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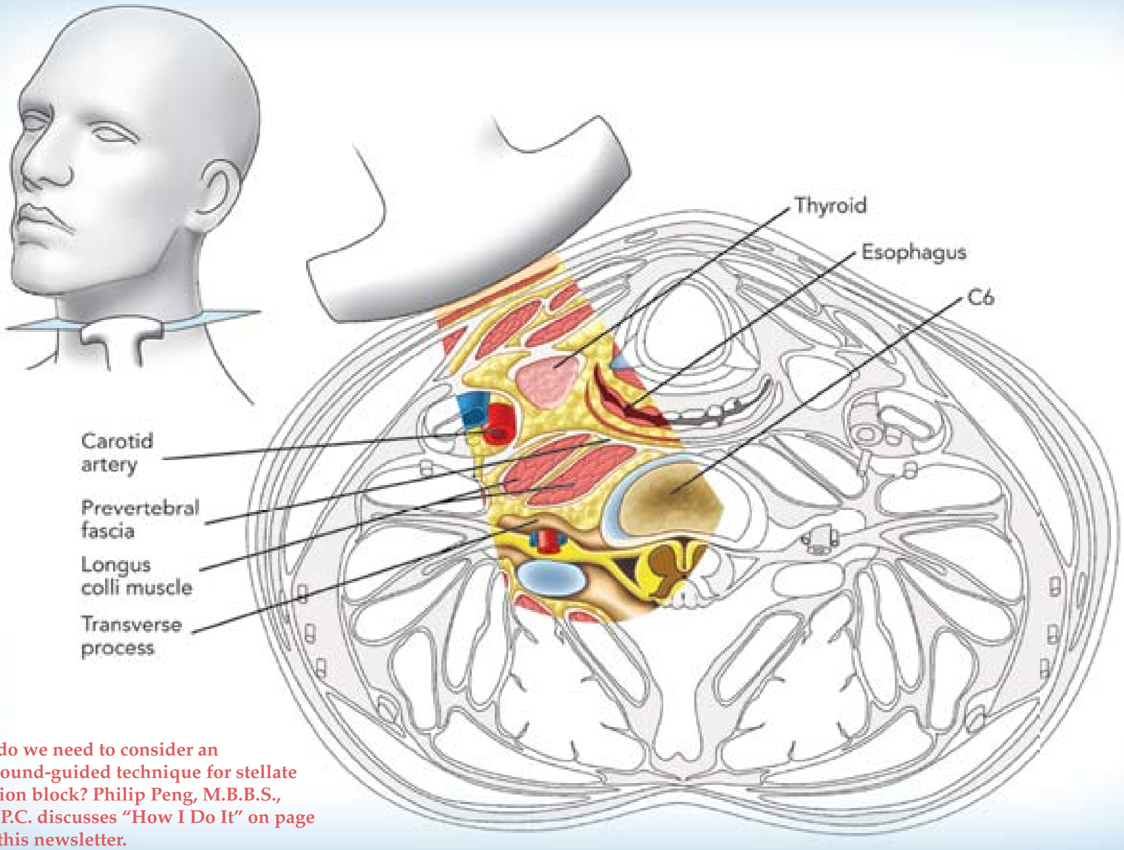

Why do we need to consider an ultrasound-guided technique for stellate ganglion block? Philip Peng, M.B.B.S., F.R.C.P.C. discusses "How I Do It" on page 16 of this newsletter.

Editorial

The Wheel For Ever Turning

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Wheel of my work, the wheel
for ever turning,
Cheerful or toilful, ever still
renewing,
Morn after morn, the cir-
cling lesson learning,
Knowing is past me: I am
here for doing:
Wheel of my work: the wheel
for ever turning.

– G.K. Chesterton, 1890s

In 2000, I sat in a lecture room in Quebec City at the International Symposium on Regional Anesthesia as Drs. Patrick Narchi and Gale Thompson debated the benefits of nerve stimulation compared to landmark techniques for peripheral nerve blocks. At that time, many European regional anesthesiologists had converted to using peripheral nerve stimulation, citing advantages, including the ability to consistently find objective endpoints. I found myself caught between two techniques; sometimes using landmark methods and sometimes nerve stimulation, depending on the block.

Only 10 years later, we are having the same debates about the use of ultrasound compared to nerve stimulation, with many practitioners limited by availability of equipment and experience. As I read the contribution by Patrick Narchi in this month's newsletter ("Two Articles That changed My Practice"), I found it interesting that the same arguments against new technology used then were exactly the same as opponents of ultrasound are using now. However, just as 10 years ago, it is probably important that competent practitioners have knowledge of a number of techniques in order to consistently perform successful and safe regional anesthesia. John Donovan, in his essay on working in Haiti, illustrates this well by using both the benefits of new technology, even in this austere environment, and the reliability of the older but tested methods.

In this month's newsletter, we have discussion around a number of newer and more controversial areas, including the utility of the TAP block (Pro:Con from Drs. Hebbard and Dillane) and the differential epidural (from Samer Narouze, M.D.). Philip Peng, M.D., from Toronto, describes the ultrasound approach to the stellate ganglion block with potential advantages, including more effective block and less puncture of associated vital structures. These techniques are exciting but, just like the use of peripheral nerve stimulation, require further evaluation in well designed studies prior to wider application in practice.

"Only 10 years later, we are having the same debates about the use of ultrasound compared to nerve stimulation, with many practitioners limited by availability of equipment and experience."

I have two requests for all readers of the newsletter in this edition. First, please e-mail me at **newsletter@asra.com** if you have any comments or suggestions for articles or letters that you would like printed that could contribute to or start a debate within the newsletter. Second, if you are a resident with an interest in pain management, please consider contributing to the "casting call" from Becky Jameson, M.D. on page 7.

It will be interesting to see what advance we will be debating in another 10 years. One thing is definitely for sure: unlike Chesterton, it is unlikely that "knowing will be past me" anytime soon.

President's Message

ASRA Strategic Plan Development and Implementation

A productive and progressive future underlies the basis of ASRA's health and growth. To develop a forward-looking strategic plan, the ASRA Board of Directors and the Executive Director convened for a two-day, focused session in February. With the help of two facilitators of organizational performance improvement systems (OPIS), a consultant company, the Board identified and discussed environmental challenges and examined in depth financial, membership and organizational issues ASRA faces. The ASRA Mission Statement was reaffirmed and an abbreviated one created: "*To Advance the Science and Practice of Regional Anesthesia and Pain Medicine.*" Past and present society activities, products and services were carefully examined to ensure that goals and scope remain relevant and consistent with the mission statement. The Board then carefully explored a number of specific and measurable goals for the next 36 months; all aim to align the ASRA leadership and administrative staff activities, educational and research programs and organizational structure with ASRA's mission.

> **"I am happy to report to you that our 2009 surplus (slightly over $300,000) allows ASRA to make a significant contribution to the research fund."**

To properly achieve ASRA's mission, the Board is committed to delivering relevant products and services to members based on quantifiable needs. And to adequately determine the types of new services needed for the future, the Board will reach out to ASRA committee leaders and members-at-large for advice and direction. A needs-assessment survey will be sent out to ASRA members in the near future to better determine member demographics, special areas of interest, practice patterns, and educational and professional development needs.

The newly developed Pain Resource Center on the ASRA Web site, available exclusively to ASRA members, is an example of our new educational services added to our existing line of products (annual meetings, stand-alone workshops, the *Regional Anesthesia and Pain Medicine* journal and the quarterly newsletters). The product of a dedicated group of volunteer members from across the country, this comprehensive one-of-a-kind educational resource covers a broad range of chronic pain, cancer pain, acute pain and regional anesthesia topics. This resource is also a testament to ASRA's dedication to pain medicine and the professional development of pain practitioners. A feedback feature will enable members to rate the quality and relevance of scientific online content, and the author(s) of the "best Web page," as rated by the members, will receive an award at the end of the year.

Vincent W.S. Chan, M.D., F.R.C.P.C.

A number of other new online CME products are in the making. They are: 1) 2010 spring meeting refresher course lectures available online; 2) formal knowledge evaluation for practitioners of ultrasound-guided regional anesthesia through online testing; 3) creation of an image and video media library under the direction of Brian Sites, M.D. in order to facilitate user acquisition of ultrasound interpretative skills; 4) a comprehensive educational site developed exclusively for the Ultrasound for Pain Medicine Special Interest Group members; and 5) a library of instructional videos for pain and regional anesthesia submitted by members – the most popular videos will be selected for entry into the video competition during the 2010 fall meeting.

