Regional Anesthesia

vs

AMBULATORY SURGERY

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Responsabile Servizio Anestesia
Loco-regionale e Terapia del dolore

IRCCS Policlinico “SAN DONATO”
San Donato Milanese
ESRA Academy Chairman
last twenty years:
surgical procedures in Day Surgery grown more

Day Surgery

- Effective
-- Cost efficient
--- Safe

when selection criteria are appropriate

Choice of patient

patients ASA I and II, but also ASA III are suitable
Planning:

Discharge criteria

Modern anesthesiology techniques

Appropriate patient selection

Modern surgical techniques

Follow up

An overview of anaesthesia and patient selection for day surgery; Matthew Molyneux, Nia Griffith; aNaeSThesia aND INTeNSIve caRe MeDIcIne 8:3
Selection criteria

Arbitrary limits

AGE
- No limitations

ASA STATUS
- ASA 1-3 unless there are other complications
- Some ASA 4 (local anesthesia)

Obesity
- No limitations unless there are other coexisting pathologies
Selection criteria

Social factors

- The **carer** should be a responsible adult and a relative, trusted friend or established carer

- Both patient and carer must be able to understand instructions provided by healthcare staff

- The carer **must know the circumstances under which the unit should be contacted** and also know who to contact

- The patient should be cared for at **home**, which **should ideally be less than 1 hour away from the unit**

- A telephone and toilet facilities should be available and easily accessible at the patient’s home

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Day surgery for all: Updated selection criteria; Ian Smith; Current Anesthesia & Critical Care; 2007 Elsevier

An overview of anaesthesia and patient selection for day surgery; Matthew Molyneux, Nia Griffith; aNaeSThesIa aND INTeNsIVe caRe MeDIcIne 8:3
Selection criteria

Medical conditions & comorbidity

Optimized control & treatment before surgery

Exercise tolerance
(ability to climb at least one flight of stairs without any symptoms)

An overview of anaesthesia and patient selection for day surgery; Matthew Molyneux, Nia Griffith; Anaesthesia and Intensive Care Medicine 8:3
Excluding or delaying criteria

**Absolute cardiovascular contraindications:**
- Myocardial infarction within the past 6 months
- Angina causing marked limitation in daily activity
- Congestive cardiac failure
- Symptomatic valvular disease
- Cardiomyopathy
- Tachyarrhythmias
- Second- or third-degree heart block

**Relative cardiovascular contraindications:**
- Myocardial infarction more than 6 months previously
- Untreated mild angina
- High blood pressure (systolic >180 mmHg or diastolic >110 mmHg)
- Cerebrovascular accident in the past 6 months
- Controlled atrial fibrillation
- Previous deep vein thrombosis or pulmonary embolism

**Hepatic**
- Any active hepatobiliary disease or compromise

**Neurological disease**
- Patients with neuromuscular disorders, myasthenia gravis, or miotonia are not suitable.

**Renal system**
- Patients undergoing haemodialysis or chronic ambulatory peritoneal dialysis generally are not suitable because of practical difficulties and comorbidity. However, some simple procedures can be undertaken.

**Respiratory and airway disease**
- Asthma or COPD requiring chronic medication, or with acute exacerbation and progression within past 6 months
- History of major airway surgery or unusual airway anatomy, upper and/or lower airway tumor or obstruction
- History of chronic respiratory distress requiring home ventilatory assistance or monitoring

**Poor control, recent exacerbation of symptoms or severe exercise limitation**
Limitations:
- No valuation of pain, nausea and vomit
- Difficult achievement of minimal score for discharge

Limitations:
- Difficult achievement of minimal score for discharge

Wake Score was constructed from the basic 10-point Modified Aldrete Score, not only changing the semantics within several of the scored criteria parameters, but also incorporating ‘Zero Tolerance Criteria’ that address pain, PONV, shivering, pruritus, and orthostatic symptoms.
<table>
<thead>
<tr>
<th>Physical activity</th>
<th>Modified Aldrete Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to move all extremities on command</td>
<td>2</td>
</tr>
<tr>
<td>Some weakness in movement of extremities</td>
<td>1</td>
</tr>
<tr>
<td>Unable to voluntarily move extremities</td>
<td>0</td>
</tr>
</tbody>
</table>

### Differences

<table>
<thead>
<tr>
<th>Postoperative pain assessment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None, or mild discomfort</td>
<td>2</td>
</tr>
<tr>
<td>Moderate to severe pain controlled with \textit{intravenous} analgesics</td>
<td>1</td>
</tr>
<tr>
<td>Persistent severe pain</td>
<td>0</td>
</tr>
<tr>
<td>Postoperative emetic symptoms</td>
<td></td>
</tr>
<tr>
<td>None, or mild nausea with no active vomiting</td>
<td>2</td>
</tr>
<tr>
<td>Transient vomiting or retching</td>
<td>1</td>
</tr>
<tr>
<td>Persistent moderate to severe nausea and vomiting</td>
<td>0</td>
</tr>
<tr>
<td>Total possible score</td>
<td>14</td>
</tr>
</tbody>
</table>

