely common, and may be considered more the rule rather than the exception. Very few structures are strictly consistent in size and localization among individuals, and are even different on the opposite sides of the same individual.

Identification of nerves can be done by several methods: 1) the classic method, including palpation and searching for the nerves using paresthesia; 2) the nerve stimulation method, using the nerve stimulator to localize the target nerves; 3) the ultrasound guided nerve method, where needles are visualized during insertion and injection of the local anesthetic; and 4) a combination of the above, usually nerve stimulation and ultrasound methods.

Our goal with many regional blocks is to be able to inject sufficient (but not too much) volumes and concentrations of local anesthetic as near as possible to the target nerves to be blocked, without delays or complications. Probably personal experience with a particular technique is the single most important factor for the success of any RA technique. Urmey (1) described the percutaneous electronic guidance technique, a non-invasive technique for prelocation of peripheral nerves facilitating peripheral nerve blockade. For a long time peripheral nerve stimulation was the gold standard method of nerve identification, but with the introduction of the ultrasound a more precise injection of the local anesthetic is feasible.

Brachial Plexus Block

Describing various techniques or approaches to blocking the brachial plexus, textbooks typically identify the author who first described the particular approach. And there are many approaches. Most authors recommend tracing a geometrical line connecting one landmark to another, although the significance in practice is doubtful. For the upper plexus block, the cutaneous landmarks used are identified and connected to form a straight line, from the apex of the scalene muscular triangle, and ending with the point of palpation of the axillary artery in the axilla. This line, denoted by Paolo Grossi (2) as the “anesthetic line” can be used to localize the brachial plexus at any point. Obviously, interscalene brachial plexus block is one of the most popular upper extremity blocks in use all over the world, since first described in 1970 by Alon P. Winnie. It is a simple, safe and effective anesthesia technique for all types of surgery on the shoulder and upper arm. Hemidiaphragmatic paralysis occurs in virtually 100% of the patients and ventilatory insufficiency is one of the contraindications for this block. With the use of ultrasound, complications such as accidental intrathecal injection, systemic toxicity, spinal cord injury and hematoma formation clearly should develop less

frequently. Both supraclavicular and infraclavicular blocks are less frequently performed due to the fear of accidental pneumothorax, with reported incidences between 0.5% to 6%. Again with ultrasound the knowledgeable anesthesiologist can clearly avoid the region of the lung. Axillary brachial plexus block, described by Halstead 125 yrs ago, still is the PNB most used for upper limb surgery, due to its high rate of efficacy and its low incidence of complications compared to the other brachial plexus approaches. Again ultrasound has increased both efficacy and safety of this block, while the dose of local anesthetic injected can be decreased. If for whatever reason the result of the brachial plexus block is not sufficient, one can always locate the main terminal nerves (ulnar, median, radial) of the brachial plexus (using peripheral nerve stimulation and/or ultrasound) to block them selectively at the forearm. Distal upper extremity blocks are useful for wrist and hand surgery, not only as a supplement of more proximal incomplete blocks, but as a technique in itself when an upper arm tourniquet is not necessary. Blockade of the musculocutaneous nerve allows the application of a tourniquet. This nerve is often not included into a brachial plexus block. Recently with using ultrasound it is a rather easy to block the musculocutaneous nerve selectively. For more than 100 years intravenous regional anesthesia (Bier's block) is applied all over the world, often in the acute setting of a first aid department (3). Bier's block still is widely applied all over the world for procedures which do not exceed the time of tourniquet tolerance, but with as shortest insufflation time at least 30 minutes.

The disadvantage of any single block technique is that it wears off at a particular time, depending on the choice and the dose of the local anesthetic given. This usually is the case when the patient is back at home, often after business hours. Patients can be given better long lasting pain relief if a continuous technique is applied instead of a single block. As such pain is less, making mobilization easier. For each of the approaches a catheter can be inserted to which a continuous or patient controlled on-demand analgesic technique can be applied. Portable electronic or elastomeric pumps can be applied, allowing self-administration of local anesthetic by the patients (4). Nevertheless several requirements have to be fulfilled before widespread use of home therapy will be possible: appropriate patient selection; follow-up routines; 24-hrs access to anesthesiology services and simple (disposable) local anesthetic delivery devices.