Beyond education, ASRA wishes to create a new research fund that is dedicated exclusively to chronic pain research. As you probably know, the existing Carl Koller Endowment Research Fund receives 50 percent of the excess of operating income over expenses each year and is now close to $1.8 million in value. ASRA is presently soliciting specific high-priority research proposals, e.g., outcome-based regional anesthesia and pain research from member investigators, and up to $75,000 will be made available biennially for this award. For the new pain research fund, Asokumar Buvanendran, M.D. (Chair of the Research Committee) has agreed to lead the effort in defining the scope and criteria for funding and, most importantly, lead an ambitious fundraising campaign to rapidly build up the research fund. Tax receipts will be issued for both member and corporate contributions.

To successfully implement our strategic plan and carry out all newly initiated programs, ASRA must maintain a strong financial balance sheet. I am happy to report to you that our 2009 surplus (slightly over $300,000) allows ASRA to make a significant contribution to the research fund. A breakdown of revenues and expenses is highlighted in the figures on page 20.

Also required is the dedication and involvement of our administrative staff and volunteer members who will participate in the implementation of the strategic plan

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Notes from Saint-Marc: An Anesthesiologist Volunteers His Time and Skills to Help Alleviate Suffering in Haiti

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Like most physicians, the devastation of the January 12 earthquake in Haiti left me wondering what I could do to help. In addition to over 200,000 people killed, massive numbers of patients with severe injuries overwhelmed hospitals that were poorly equipped, understaffed, and in many cases, structurally unsound — if standing at all. The preponderance of extremity trauma and focus on pain management by both responders and media created a clear need for anesthesiologists with regional anesthesia skills.

In the days after the earthquake, we organized a 15-person surgical team with the support of our hospital system, California-based Sutter Health. Given the chaos brought upon Haiti's severely-strained medical system, we recognized the need to work with an established organization and were fortunate to team up with Partners In Health (PIH). PIH has been at work in Haiti for over 20 years providing aid throughout the country and was among the first to respond to the earthquake disaster with emergency medical services.

In many ways, our preparation was as frenetic as the trip itself. In addition to the challenges of gathering equipment, supplies and medications, simply getting to Haiti seemed virtually impossible. We managed to secure a private jet and reserve a timeslot to land at the damaged airport in the capital of Port-au-Prince.

We arrived in the middle of the night and tried to get a few hours of sleep in a playground near the airport. Shortly after being awakened by transport planes and roosters, we were transported to the PIH hospital in St-Marc. Located 60 miles outside of Port-au-Prince, the 150-bed hospital was spared significant structural damage and was soon flooded with hundreds of severely-injured patients. We collaborated with a Massachusetts General Hospital orthopedic trauma team that had arrived immediately following the earthquake. They had brought the operating rooms up to speed while managing to secure a seemingly endless supply of donated external fixators.

Operating in Haiti required us to be both flexible and resourceful. Although the hospital had two operating rooms, one had been used predominantly for obstetrics while the other had served as a storage room. Electricity was intermittent, forcing us to periodically work in extreme heat or in the dark. With a limited supply of battery-powered tools and a single X-ray machine, our surgeons became adept at performing procedures without fluoroscopy and using hand drills.

For anesthesia equipment, we had anesthesia machines but lacked functioning ventilators and a reliable oxygen supply. Given these conditions, regional anesthesia was the anesthetic technique of choice. The majority of cases involved extremity trauma and could be done under neuraxial or peripheral nerve block. With a large number of cases for only two operating rooms, regional anesthesia enabled us to maximize our efficiency since blocks could be placed preoperatively and recovery stays were brief.

Regional anesthesia was widely accepted by the patients in St-Marc in the wake of the disaster since it is routinely practiced for Cesarean sections there. The use of *general anesthesia* for extremity amputations performed by foreign medical teams was unfamiliar to the people and caused some patients scheduled for external fixation to fear that they would wake up with an amputation. Using regional anesthesia whenever possible, including pediatric cases, helped us earn the trust of our patients and their families.

Spinal anesthesia was the most common technique employed. Peripheral nerve blocks were performed under either neurostimulation or ultrasound guidance, depending on the preference of the clinician. Despite the austere situation, ultrasound equipment was available and proved to be remarkably useful by multiple specialties at St-Marc (emergency medicine physicians, surgeons and anesthesiologists) for regional anesthesia, vascular access and diagnostic studies.

In this challenging environment, we performed over 20 cases a day despite periodic loss of power and three-hour breaks for Cesarean sections. The vast majority of cases were orthopedic, with a large proportion being external fixation of fractures. We were fortunate to have relatively few amputations. This was, in part, due to a concerted effort to salvage limbs and the timing of our medical mission (more than a week after the initial earthquake).

With limited resources and O.R. space, our wound care teams, which included surgeons, nurses and anesthesiologists, would perform dressing changes and debridements on the wards under conscious sedation. We would often have two teams rounding for four to six hours each day, keeping our anesthesiologists equally busy outside and inside the O.R.

The severity of injuries was striking and often left me wondering how the patients ever made their way from Port-au-Prince to St-Marc. We cared for patients with spinal cord injuries, severe pelvic fractures and complex extremity fractures. We saw patients die from massive pulmonary embolism and even tetanus. Whenever possible, we attempted to evacuate critically ill patients to facilities offering a higher level of care, such as the *U.S.N.S. Comfort*, the U.S. Navy's hospital ship that was deployed to Haiti. If we were unable to secure a helicopter transport, our only option was to take the patient via ambulance. It is a long ride to Port-au-Prince, and patients with painful fractures could not tolerate the bumpy ride. We spent several days attempting to evacuate a woman with a complex femur fracture that had become infected. The initial attempt to take her via ambulance to Port-au-Prince was aborted due to severe pain. We were determined to evacuate her, so we prepared for a second attempt accompanied by an anesthesiologist. Since we had limited monitoring en route, and we utilized an opioid-sparing, multimodal analgesic approach, including a lumbar plexus block. Just as the block was setting up, we learned that a helicopter was arriving to take her by air. We quickly improvised by folding down the seats of an SUV and driving her pain-free to the landing zone with her legs supported out the back.

While using my skills as an anesthesiologist to help the victims of the earthquake was a remarkable opportunity and a privilege, it is the resiliency of the Haitian people that leaves the most lasting impression. I feel like I got more than I gave.

Acknowledgements:

The success of our medical mission would not have been possible without the support and existing infrastructure of Partners In Health. To learn more, go to **www.pih.org**.

Figure 1

The Partners In Health hospital in Saint-Marc, Haiti.

Figure 2

Sutter Health surgeon Dr. Lisa Bailey attends to a wound in the surgical ward under moderate sedation provided by anesthesiologist Dr. Henry Salzarulo.

Figure 3

Dr. Donovan performs a lumbar plexus block to minimize a patient's leg pain prior to transport to another medical facility.

Two Articles That Changed My Practice!

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My interest in regional anesthesia started during my residency training in 1986. At that time, neuraxial blocks such as spinals and epidurals (mainly lumbar analgesia for obstetrics) were the major techniques to learn and use in future practice.

During my residency training, I lived through the exciting transition from neuraxial blocks to peripheral nerve blocks for both anesthesia and analgesia. This major shift in regional anesthesia was related to many factors. The most important ones were catastrophic complications after neuraxial blocks, such as spinal hematomas and epidural abcesses, and the development of ambulatory surgery practice.

When I started my residency in anesthesia, peripheral blocks were considered very special techniques that were "reserved" only for practitioners with high levels of expertise. Those practitioners had exceptional dexterity that allowed them to reach optimal endpoints before injecting the magic solution around the nerves. As young residents, my colleagues and I "admired" senior faculty members who performed peipheral nerve blocks and we wondered if our generation would have the privilege of learning and acquiring the technical skills required to perform peripheral blocks.

"Fortunately, the increased availability of nerve stimulators in the late '80s in France encouraged us to perform peripheral blocks on orthopedic patients."

Fortunately, the increased availability of nerve stimulators in the late '80s in France encouraged us to perform peripheral blocks on orthopedic patients. The new device that used neurophysiologic principles to locate nerves became the tool that provided "objective endpoints" in the form of muscle contractions. I remember feeling very proud when I elicited the first adequate motor response using a nerve stimulator.

The practice of nerve stimulation evolved rapidly from single to multiple nerve stimulations resulting in two, three and even four different motor twitches and leading to a more precise delivery of local anesthetics around specific nerves. As a result, the success rate reported with the axillary block increased dramatically by locating and injecting in the proximity of at least two nerves. In 1987, Goldberg was the first to demonstrate that seeking only one of the four nerves before injecting the total dose of local anesthetics did not improve the success rate after axillary block when compared to the trans-arterial approach.

However, in a major development in 1992, Lavoie et al. showed that looking for both the musculocutaneous nerve and any of the three other nerves (median, ulnar or radial) increased the success rate of the axillary block significantly. This enthusiasm led some experts such as L.J. Dupré to locate the four nerves and selectively inject local anesthetic adjacent to each one of them. Indeed, in 1994, Dupré et al. described a modified axillary block called the midhumeral approach performed at the junction of the upper and middle third of the arm. At that location, the four nerves are dispersed away from the artery, facilitating their separate localization and selective infiltration. Later studies on the axillary block showed a more balanced view on the performance of the block where only two or three nerve localizations are needed to achieve a complete sensory block instead of the four nerve technique previously described.

The new concept of locating nerves with the nerve stimulator faced strong opposition from some regional anesthesia practitioners. The opponents advocated that peripheral blocks performed using the traditional techniques relying on needle-induced paresthesia or fascial pops are feasible and reliable techniques when performed by experienced anesthesiologists and that the need for a new device was not justified. This opposition manifested itself clearly in conferences, and I remember many "historical" pro/con debates on this topic that took place during regional anesthesia meetings. Such an opposition against nerve stimulation could only be supported for single-shot superficial blocks. Localization of deep structures such as during sciatic or infraclavicular blocks is definitely easier when assisted by a nerve stimulator compared to blind techniques. In addition, the increasing use of peripheral bocks in orthopedic pediatric surgery would not have been possible without the use of nerve stimulation since these blocks are usually performed under general anesthesia. Moreover, the insertion of perineural catheters using a nerve stimulator technique leads to a more accurate placement when a motor twitch is elicited prior to catheter insertion.

Recently, a newer technological advance for nerve catheter insertion has emerged. The stimulating needles are used to guide the insertion of "stimulating catheters" in order to improve the proximity of the catheter tip to the nerve, improve the effectiveness of these catheters postoperatively and reduce the total local anesthetic dose required to achieve adequate analgesic states. The literature shows that femoral stimulating catheters did not improve analgesia after total knee replacement when compared to traditional catheters. However, studies performed on the sciatic nerve for foot surgery showed a significant reduction in local anesthetic requirements both intra- and/or postoperatively, a superior quality of analgesia and a lesser need for rescue analgesics.

During the last 10 years, a new technological improvement for locating nerves has emerged in the scientific literature. The ultrasound machine is being promoted to offer many advantages over the nerve stimulator technique. A significant number of recent studies and metanalyses demonstrate the advantages of ultrasound-guided nerve blocks when compared to the "old" nerve stimulator techniques. These include a more rapid onset of the block, less needle passes, lower vascular puncture rates, lower local anesthetic requirements, etc. In addition, when adopting a new technique, the learning curve is definitely steeper with the ultrasound-guided technique when compared to nerve stimulation. The latter technique had been promoted for two decades before it was universally accepted. The major difference in the speed of acquiring the necessary skills required to perform peripheral blocks between the two techniques explains the rapid development and adoption of ultrasound-guided blocks in many countries where previously nerve stimulation faced resistance and opposition, especially in the United States. There is no doubt that the 2D-ultrasound approach will evolve in the near future to a 3D-approach, making nerve visualization and needle advancement much easier.

In conclusion, I have had the privilege of living in an era where major shifts in regional anesthesia took place, and I am very grateful to colleagues such as Lavoie[1] and Dupré,[2] who opened my eyes to the importance of nerve location and helped me in my practice since the '80s. Their two articles had a significant impact on me. I was challenged and intrigued by them, and they put me on a quest to constantly improve the quality and effectiveness of my practice, resulting in higher quality of care for my patients.

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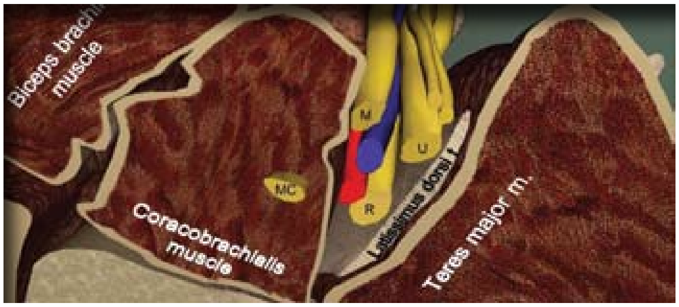

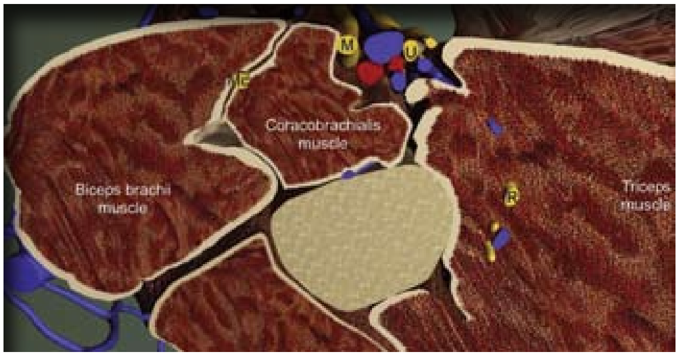

Upper figure: cross section at the axillary level.
Lower figure: cross section at the midhumeral level.

M = Median nerve.
R = Radial nerve.
U = Ulnar nerve.
MC = Musculocutaneous nerve.
Red structure: artery.
Blue structures: veins.

PRO

TAP Blocks Are an Effective

CON

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TAP blocks build on the old concept of the abdominal wall field block. After initial description of landmark-guided TAP blocks through the lumbar triangle by Rafi,[1] randomised controlled trials demonstrated efficacy compared to no block for a variety of lower abdominal surgeries, including large bowel surgery, caesarean section and hysterectomy.[2-4] Initial experience with ultrasound-guided TAP block near the lumbar triangle (posterior TAP block) found the block largely limited to the sub-umbilical region.[5-7] Randomised controlled trials have demonstrated efficacy of ultrasound-guided posterior TAP block in caesarean section, appendicectomy and laparoscopic cholecystectomy with infra-umbilical ports.[8-10] An alternative ultrasound-guided approach along the oblique subcostal line near and parallel to the costal margin blocks the supra and infra umbilical nerves.[7] This approach has not been rigorously tested but promises the widest blockade of the anterior nerve supply of the abdominal wall as all the anterior nerve branches pass through the TAP in that line.

An alternative technique to epidural should be continuous. I have been using continuous catheter techniques along the oblique sub-costal line for nearly three years. *I have used the bilateral subcostal oblique TAP block with catheters for infusion in 48 consecutive cases between May 2007 and October 2009. The majority of cases were for colonic surgery, emergency and elective, all with midline incisions, mostly extending both above and below the umbilicus. Eight cases involved placement of blocks after the failure of other analgesic techniques with apparent improvement in analgesia. Oblique*

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Epidural analgesia has long been considered the reference standard for major abdominal and pelvic surgery. Recently published clinical trials involving abdominal[1,2,3,4] and pelvic surgery[5] have demonstrated promising results with the transversus abdominis plane (TAP) block, ostensibly as an alternative to epidural anesthesia.[6] However, after the publication of only seven randomized clinical trials, comprising a total of 364 patients of whom 180 received a TAP block,[7] reports of the demise of the epidural may have been greatly exaggerated.

Sensory blockade of the anterolateral abdominal wall was first described by Rafi in 2001.[8] Whether performed using an anatomical landmark technique[2] or using ultrasound guidance[4,9] thoracolumbar myocutaneous sensory blockade of the skin, muscle and parietal peritoneum of the anterior abdominal wall is achieved. It has no effect on visceral pain, appears to result in a relatively limited segmental nerve blockade that is dependent on the site of insertion and does not produce a sympatholysis.

Epidural placement at an appropriate vertebral interspace that is congruent with the surgical incision and underlying viscera will allow a degree of control over the completeness and timing of blockade, which is not achievable with the TAP block. The epidural catheter may be tested for the level of sensory blockade after injection of local anesthetic. For a greater degree of precision, electrical epidural stimulation can be used to guide catheter placement and advancement to within two segmental levels. [10] Catheter adjustments can be made in a post hoc manner in the event of migration or kinking. Epidural blockade can then be used as the primary anesthetic for lower abdominal procedures (sigmoid colectomy, low *subcostal TAP blocks may provide complete analgesia for surgery confined to the anterior abdominal wall, two of the three cases with catheters placed for large incisional hernia repairs required no PCA opioid. Epidural and nerve block catheters were used (Portex epidural and B Braun "contiplex"). The block to ice appeared to decrease in extent on the day after placement and then be largely stable (see Figure).* Ultrasound-guided TAP blocks are the developing, more flexible technique compared to landmark-guided blocks with the safety advantage of continuous needle imaging and the ability to hydrodissect and place a needle and catheter along the plane, across the course of the nerves.