Lumbar Plexus Block

Even though central neuraxial blocks are the first choice for thoracic and abdominal surgery and epidural catheters play a cornerstone in good postoperative outcome, PNB for lower extremity surgery in an outpatient setting, are the first choice for prolonged postoperative analgesia superseding other types of analgesia. Many procedures, particularly orthopedic surgery, are associated with moderate to severe postoperative pain, often poorly

controlled with opioids or other analgesics.

Central neuraxial opioid side effects are similar to those of parenteral therapy. PNB are more attractive than central neuraxial blocks as the latter frequently mandate the use of urinary catheterization. PNB can also provide high-quality anesthesia and analgesia for unilateral lower extremity surgery.

Again a good knowledge of anatomy is the key to a successful blockade without complications. Although upper extremity regional blocks are applied for many decades, many anesthesiologist are still reluctant to provide lower extremity blocks for their patients, often due to lack of knowledge of the anatomy.

The lumbar plexus (formed by the anterior divisions of the first four lumbar nerves) and the sacral plexus (formed by the lumbosacral trunk and first three sacral nerves) are the targets of peripheral nerve blocks of the lower extremities. The first lumbar nerve receives a branch from the XIIth thoracic nerve and splits into an upper and a lower branch. The upper branch divides into the iliohypogastric and ilioinguinal nerves, while the second lumbar nerve receives the lower branch from the first lumbar nerve and gives origin to the genitofemoral and the femoral cutaneous nerve. The remainder of the second nerve and the third and fourth lumbar nerves divide into a ventral and a dorsal division. The ventral division of the second, third and fourth lumbar nerves unite to form the obturator nerve, while the dorsal division of the same lumbar nerves join to form the femoral nerve. The great sciatic nerve is the continuation of the vertex of the sacral plexus. It is the largest nerve in the body, measuring 1 to 2 cm in diameter. It leaves the pelvis through the greater sciatic foramen below the piriformis muscle and descends along the back of the thigh to the popliteal fossa, where it divides into the common peroneal nerve and the tibial nerve. The common peroneal nerve is the most laterally situated terminal branch and supplies the muscles and skin of the anterolateral aspect of the leg and the dorsum of the foot. It descends obliquely on the lateral side of the popliteal fossa toward the fibula head, winds around the neck of the fibula and divides into the superficial and deep peroneal nerves. The latter gives muscular branches to the anterior muscle group of the lower leg and articular branches to the anterior face of the lateral ankle joint. The tibial nerve passes between both heads of the calf muscles, supplying the muscles on the posterior aspect of the lower leg and plantar aspect of the foot. The foot itself is innervated by five nerves, four of them are terminal branches of the sciatic nerve and the other one is a branch of the femoral nerve, i.e. the saphenous nerve, which runs next to the femoral artery in the mid femoral area, and becomes subcutaneous in the medial face of the knee, running parallel to the internal saphenous vein, downwards passing the medial malleolus, innervating the latter and part of the heel. The sural nerve is formed by branches of the tibial and common peroneal nerve and provides sensory innervation to the lateral aspect of the

lateral ankle and the foot. The sural nerve passes behind and below the lateral malleolus.

With PNB of the lower extremity, total unilateral anesthesia is easy to perform, avoiding all disadvantages of central neuraxial blocks. Surgical procedures of the hip, thigh, knee, lower leg and foot are all possible. Successful blockade however is based on careful blockade of the surgical area, including all motor branches, and sensory branches of skin and bones, which are not necessarily identical in origin. Anesthesiologists have a wide choice of techniques available. Often combination of blocks on different nerves are applied, e.g. the psoas compartment block combined with a sciatic nerve block provides excellent surgical anesthesia to the entire lower extremity and is a good alternative to spinal blocks for hip surgery. To identify the exact spot of needle insertion and injection of local anesthetic, neurostimulation and echography using ultrasound certainly are valuable adjuncts. Depending on the situation other techniques such as the loss-of-resistance, can be used to identify the correct anatomic localization of the needle tip. Especially the old fragile, ill-defined patient, can benefit from unilateral PNB, so that mobilization can be achieved as fast as possible.