> **"Epidural analgesia is known to produce improvements in pulmonary outcome after major surgery with no clinically significant effect on mortality, even in high-risk patients.[11]"**

Blockade of the anterior branches of the T6 to L1 nerves produces cutaneous block of the anterior abdominal wall to around the mid-clavicular line laterally, muscular block of transversus abdominis, internal oblique and the rectus abdominis muscles distal (medial) to the site of block as well as block of the anterior peritoneum. The external oblique muscle is not blocked (supplied by the lateral branch) as well as the viscera and other retro-peritoneal structures. This blocks midline incisions with partial block of more lateral incisions. For surgery not confined to the abdominal wall, intravenous opioid is generally required as well as multimodal analgesia. Due to the lack of visceral analgesia, patient subgroups with more extensive retroperitoneal surgery and patients with chronic abdominal pain of visceral origin are less suitable.

The best analgesia expected from a continuous TAP catheter technique is therefore likely to be inferior to the best epidural analgesia. In the increasing number of patients in whom epidural techniques are contra-indicated, the nature of TAP block as a technique that builds on existing intravenous and oral methods makes the justification of adding TAP blocks easy, provided the ease of insertion, complication and side effect profile is favourable.

Epidural analgesia is known to produce improvements in pulmonary outcome after major surgery with no clinically significant effect on mortality, even in high-risk patients.[11] These outcomes are produced at the cost of more expensive, higher-intensity postoperative care and

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Alternative to Epidural Anesthesia

anterior resection), and the requirement for general anesthesia may be avoided in high-risk patients. Alternatively it may be used for intra- and post-operative analgesia (hepatic and gastroesophageal surgery).

TAP blockade does not allow this level of control. Success in outcome trials has been measured in terms of reduced opioid requirements and visual analog scale pain scores.[1,2,3,4,5,6] Objective demonstration of reduced sensation has only been shown in audit form by a single investigator.[9] In this author's experience, it is difficult to demonstrate the presence of a sensory level even in a TAP block that appears to provide effective analgesia. It has been necessary to demonstrate the spread of injectate using cadaveric studies.[11,12,13,14] These studies indicate that if performed superior to the iliac crest, the anterior primary rami of T11, T12 and L1 are surrounded by injectate, while a subcostal approach involves segmental nerves T9, T10 and T11.[14] This correlates with available clinical data where a suprailiac block produces subumbilical anesthesia.[9,15] Injection of local anesthetic at each block location produces a relatively narrow band of unilateral analgesia that cannot be confirmed with the certainty of epidural sensory blockade. Subsequently, for midline incisions, a bilateral block needs to be performed. In comparison to continuous epidural anesthesia, a single shot TAP block appears to spread progressively over several hours[16] with potentially slow onset and fades over an indeterminate period of time. There have been no reports to date of the use of TAP blockade for surgical anesthesia.

The use of continuous TAP block catheters has been reported to prolong the analgesic effect.[6] Inserted pre-operatively, TAP catheters may be technically difficult to place and have the potential to interfere with the surgical field. Placement of a TAP catheter prior to closure of the surgical incision has been described by Jankovic et al.[17] for renal transplant surgery. However, time to first opioid requirement was not provided, and unlike epidural anesthesia, this technique may not allow sufficient time for development of adequate sensory blockade for the immediate post-operative period.

Critics of epidural anesthesia may cite the Veterans Affairs study and the MASTER trial, both large, randomized, controlled outcome studies that failed to demonstrate a reduction in major morbidity and mortality up to 30 days postoperatively in patients who had epidural analgesia and anesthesia.[18,19] It may be worth reiterating that outcome studies of regional anesthesia are underpowered and sample sizes are too small to detect a difference in mortality or cardiac morbidity. Despite this, both studies demonstrated superior postoperative pain control when compared with systemic analgesia. Moreover, in a meta-analysis of 29 trials in abdominal surgery patients, Block

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very rare but devastating complications. Epidural techniques may also be associated with very poor analgesia due to block failure, with 42 percent of epidurals in the "MASTER" study removed earlier than intended, including 10 percent for poor analgesia.[11] It is now conceded that the major advantage of epidural analgesia is improved pain relief.[12]

Should we require rigorous efficacy data before we offer abdominal wall blocks to patients as an alternative to epidural? I believe not, but I think our patients need to have reasonable information about the relative risks and benefits of the techniques so they can choose. There are no published reports of ultrasound-guided TAP block complications; however, the true incidence can only be established by large case series and case reports. Theoretical risks of TAP block include local infection, hematoma, and neurological injury. Liver and bowel trauma are other potential risks, with the risk directly related to the skill of the operator. The pharmacokinetics of posterior ultrasound-guided TAP block with lignocaine[13] have confirmed a relatively slow absorption of local anesthetic with possible faster absorption (similar to epidural absorption) after intramuscular injection. *Lack of hypotension related to sympathetic block also makes management of these patients simpler than epidural cases.*

In summary, for midline abdominal incisions, TAP block is better than no block, has the back-up of adding to conventional techniques and requires less intensive postoperative care than epidural. It has a better theoretical risk profile and avoids the most feared complications of epidural analgesia. A true comparison with epidural analgesia is not yet available. However, as happened with postoperative epidural analgesia, many medical innovations are taken up by the clinical community before the definitive evidence is available. Other abdominal wall techniques such as surgeon-placed catheters (limited to placement during surgery) and rectus sheath catheters (subject to greater anatomical variation), although not discussed here, are also promising.

If you are currently offering your patients epidural analgesia largely for improved pain relief, and the surgery is suitable, you should now consider offering a continuous ultrasound-guided TAP block as an alternative.

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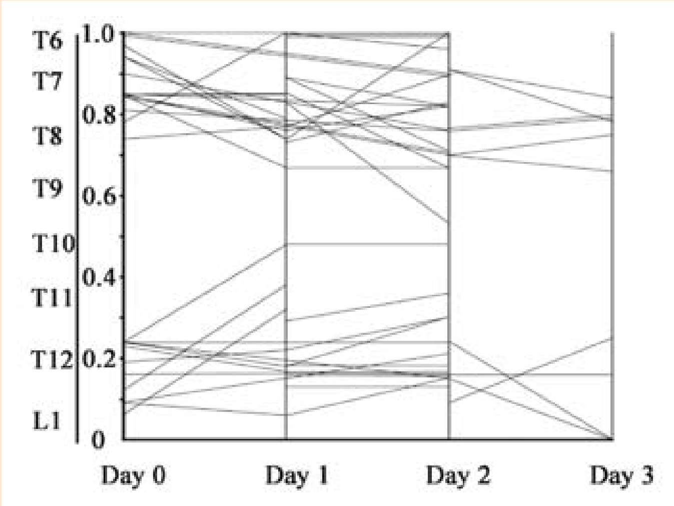

Upper and lower limits of local anaesthetic block to ice where recorded on consecutive days for oblique subcostal infusions measured from day 0 to day 3 post-surgery. With the xyphoid at the top of the diagram, the limits of the block are expressed as a proportion of distance from xyphoid to pubis, the approximate dermatome is also indicated.

CON

Continued from page 9

et al. demonstrated the superiority of epidural analgesia over parenteral opioid analgesia.[20] There have been no clinical trials to date comparing the analgesic efficacy of the TAP block with epidural analgesia.

Albeit of conjectural consideration for abdominal and pelvic surgery, epidural anesthesia precipitates physiological changes in several organ systems, predominantly as a result of sympathetic blockade, which cannot occur with a TAP block. Epidural anesthesia has been associated with reduced thromboembolism[21,22] and lower intraoperative blood loss[23] in orthopedic patients. Though not specifically in abdominal surgery patients, in a meta-analysis of 141 randomized trials analyzing the effects of neuraxial anesthesia, Rodgers found a reduction in post-operative pneumonia of 39 percent.[24] Randomized trials have demonstrated a shorter duration of postoperative ileus after colon surgery[25] in addition to enhanced functional exercise capacity and health-related quality of life.[26] Epidural anesthesia markedly reduces the stress response to surgery[27] with reduced maximal blood concentrations of epinephrine, norepinephrine, cortisol and glucose and may play a role in modulating the catabolic response to surgery.[28] Thoracic epidural anesthesia has been shown to attenuate stress-induced immunosuppression in patients undergoing major abdominal surgery.[29] Though it may be difficult to differentiate between analgesic and sympatholytic effects, no current studies have attributed any extra-analgesic effects to the TAP block.

The limited number of available studies may demonstrate the analgesic efficacy of the TAP technique, but they are not sufficient to allow an appraisal of its safety. In comparison to the dose of local anesthetic required to establish a successful epidural block, a relatively large dose may be required to initiate and maintain a TAP block, especially with a bilateral approach. A recent study in a series of 12 patients found a significant increase in the serum concentration of local anesthetic with the potential to cause systemic toxicity.[30] Other potential complications of the technique include liver laceration[31] and intraperitoneal injection.[32]

The TAP block is a relatively simple technique that provides myocutaneous anesthesia in a limited distribution. As part of a multimodal analgesic regimen, it may be useful in the prevention and treatment of parietal post-operative pain. However, it lacks the precision, flexibility and control offered by epidural anesthesia and cannot be considered as an effective alternative.

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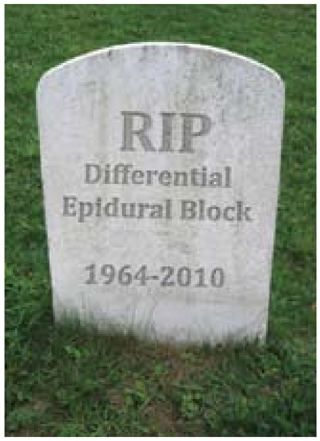
Differential Epidural Block May Become Obsolete With the Introduction of TAP Block



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Abdominal pain is one of the most frequent complaints to primary care physicians, accounting for nearly 2.5 million office visits per year. No identifiable cause can be found in up to 50 percent of patients.[1]

Chronic abdominal pain is difficult to treat mainly because of the complexity of the etiology and the inability to sort out where the pain is coming from. Pain practitioners have been using differential epidural block to allow characterization of chronic abdominal pain into visceral and nonvisceral pain. Surprisingly, patients with chronic abdominal pain that was initially thought to be visceral in origin have often proven to have nonvisceral pain.[2]

Reviewing the literature, only two reports were found with weak evidence that differential neuraxial blockade can predict treatment response. Both reports evaluated only a small cohort of patients.[2,3]

Differential Epidural Block:

Differential epidural block is a diagnostic nerve block that was initially described in 1964 for the evaluation of lower-back and lower-extremity pain.[4] Since then, several modifications of the procedure have been implemented using both subarachnoid and epidural approaches.

Differential epidural block involves the placement of a thoracic epidural catheter and the injection of saline (placebo) and different concentrations or incremental doses of local anesthetics. The procedure relies on the variable sensitivity of nerve fibers of various size, myelination and function to local anesthetics. Sympathetic fibers and visceral afferent nerves are relatively more sensitive to local anesthetic blockade than large sensory or motor fibers [Table 1].

Pitfalls of the differential epidural block test:

1. The interpretation of the differential block is nonstandardized.
2. The interpretation of the differential block is very subjective.
3. The interaction between local anesthetic and nerve fibers is a dynamic and unpredictable phenomenon that may be influenced by a multitude of factors.
4. Overlap in the range of nerve fiber sizes makes it unlikely that any fiber type can be reliably isolated by this procedure.
5. As a result of the above, the interpretation of the test is often mixed (visceral/somatic/central), which defeats the purpose of the study!
6. The procedure takes between four and eight hours, and it carries the limitations and disadvantages of neuraxial blocks.

Transversus Abdominis Plane (TAP) Block:

The TAP block is a new regional anesthesia technique that provides analgesia to the abdominal wall. First described in 2001, the technique involves the injection of local anesthetic into the plane between the internal oblique and transversus abdominis muscles, the transversus abdominis plane.[5,6] TAP block targets the entire anterolateral abdominal wall between the costal margin and inguinal ligament.[7] The introduction of ultrasound-guided TAP block allows the successful installation of local anesthetics around the anterior branches of the thoracolumbar ventral rami blocking "somatic sensations" from the anterior abdominal wall. As stated above, the limitations of differential epidural block are numerous and, contrary to TAP block (somatic) and celiac/hypogastric block (visceral), different nerve fibers cannot be reliably isolated. The author has found that transversus abdominus plane (TAP) block is very valuable in diagnosing pain originating from the abdominal wall and thus helps differentiate between a somatosensory and visceral origin of pain.[8] Single injection as well as continuous infusions can be used for treatment of various somatosensory abdominal pain syndromes [Table 2].

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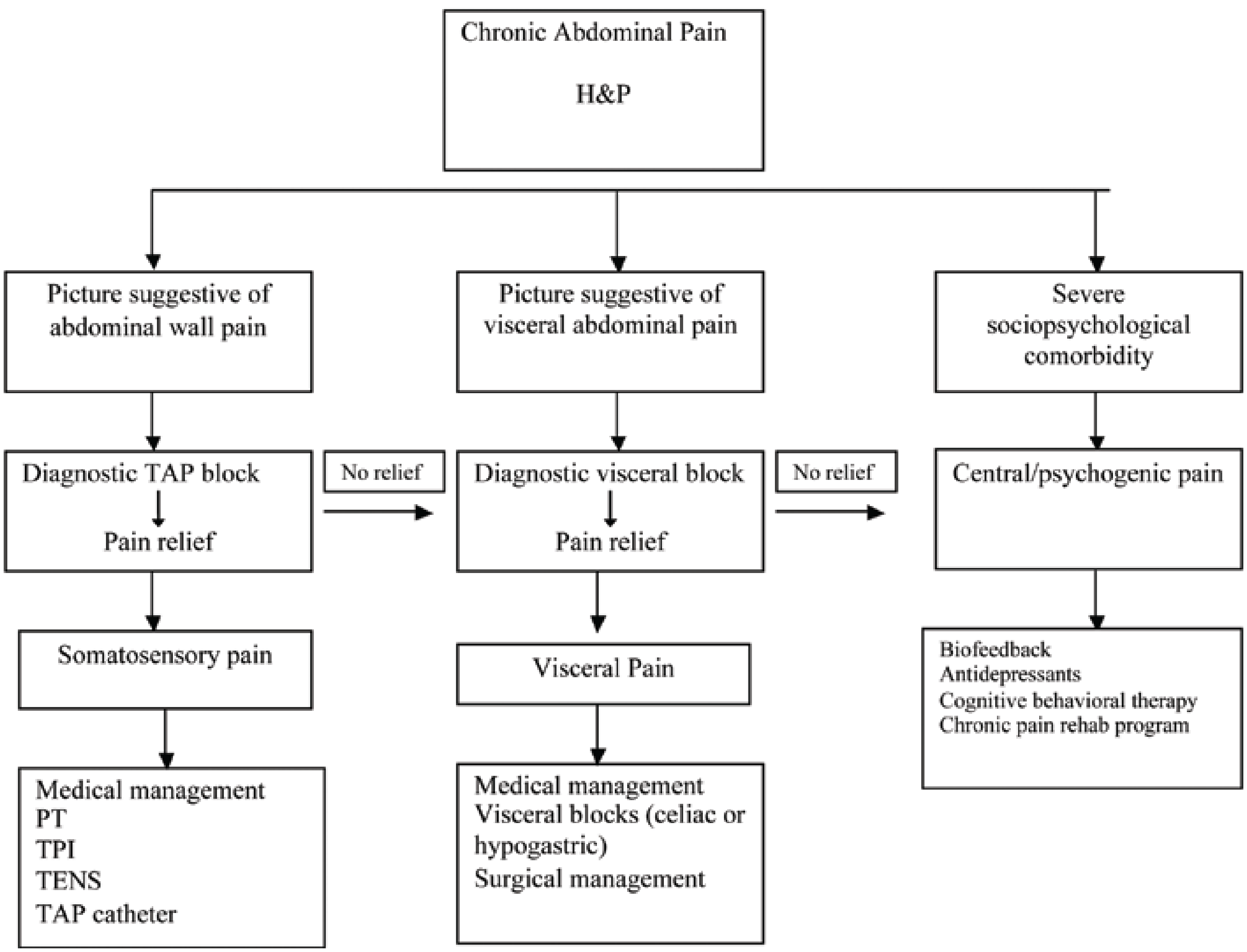
Table 1:
Interpretation of differential epidural block

1. Visceral Pain: No pain after surgical anesthesia of the relevant dermatome with persistent pain relief after the dermatomal somatic anesthesia level recedes.
2. Somatosensory: No pain after surgical anesthesia to the relevant dermatome with the return of pain as somatic dermatomal anesthesia level recedes.
3. Central: Persistent pain in spite of surgical anesthesia.
4. Mixed: mixed picture between the above three scenarios. Often encountered secondary to the subjective nature of pain.
5. Placebo Responders: prolonged pain relief with saline injection.

Table 2:
Suggested algorithm for the management of chronic abdominal pain



Gap Junctions and Pain: A New Frontier in Pain Research

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One breakthrough in pain research is the recent recognition of the critical role that the glial cells and inflammatory cells play in the development and maintenance of pain. As an important electrical, metabolic and molecular signal coupling mechanism, gap junctions between astrocytes as well as neurons are indicated in the genesis of pain and may represent a new therapeutic target for pain management.

Activated astrocytes and microglial cells could be part of the generators of neuropathic pain. As astrocytes exhibit gap junction coupled networks, glia may be involved in spreading of pain signaling in the form of calcium oscillations or waves. Astrocytic calcium oscillations induce ATP release, which in turn stimulates both microglial cells and those monocytes that have crossed the blood-brain barrier, and also stimulates distant astrocyte networks and microglial cells. These activated cells release pro-inflammatory cytokines. One possibility is that the calcium oscillations by their induction and release of growth factors give rise to new synapses and establish new neuronal contacts for maintaining and spreading pain sensation.