A femoral nerve block can be used to provide anesthesia and analgesia for most surgeries involving the femur, the knee, anterior, lateral and medial thigh and the distal medial leg. The femoral artery is the most important landmark with the femoral nerve in the lateral (i.e. one finger or 2 cm) position. However it is important to highlight that the femoral nerve is located in a different aponeurosis compartment, which is deeper than that of the crural vessels. The femoral artery and vein are located between the fascia lata and fascia iliaca, whereas the nerve is below the fascia lata. As the femoral nerve is mainly motor (80%) its localization is easy to perform using a nerve stimulator, although ultrasound is also applicable. With the patient in the supine position, anatomical landmarks are identified: inguinal ligament (anterior superior iliac spine to lateral border of the pubic tubercle), inguinal crest by lifting the leg, and femoral artery. In the classic approach, a wheal is performed in a point immediately below the inguinal ligament and next to the lateral wall of the femoral artery pulse (1-2 cm). It is common to feel two "pops" as the needle goes through the fascia lata and the fascia iliaca and a loss-of-resistance once is felt once the latter is crossed. Another approach is to insert the needle immediately on the femoral crease (ask patient to flex the thigh on the hip). Correct stimulation results in up and down movements of the patella and/or twitch of the entire quadriceps muscle. The saphenous nerve can be blocked in the inguinal crease, mid femoral area, at the level of the tibial tuberosities or at the level of the internal malleolus. As it is a 100% sensory nerve, nerve stimulation is useless, although ultrasound may help to find the saphenous nerve.

Contrary to common belief, sciatic nerve blocks are

relatively simple to master and perform. They are among the least frequently practiced nerve block procedures. The deep location of the sciatic nerve mandates proper training and thorough knowledge of anatomy. The use of a nerve stimulator is essential to optimize the success rate of sciatic nerve block, even when ultrasound is used. Longer (100 to 150 mm 21-22 gauge) insulated needles are needed. Irrespective of the approach, stimulation of the sciatic nerve produces either a dorsiflexion of the foot with an extension of the toes or an eversion (stimulation of the common peroneal nerve), or a plantar flexion of the foot and toes or an inversion (stimulation of the tibial nerve). Patients can be given a sciatic block (e.g. anterior, lateral, parasacral, posterior, gluteal, subgluteal approaches) irrespective of their position (supine, lateral, prone, lithotomy) on the operating table. The gluteal approach of the sciatic nerve often is more difficult than the subgluteal or mid femoral blocks, which are more easier to perform.

Operations performed on the forefoot, ankle and foot can easily be done by blockade of the sciatic nerve at the popliteal fossa, eliciting inversion or combined inversion/ plantar flexion on nerve stimulation and injecting of e.g. 30 ml of the selected local anesthetic. The popliteal fossa is a triangular area located in the posterior part of the knee, defined medially by the semimembranosus and semitendinosus muscles and laterally by the femora biceps muscle. In fact the sciatic nerve is in its itinerary along the posterior thigh already divided into two branches (tibial and common peroneal nerves). Posterior and lateral approaches of the popliteal areas are both possible depending on the local situation of the patient.

Cutaneous nerve blocks of the lower extremity and blocks of the distal nerves (e.g. lateral femoral cutaneous, posterior femoral cutaneous, saphenous, sural and superficial peroneal nerves) are useful anesthetic techniques as an adjunct to the major conduction blocks of the lower extremity, although they might be applied as a sole anesthetic technique in specific indications.

New stimulating catheters to provide continuous peripheral nerve blockade, the use of disposable infusion pumps with large elastomeric and electronic pump volume reservoirs, allowing a combination of a background infusion with PCA boluses, all increase the magnitude of surgeries safely performed in the ambulatory setting while enhancing the quality of postoperative analgesia and patient satisfaction. One always should calculate the total dose given if a combination of PNB is applied, especially in lower extremity blocks where large volumes of local anesthetics of single-shot injections at different locations are given. Here too is the use of a catheter beneficial as lower volumes can be given, providing top-ups as indicated during the surgical procedure.

RA in the pediatric population

Although RA in children was reported over a century ago with the introduction of spinal anesthesia,

the advent of safer methods for general anesthesia decreased its use till recently. However, both central neuraxial and PNB can be applied successfully in children and many anesthesiologists involved in pediatrics provide RA in anesthetized children. Similar indications, but adjusted equipment (including catheters) and doses of local anesthetics should be applied, so that this patient population can benefit from the application of RA to the maximum extent. Although caudal analgesia is the most common analgesic technique performed in children, other peripheral nerve blocks should not be forgotten. Childhood experiences of pain can result in short- and long-term negative sequelae, and improperly treated pain causes behavioral and biological consequences. Children too have the right to obtain the best care there is to take away any postoperative pain.