In adult human and rat pia-arachnoid cell cultures loaded with calcium indicator dye, mechanical stimulation produced an increase in calcium in the stimulated cell (Grafstein 2000). This change then propagated rapidly among neighboring cells, forming a calcium wave with a maximum distance of propagation and velocity resembling calcium waves in astrocytes. The pia-arachnoid waves were blocked by either octanol or apyrase, suggesting that propagation might occur either by gap junction communication or extracellular movement of ATP. Gap junction coupling between pia-arachnoid cells and astrocytes was shown by dye transfer experiments and immunostaining for connexin 43. It is suggested that calcium signals from cells in the cortical parenchyma may be transmitted to the pia-arachnoid and might then serve in the induction of neurovascular changes, including those postulated to be responsible for the pain of migraine headache.

Spataro et al. (2004) tested if spinal cord glia are involved in the contralateral spread of excitation resulting in mirror image pain. The gap junction decoupler carbenoxolone was administered intrathecally after induction of neuropathic pain in response to sciatic nerve inflammation (sciatic inflammatory neuropathy) or partial nerve injury (chronic constriction injury). In both neuropathic pain models, a low dose of carbenoxolone reversed mirror image mechanical allodynia, while leaving ipsilateral mechanical allodynia unaffected. Ipsilateral thermal hyperalgesia was briefly attenuated. In contrast, blockade of mechanical allodynia and thermal hyperalgesia was not observed in response to intrathecal glycyrrhizic acid, a compound similar to carbenoxolone in all respects, but it does not decouple gap junctions. Thus, blockade of mechanical allodynia and thermal hyperalgesia by carbenoxolone may reflect an effect on gap junctions. Examination of carbenoxolone's effects on intrathecal human immunodeficiency virus type 1 gp120 showed that blockade of pain facilitation might result, at least in part, via suppression of interleukin-1 and, in turn, interleukin-6. This suggests that activation of glia gap junctions might lead to proinflammatory cytokine release, and spread of excitation via gap junctions might contribute to inflammatory and traumatic neuropathic pain.

The emerging literature supports a role for glia/cytokines in persistent pain. Using a trigeminal model of inflammatory hyperalgesia, Guo et al. (2007) demonstrate a mechanism by which glia interact with neurons, leading to activity-dependent plasticity and hyperalgesia. In response to masseter inflammation, there was an upregulation of glial fibrillary acidic proteins (GFAPs), a marker of astroglia, and interleukin-1beta (IL-1beta) in the region of the trigeminal nucleus specifically related to the processing of deep orofacial input. The activated astroglia exhibited hypertrophy and an increased level of connexin 43 (Cx43). The upregulated IL-1beta was selectively localized to astrocytes but not to microglia and neurons. Anesthetic block of the masseter nerve prevented the increase in GFAP and IL-1beta after inflammation. Substance P, a neurotransmitter of primary afferents, induced similar increases in GFAP and IL-1beta, which was blocked by a nitric oxide synthase inhibitor. Injection of IL-1 receptor antagonist or glial inhibitor attenuated hyperalgesia and NMDA receptor phosphorylation after inflammation. In vitro application of IL-1beta induced NR1 phosphorylation, which was blocked by an IL-1 receptor antagonist, a PKC inhibitor, an IP3 receptor inhibitor, and inhibitors of phospholipase C and phospholipase A2. These findings provide evidence of astroglial activation by tissue injury, concomitant IL-1beta induction, and the coupling of NMDA receptor phosphorylation through IL-1 receptor signaling.

Glial-specific gap junctions play a role in nociception in the rat trigeminal ganglion. Ohara et al. (2009) report that the Cx43 gap-junction subunit was found to be confined to the satellite glial cells (SGCs) that tightly envelop primary sensory neurons in the trigeminal ganglion. Cx43 increased in the trigeminal ganglion in rats with a chronic constriction injury (CCI) of the infraorbital nerve. Using Cx43 RNA interference (RNAi) to alter gap-junction function in SGCs and, they found that reducing Cx43 expression in CCI rats reduced pain-like behavior, whereas in non-CCI rats, reducing Cx43 expression increased pain-like behavior. The degree of pain-like behavior in CCI rats and intact, Cx43-silenced rats was similar. These results suggest that increases in glial gap junctions after nerve injury increase nociceptive behavior, but paradoxically the reduction of gap junctions in normal ganglia also increases nociceptive behavior, possibly reflecting the multiple functions of glia.

Glia-neuron heterotypic gap junctions may also play a role in nociception in the trigeminal nucleus caudalis (Sp5C). By immunoelectron microscopy, Lan et al. (2007) showed an increase of Cx32/Cx43 heterotypic gap junctions (HGJs) between astrocytes and neurons within Sp5C following subcutaneous injection of 5 percent formalin into mystacial vibrissae. The orofacial nociception behavior reduced significantly after intrathecal administration of carbenoxolone or fluorocistrate (FCA), a glail metabolic inhibitor. FCA attenuated the expression of Fos/NeuN-immunoreactive (-IR) neurons and Fos/GFAP-IR astrocytes in Sp5C while carbenoxolone decreased the number of Fos/NeuN-IR neurons, but not Fos/GFAP-IR astrocytes. Thus, orofacial nociception may be mediated by gap junctions between astrocytes and neurons.

Changes in mouse dorsal root ganglia neurons and satellite glial cells (SGC) were investigated by the Hanani group following spinal nerve injury (axotomy) (2002), intestinal injury (2005), and induction of inflammation by the injection of complete Freund's adjuvant (CFA) (2007). Under control conditions, SGCs were mutually coupled by gap junctions, but mainly to other SGCs around a given neuron. After axotomy, SGCs became extensively coupled to SGCs that enveloped other neurons. Serial section electron microscopy showed that after axotomy, SGC sheaths enveloping neighboring neurons formed connections with each other. Such connections were absent in control ganglia. The number of gap junctions between SGCs increased 6.5-fold after axotomy. These results suggest that axotomy induces growth of perineuronal SGC sheaths, leading to contacts between SGCs enveloping adjacent neurons and to formation of new gap junctions between SGCs. These glial plastic changes may contribute to neuropathic pain. Glial plasticity also occurs following intestinal injury induced by partial colonic obstruction via ligation. Coupling between SGCs increased 18-fold, but coupling between neurons or between neuron and SGCs was not observed. The excitability of neurons projecting to the colon was significantly increased as firing threshold decreased by more than 40 percent, the resting potential was depolarized by 4-6 mV, the number of spontaneous firing neurons increased eight-fold, and the number of neurons with subthreshold voltage oscillations increased over three-fold. The pain threshold to abdominal stimulation decreased by 70.2 percent. These data suggest that augmented gap junctions and increased neuronal excitability contribute to the pain behavior. Glial plasticity and neuronal hyperexcitability are further demonstrated following CFA injection in the hind paw. There was a 38 percent decrease in the threshold for firing an action potential in DRG neurons after two weeks. Injection of Lucifer yellow into SGCs revealed that coupling by gap junctions among SGCs surrounding adjacent neurons increased several-fold. In SGCs enveloping neurons that project into the inflamed paw this effect was even more enhanced. Inter-neuronal coupling was augmented as well. Pain threshold in the injected paw decreased, and this decrease was prevented by intraperitoneal injection of carbenoxolone. The results show that augmented glial coupling is one of the major events occurring in DRG following inflammation, nerve injury and intestinal injury. The elevation in pain threshold after carbenoxolone administration suggests that augmented intercellular coupling might contribute to chronic pain.

There are changes of glial cells and neurons in lumbar spinal cord in hyperalgesia induced by hindpaw subcutaneous formalin injection in rats. Qin et al. (2006) showed that Fos/NeuN-IR neurons, GFAP-IR astrocytes and OX42-IR microglia were distributed in dorsal horn of lumbar spinal cord, predominantly in the superficial layer. Many heterotypic gap junctions, consisting of Cx43-IR on the side of astrocytic process and Cx32-IR on the side of neuronal dendrite, were revealed by immunoelectron microscopy in the superficial layer of dorsal horn. The number of herotypic gap junctions was significantly increased in the experimental rats compared to controls. Intrathecal carbenoxolone or fluorocitrate prolonged the paw withdrawal thermal latency. Thus heterotypic gap junctions between spinal astrocytes and neurons may play an important role in the genesis of hyperalgesia.

The role of gap junction protein connexin 37 in neuropathic hypersensitivity is also studied in sciatic nerve following peripheral nerve injury. Lin et al. (2002) showed thermal hyperalgesia and increased connexin 37 mRNA levels proximally and distally in rat sciatic nerves after injury. Sciatic nerve connexin 37 mRNA increases were proportional to the extent of thermal hyperalgesia. In contrast, skin, muscle and lumbar spinal cord connexin 37 mRNA showed no significant changes. Neuropathic pain relief correlated with downregulation of connexin 37 mRNA. These results indicate that upregulation of connexin 37 mRNA following sciatic nerve injury correlates with subsequent thermal hyperalgesia and that gap junctions in neurons may contribute to the hyperexcitability following peripheral nerve injury.