Conclusions

With better knowledge of the pathophysiological mechanisms of organ dysfunction associated with surgery, interventions aimed at attenuating the surgical pain and stress response, facilitating the immediate recovery process, the today anesthesiologist should practice RA wherever possible. RA is the ideal technique for ambulatory surgery, but certainly is still underutilized. We know that RA has advantages in the ambulatory setting. Upper and lower extremity nerve blocks have many advantages, such as simplicity, high efficiency, low cost, and are good alternatives to central neuraxial techniques when contra-indicated. Now we have to bring pain relief from the ambulatory surgery setting into the patient's home postoperatively, so that he no longer is awake and full in pain in the midst of the night. The establishment of acute pain services in many institutions have a major impact on postoperative comfort and patient satisfaction. We can almost guarantee good pain relief during an operation. But our duty does not stop here. We have the tools to provide postoperative long-lasting pain relief. We now have to step into the next phase and control pain relief also in the days following surgery when the patient is at home. This requires extra equipment to guarantee continuous pain relief, but also manpower and a system whereby patients can contact the acute pain service on a 24-hr basis.

Patients should be informed about the benefits of RA. They should be given time to explain the procedure, taking away the frightening ideas of needles pricking through their skins. Resident training is extremely important. Junior and senior faculty anesthesiologists should practice on a regular base, but also should use skillslabs to improve their confidence in RA. Thorough knowledge of the pertinent anatomy is required to consistently perform RA blocks successfully. Surgeons should use infiltration blocks wherever feasible. This simple item already helps reducing the pain in the first hours postoperatively.

Continuing medical education is of paramount importance. Anesthesiologists, both staff and trainees, should have access to texts, photos, videos, and hopefully

skillslabs, cadaver workshops, symposia and congresses on RA. Even anesthesiologists in remote places in the world should be able to have access to the latest information. With the Internet this no longer is a dream. Internet has become one of the most important tools to spread the knowledge as fast as possible, in an unrestrictive way. As everywhere in the world Health Authorities places professionals under pressure to assure medical practices to perform according to the best attainable evidence, instant knowledge by a search through the Internet can be very helpful. This medium even can help in instantaneous consultation, collecting complications (provided privacy and anonymity is guaranteed) so that others can learn to avoid them. Fearing often the legal implications, many incidents are not reported and we lose the valuable information to correct errors and modify our practice. With the wide availability through all means, including Internet, the essential knowledge on RA can be spread throughout the world, to the benefit of all patients who have to undergo painful

surgery.

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Diabetic foot as One Day Surgery: possibilities.

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Abstract:

Retrospective analysis of 73 cases of Diabetic foot diseases in various stages, from May 2007 to April 2009, was undertaken. Patients were categorised as follows: Day Case debridement: 41; Disarticulations and minor amputations: 10; Secondary Suturing: 10; Skin grafting: 6, Indoor patients: 30; Limb amputation: 1. Some of the patients have undergone more than one procedure over a period of time.

Introduction:

The intent of this article is to showcase the possibilities of One Day Surgery in select Diabetic foot afflictions. The degree of damage and the extensiveness of surgery, including the toxæmia, were used as criteria for keeping the patient indoors or treating as a Day Case. However, the Protocols set for selection, preparation and discharge were strictly followed. (1)

Presenting a retrospective analysis of 73 Diabetic foot cases. Diabetic foot is a disease which invariably lands up in a limb amputation. To save a limb, it requires time, money and patience. It is the passion of a surgeon that enables him to save a diabetic gangrenous limb.

A late complication of long standing diabetes mellitus is a diabetic foot. The sequel of neuropathy and vascular compromise, ultimately leads to infection and gangrene, in a susceptible patient. A good glycaemic control, regular exercises, definitely prevents such changes.

Material & Method:

Data collected from May 2007 to April 2009, were analysed retrospectively, out of the 73 patients of diabetic gangrene of different stages and patients requiring secondary suturing and skin grafting, there were 30 patients hospitalised and 43 treated as Day Case. Out of which, 10 patients required secondary suturing and 6 patients underwent skin grafting.

Case 1: Mr. TK, 48 yrs. Old; Diabetic since 17 years. Presented with gangrene of the Right 5th toe. History of injury at home, 10 days old. Sugars were marginally high,

FBS: 134 mg%, PPBS: 162 mg%, GlycoHb: 202. WBC count was 11,000/dl. Patient was on oral hypoglycaemic and anti hypertensive medication with a blood thinner. Clinically, complete demarcation of the gangrenous skin with minimal signs of inflammation around the foot. No discharge, no pain. X-ray showed minimal osteomyilitic changes. Reason for delay: hoping to heal with medications. Insulin was started for better glycemic control.

Under local block, disarticulation of the 5th toe and primary closure of the skin with non absorbable sutures, which were removed after 15 days. Follow up on 2nd and 5th days of surgery. Patient was discharged on oral antibiotics and was following up with his physician for diabetes control. Patient did not follow up after removal of stitches.

Case 1.



Before Surgery



After Surgery

Case 2: Mrs. MS, aged 67 yrs. Female patient, operated for diabetic gangrene of the right heel 2 years ago. Debridement, followed by dressings and skin grafting was done for her. Presented after 2 years for follow up with a granuloma of 2 cm size on the same foot, at the junction of the skin graft and normal skin. Excision and full thickness skin graft from the groin fold was performed. Good glycaemic control was achieved on OPD basis, 15 days follow up showed complete take up of the graft.

Case 2.



Before



After

Case 3: Mr. SM, aged 58 years, male patient, presented with a non healing ulcer of size 4 cm X 4 cm, on the dorsal surface of the right foot. FBS was 200 mg%. Debridement was performed under local anaesthesia and regular follow up dressings were done. Patient refused skin grafting, the wound healed by primary closure over a period of 6 months. Again, glycaemic control and antibiotics were given on OPD basis.

Case 3.



Before



After

Patients were selected and prepared by the protocols. Apart from the 30 indoor patients, where, the average hospital stay ranged from 1 week to 8 weeks. The One Day Surgery cases were discharged after fulfilling the discharge criteria laid down in the protocols. There were no readmissions seen in the One Day Cases.

Most surgeries are performed under minimal local blocks, due to neuropathies, there is a lack of sensations, therefore in most of the cases, do not require extensive blocks. On the other hand, hyperesthesia is seen in some cases, making the infiltration of local difficult and has patchy results. This usually is overcome by sedating the patient with low dose of medazolam. Most commonly used anaesthetic agents at our centre was a combination of Lignocain HCl 2%, without adrenaline and 0.5% Bupivacain, mixed in equal amounts and injected through a 27G needle for even distribution. Commonly used blocks were ankle block, ring block and infiltration around the wounds and skin graft sites before harvesting.

During the follow up dressings, basic method of dressing was to clean the wound with Povidon-iodine solution, and minimal hydrogen peroxide, only P-iodine solution at graft sites.

Complications were explained, pain, especially from the donor site, in cases of skin grafting, were prescribed mild non NSAID pain killers. Oral antibiotic cover was usually a broad spectrum type. Other supportive treatment in the form of multivitamins, haematinics were prescribed, usually by the physicians.

Discussion:

Dressing for diabetic ulcers and wounds are a procedure in itself. Debridement is to be done with a fine scissor and forceps, on a daily basis. It is understood that the patients presenting with diabetic foot have long standing medical ailments other than Diabetes mellitus, like hypertension and IHD. Associated sequel to DM, such as severe paraesthesia and compromised vascularity, works to our advantage in these patients. Due to the chronicity of the disease, vascular blocks and occlusions develop over a period of time and also develop collaterals. Sometimes, these are not sufficient, or the fine balance between the supply and demand gets tipped by certain factors like injury or raised sugar levels, making the tissues prone to infection. The neurological deficit prevents the patient from reporting the injury in time, as a result, by the time there is a visible change in the tissues, and it is already late.

In this series, we have not seen any reaction to local anaesthesia. Most cases were successfully performed with a substitution of midazolam and pentazocine intravenous injections given by our anaesthetist.

For example, Case 1, patient did not have pain after injury at home. A politician; did not have time to consult a doctors and felt obliged to take home remedies offered by his patrons. Resulting in setting in of gangrene before he consulted a physician. By the time surgical opinion was taken, a well demarcated gangrene was evident.