Taken together, there is an emerging scheme of cellular mechanisms of pain development and maintenance that involve primary afferent neurons and satellite cells in the dorsal root ganglia and trigeminal ganglia, neurons, astrocytes and microglia in the dorsal horn of the spinal cord and trigeminal nucleus of the brainstem. Gap junctions between glial cells, neurons and possibly inflammatory cells play a central role in pain processing pathways that involve neurotransmitters (such as Substance P and glutamate), receptors and channels (such as NMDA receptors), proinflammatory cytokines (such as IL-1 and IL-6), and intracellular enzymatic signaling molecules (such as PKC, IP3, phospholipase C and phospholipase A2). There are similar glial and neuronal changes between visceral and somatic pain models. A better understanding of the pain signaling pathways will help to identify new therapeutic targets and strategies in the future.

How I Do It
Stellate Ganglion Block

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The most widely practiced approach to stellate ganglion block (SGB) is the paratracheal approach, in which the needle is inserted toward the prominent anterior tubercle of cervical sixth vertebra (Chassaignac's tubercle). However, this landmark is actually in proximity to the middle cervical ganglion instead of the stellate ganglion, which is located opposite the neck of first rib [Figure 1].[1]

Anatomy

The stellate ganglion, formed by fusion of the inferior cervical and first thoracic ganglion, is located adjacent to the neck of the first rib, lateral to the longus colli muscle and posterior to the vertebral artery [Figure 1]. The post-ganglionic fibers are sent from the stellate ganglion to the cervical nerves (seventh and eighth) and first thoracic nerve to provide sympathetic innervation to the upper limbs.[1,2] The preganglionic fibers of the head and neck region continue to travel cephalad to the superior and middle cervical ganglion through the cervical sympathetic trunk (CST), which is covered by the posterior fascia of the carotid sheath anteriorly and lies between the prevertebral and alar fascia posteriorly,[3,4] in the so-called "prevertebral interlaminar space."[5]

Why do we need to consider an ultrasound-guided technique?

Ultrasound offers a number of advantages over the conventional approach with or without fluoroscopy guidance.

1. Risk of missing the target:

The breadth (cephalo-caudal distance) of Chassaignac's tubercle can be as small as 6mm [Figure 1].[6] Thus, it can be easily missed with needle advancement with the conventional technique. A consequence of this is potential puncture of the vertebral artery or nerve root, which is usually protected by the anterior tubercle of C6. However, once the needle is in contact with the bone, the vertebral artery can still be at risk. The vertebral artery usually ascends and enters the foramen in the transverse process of C6 vertebra. Unfortunately, this may only apply in 90 percent of our patients, and the vertebral artery may enter at the transverse process of C4 or C5 in 10 percent of patients.[7] Although contrast injection in the fluoroscopy-guided technique helps to avoid inadvertent injection of local anesthetic into this artery, the intravascular injection can be recognized only *after* the artery has been punctured. A modified fluoroscopy-guided oblique approach may minimize the risk of vertebral artery puncture as the needle is directed to the junction of the uncinate process and the vertebral body.[8]

In contrast, the target for the ultrasound-guided technique is the prevertebral fascia (see below), and ultrasound allows real-time needle advancement so that the practitioner can visualize the needle entry to the target soft tissue.

2. Risk of esophagus and vascular injury along the needle path:

Ultrasound is far better than fluoroscopy for visualization of soft tissue. The esophagus is often seen deviated from the midline and lies ventral to the medial part of the transverse process, which is part of the needle path [Figure 2a].[9] Mediastinitis can result especially if the patient has an unrecognized diverticulum.[10] Moreover, this probably is the cause of the "foreign body" sensation that is often attributed to the blockade of the external laryngeal branch of superior laryngeal nerve or recurrent laryngeal nerve.

Certain arteries, especially the inferior thyroidal artery, can be seen passing in front of the prevertebral fascia right in the needle path [Figure 2b]. The consequence of not recognizing this variation will be the formation of hematoma. As a matter of fact, hematoma was fairly commonly encountered (25 percent) in the first case series comparing ultrasound-guided with the "blind" injection technique.[11] The consequence of a larger hematoma can be life-threatening, as demonstrated by a review of those patients with retropharyngeal hematoma following stellate ganglion block.[12]

3. Suprafascial or subfascial injection:

Fluoroscopy relies on a surrogate landmark (C6 transverse process) as the target. The technique involves directing the needle to the bone and withdrawing the needle. The spread of solution following "bone contact and needle withdrawal" has been studied, and the injectate spreads anterior to the prevertebral fascia and in the paratracheal space in most of the patients, without much caudal spread.[13] It has been suggested that subfascial injection results in more caudal spread, higher rate of sympathetic block of the upper limb and lower risk of hoarseness.[14,15] Given the anatomical position of the CST, the ideal location is in between the two lamina of the prevertebral fascia.

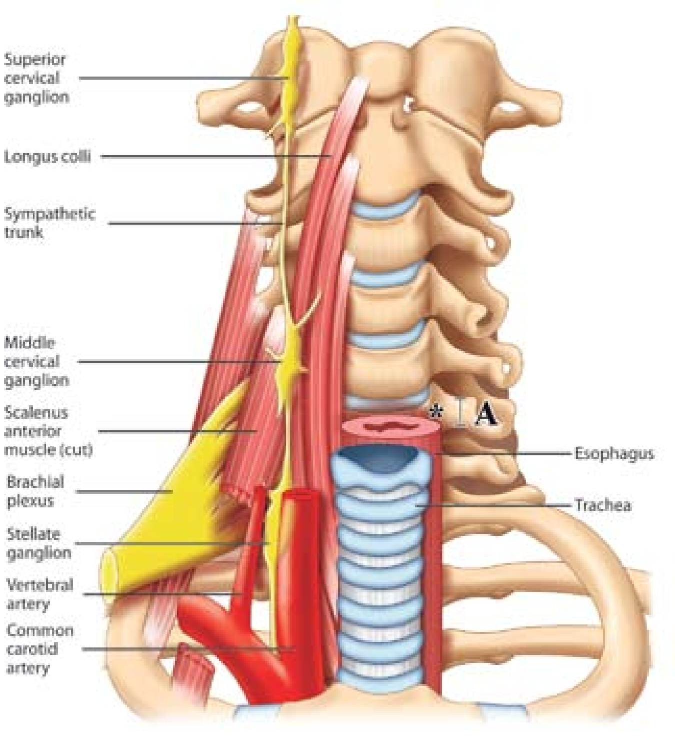
Ultrasound-guided scanning and injection technique

The patient is placed in the supine position with the neck in slight extension. A high-frequency linear transducer (6-13 MHz) is placed at the level of C6 to allow cross-sectional visualization of anatomic structures, including the transverse process and anterior tubercle of C6, longus colli muscle and prevertebral fascia, carotid artery and thyroid gland [Figure 2c, d, e]. A pre-scan is important in planning the path of needle insertion as the presence of the esophagus and the inferior thyroidal artery[16] may obviate the needle insertion path between the carotid artery and trachea. In that situation, the needle may be inserted lateral to the carotid artery, which is the author's preferred route.

The tip of the needle is directed to the prevertebral fascia superficial to the longus colli [Figure 2e]. A total of 5mL of local anesthetic is injected. Visualization of the spread of injectate under real-time scanning is important, as the absence of this may suggest intravascular injection.

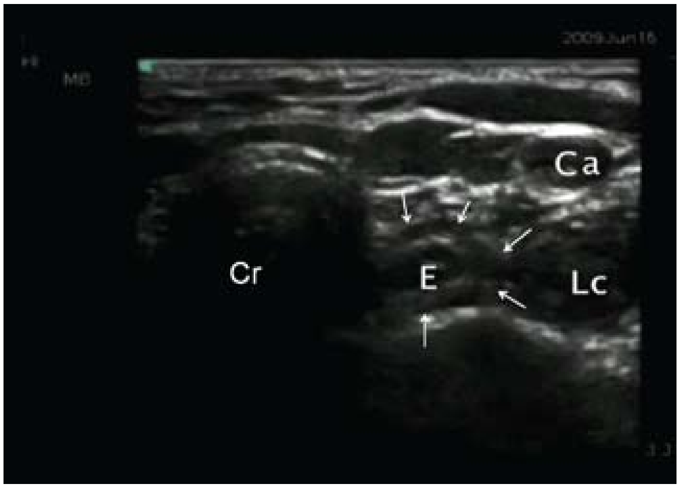
When advancing the needle from the lateral aspect, the best interval is between the carotid artery and the tip of the anterior tubercle. This needle path will avoid hitting the cervical nerve root. The internal jugular vein can be visualized by decreasing the probe pressure and avoided by "pushing" the way with the needle.