Case 2, after the initial fear of surgery, care was taken for almost a year and half, but, later, barefoot walking in and out of the house was the norm. Lack of sensation compounded by injury, which continued to grow into a non healing granuloma. On and off bleeding noticed by family members lead to a visit to the doctors and surgical correction.

Complications were few and mostly related to surgical wound bleeding. These were explained to the patient along with post procedure instructions as to how to care for them. Regular follow up was recommended. Patients were managed by physician-diabetologist, and among other parameters, blood sugar levels were kept under control. Regular dressings were demonstrated and taught to the patient or to an able relative if a visit to a doctor was not possible on a daily basis.

Most patients were comfortable with the fact that they would get immediate attention and admission, if required, irrespective of the time of the day or night.

There are several adjuvant therapies available for diabetic patients, especially with wounds. Hyperbaric Oxygen therapy, is and when available, is very good for wound healing. Hypersaturated Oxygen solutions, debriding powers and gels, enzymatic creams and lotions, used selectively and judiciously, help in wound care. Every available therapy which will help in fasted wound healing, can be tried, provided these are easily available and affordable to the patient. Due consideration should be given to the side effects and drawbacks of these therapies and pros & cons weighed properly.

Prevention and foot care: (2)

As is well known, prevention is better than cure, foot care becomes an important part of every diabetic's lifestyle. A few minutes spent on pampering your feet will go a long way in keeping them healthy. While prescribing medication, please spend 5 more minutes to explain foot

care to your patients.

What can go wrong? Remember, diabetics are prone to Neuropathy and Vascular occlusion/damage of the limbs. Therefore, not only is it mandatory to keep the blood sugars in control, but also, regular exercise to keep the circulation in good order.

Reduced sensation makes you vulnerable to injuries. As the lack of pain usually does not mandate attention, till it is too late. Damaged circulation allows the tissues to die and retards healing.

Foot wear: always wear a foot wear, even at home, as you can injure yourself if not careful. While choosing a foot wear, care is to be taken to see that it is soft inside and firm outside. Fits comfortably, not loose nor tight. It is important to keep these in mind, as a shoe bite or a corn, can be the precursor to full blown gangrene. Broad based open sandals with adjustable straps or sports shoes are the best. Remember, money spent on a good foot wear, will protect your patient from bigger medical expense later.

Foot wash: regular foot cleaning is to be advised, especially whenever the patient has been outside the house for a long time. The sweat and dirt need to be cleaned with soft soap. The sides of the foot and sole should be scrubbed with a foot scrubber or a Pumice stone. Very gently, so as to just remove the dead skin and not the skin itself. Remember, neuropathy reduces the sensation and this can damage the skin causing abrasions. The web spaces need special attention, as sweat and dirt make these spaces prone to fungal infection and damage. Gentle cleaning with soap and water using your fingers is sufficient. Followed by drying of the feet and the web spaces is mandatory. Application of petroleum jelly or aloe vera, very small amount to keep the skin soft and supple, is helpful.

Nail trimming: whenever the patient cuts their toe nails, advise is to leave a little for the next time. That is, they are not to cut too close to the skin or too short. A straight cut is better. Ingrown toe nails need extra care, make sure that you trim the inward growth of the corners also, if you have this problem. At the sign of slightest inflammation, they should report to you. Over treatment in diabetics, is better than under treatment.

Excessive sweating: in the shoes can harm the skin by making it soggy and prone to skin infection and intertrigo. Use of thick cotton socks, washing them daily, with use of a very small amount of talcum powder, usually helps. Mind you, too much of powder is also not good. Take

talcum powder on your palm and just touch it with the tips of your fingers, and then pass your fingers in between the web spaces of your toes.

Conclusion:

Diabetic foot is a chronic disease. Here, not only the patient, even his relatives are tired of hospital/doctor visits and the involvement of time and money.

Prevention is the main stay of diabetic foot care. Protective foot wears at home and outside home. Nail care, immediate attention to callosities, look for and attend to neuropathic fractures, sugar control and regular exercises, are all a

part of the multipronged approach to diabetic foot care. These patients are more than willing to avoid hospitalization for lack of time and money. Day surgery is a concept, a mind-set, which can easily be changed, from an indoor patient to an outdoor patient. This aversion to hospitals gives a boost to the overall success of Day Surgery, which, in select cases has shown tremendous benefit to the patients.

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