Figure 1

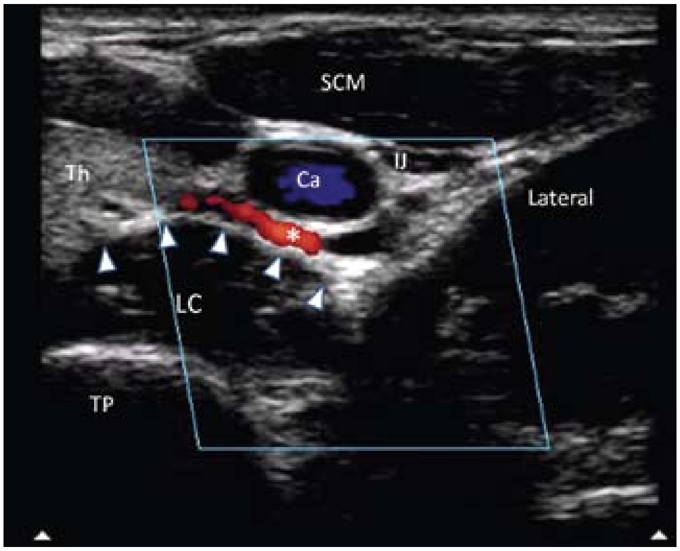


Prevertebral region of the neck. The target site for needle insertion in the classical approach is marked as *. The breadth of the transverse process is marked as A. Reproduced with permission from USRA (usra.ca).

Figure 2



2a. Ultrasonographic image of neck at C6 showing the deviation of esophagus (outlined by line arrows).



2b. Ultrasonographic image with color Doppler. The inferior thyroidal artery was indicated with *; the prevertebral fascia is marked by solid arrowheads.

ABBREVIATIONS:

C6-sixth cervical vertebra; **Ca**-carotid artery; **IJ**-internal jugular vein; **SCM**-sternocleidomastoid muscle; **Th**-thyroid; **LC**-longus colli muscle; **E**-esophagus; **Tp**- transverse process; **AT**- anterior tubercle; **Cr**-cricoid; **Med**-medial. *Reproduced with permission from USRA.*

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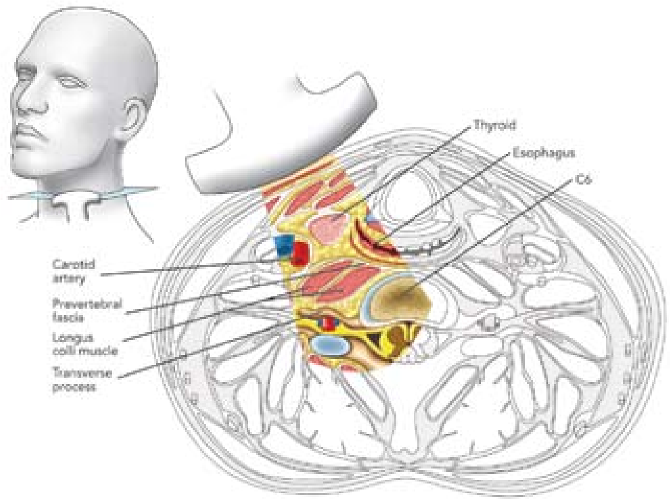
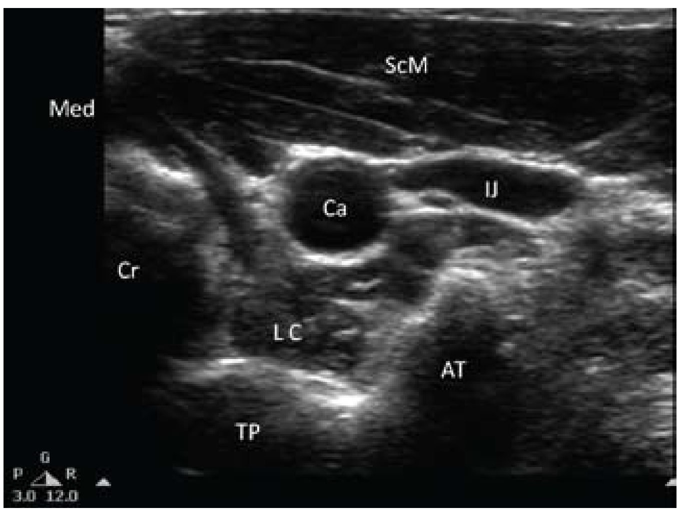


2c. Cross section of the neck at the sixth cervical vertebral level correlating with the ultrasonographic image.



2d. Ultrasonographic image of neck at C6.

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Commentary:

The lower cervical sympathetic chain is situated in a compact area in the anterior neck surrounded by many vital soft tissue structures that are not readily seen by fluoroscopy. This makes the case for the use of an ultrasound guided technique. Ultrasound is superior in identifying soft tissue structures, mainly the esophagus, nerve roots, and commonly and uncommonly encountered arteries.[1]

While most of practitioners use the out-of-plane approach in the supine position, others advocate the use of in-plane approach in the lateral decubitus.[2] *Both approaches are equal. The take-home message is the need to perform a scout scan first in order that one can be familiar with the relevant anatomy of the area of interest and plan accordingly for a safe path for the needle whether in-plane or out-of-plane.*

- Samer Narouze, M.D., M.Sc.

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2e (left). Ultrasonographic image of the neck at C6 as in Figure 2d following injection of local anesthetic. The needle is indicated by solid arrows and the local anesthetic is outlined by the line arrows.

CASTING CALL!

It is said that everyone will get their 15 minutes of fame at some point in their lives. This year, the ASRA Resident Section Committee (RSC) would like to give you those 15 minutes! We'd like to make you a movie star! While we can't promise that you'll actually have your name in lights, we can promise that you will be contributing to interventional pain education for years to come. The goal of the project is to create comprehensive educational materials for interventional pain procedures that will be used for pain physicians in training. So here is what you have to do:

1. Pick a faculty mentor who is also a member of ASRA.
2. Decide on a specific pain intervention.
3. Create a video and a poster of the intervention.
   - A. The video, which should be five minutes or less in length, should adequately demonstrate the conventional procedures/protocol for the specific intervention. All patient identifiers should be removed.
   - B. The poster should provide a brief history of the procedure, indications and contraindications, technique, complications and references.

Jessica Jameson, M.D.
CA-1, University of Iowa Hospitals and Clinics
ASRA RSC Member-at-Large

The deadline for submission is August 10, 2010. All submissions will become property of ASRA and may be posted on educational Web sites for future use. Submitted videos will be posted for viewing and voting for a period of four weeks. After voting is complete, the authors of the top five videos will be notified. All posters and videos will be on display during designated times at the fall Pain Medicine meeting on November 18-21, 2010 in Phoenix, Arizona. Authors must be present at the assigned time of viewing. The top five videos will be formally presented by the authors during a final judging session, after which the authors of the top three videos will receive a monetary prize to be presented during an awards ceremony. So if you are fairly certain that appearing on "The Bachelor" or "American Idol" is just not in your future, then this is your chance! Show us your stuff!

American Society of Regional Anesthesia and Pain Medicine
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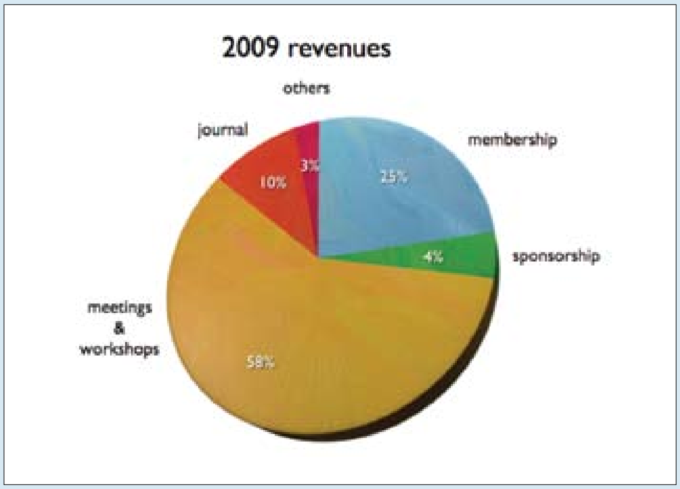
Park Ridge, IL 60068-2573

President's Message
ASRA Strategic Plan Development and Implementation



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to further strengthen ASRA's membership, finance and organizational structure.

The future is bright and exciting for ASRA. I hope that our new educational opportunities will enrich member value. I also hope that ASRA will remain your trusted source of education and research in pain medicine and regional anesthesia. If you have new ideas that can further improve our society, please write to me at **president@asra.com**.