### Wake Score
Wake score

<table>
<thead>
<tr>
<th>Movement (LE: lower extremity; UE: upper extremity)</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purposeful movement of (at least) 1 LE and 1 UE</td>
<td>2</td>
</tr>
<tr>
<td>Purposeful movement of at least 1 UE (and neither LE)</td>
<td>1</td>
</tr>
<tr>
<td>No purposeful movement</td>
<td>0</td>
</tr>
</tbody>
</table>

Clinical correlations:

- An isobaric spinal would decrease the likelihood of achieving a score of ‘2’ compared with an ipsilateral hyperbaric spinal.
- Prolonged emergence time from GA with volatile anesthetic (+/- neuromuscular blocking drugs) would increase the likelihood of achieving a score of ‘0’ as opposed to a ‘1’ or ‘2’.
- Interscalene block patients with blocks designed to provide overnight anesthesia-analgesia would not achieve an Aldrete parameter score of 2, as only 3 of 4 extremities would achieve purposeful movement.
Table 2. ‘Zero Tolerance Criteria’ for WAKE score phase 1 postanesthesia care unit bypass (outpatient surgery) or fast-track phase 1 postanesthesia care unit discharge (inpatient or outpatient surgery)

<table>
<thead>
<tr>
<th>1</th>
<th>Pain as appropriately adjusted to patients’ baseline pain scores (with movement) at the surgical site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical correlations:</td>
<td>Multimodal analgesia is logically employed on a routine basis, emphasizing non-sedative analgescics such as acetaminophen, Type-2 cyclooxygenase inhibitors or nonsteroidal anti-inflammatory drugs, and N-methyl-D-aspartate antagonists (low-dose intravenous ketamine, and/or perioperative oral dextromethorphan, and/or intravenous magnesium)</td>
</tr>
<tr>
<td>Preoperative PNBs render patients as more likely to meet this criterion than would postoperative systemic opioids for rescue analgesia</td>
<td></td>
</tr>
<tr>
<td>If a patient has a preoperative baseline pain score with movement of 8 out of 10, in the absence of a PNB, it is highly likely that the patient will meet PACU Bypass/discharge criteria on all other parameters and be successfully discharged with a postoperative pain score with movement of 10 out of 10, by the nature of the limited analog scale available to choose from given the high preoperative pain score. However, in the presence of PNBs covering all relevant nerve distributions (e.g., femoral and sciatic for total knee replacement), this would seem much less likely</td>
<td></td>
</tr>
<tr>
<td>Buprenorphine added to PNBs will carry likely much greater analgesic duration than would an equivalent systemic dose of morphine or other opioid.</td>
<td></td>
</tr>
<tr>
<td>Maintenance anesthesia with propofol avoids the hyperalgesic effects of volatile anesthetics</td>
<td></td>
</tr>
<tr>
<td>Spinal/regional anesthesia is likely far less hyperalgesic than is anesthesia with volatile anesthetics and short-acting opioids</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>PONV as a ‘yes-no’ assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical correlations:</td>
<td>Preoperative oral perphenazine is less sedating than intraoperative prochlorperazine, and is similarly non-sedating as ondansetron and dexamethasone</td>
</tr>
<tr>
<td>Systemic clonidine (e.g., as a nerve block adjuvant) may have antiemetic benefits</td>
<td></td>
</tr>
<tr>
<td>Volatile anesthetics and systemic opioids are emetogenic</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Shivering, pruritus, and/or orthostatic symptoms (lightheadedness and/or hypotension in the sitting position)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical correlations:</td>
<td>Ipsilateral hyperbaric spinal (comprised of a lower overall total intrathecal dose than would an isobaric bilateral spinal) may be less likely to create lightheadedness in the sitting position when compared with isobaric spinal anesthesia, by the time surgery is finished</td>
</tr>
<tr>
<td>Systemic clonidine (e.g., added to PNBs) and phenylephrine infusions (commonly coadministered during spinal anesthesia) have favorable antishivering and/or thermoregulatory benefits</td>
<td></td>
</tr>
<tr>
<td>Volatile anesthetics disrupt thermoregulation more so than does regional anesthesia</td>
<td></td>
</tr>
<tr>
<td>Systemic opioids commonly cause pruritus</td>
<td></td>
</tr>
</tbody>
</table>
Post Anesthetic Discharge Scoring System (PADDS)

- Stable vital signs for at least one hour
- Alert and oriented to time, place, and person
- No excessive pain, bleeding, or nausea
- Ability to dress and walk with assistance
- Discharged home with a vested adult who will remain with the patient overnight
- Written and verbal instructions outlining diet, activity, medications, and follow-up appointments provided
- A contact person and circumstances that warrant seeking the assistance of a health care professional clearly outlined
- Voiding before discharge not mandatory, unless specifically noted by physician (ie, urological procedure, rectal surgery, history of urinary retention)
- Tolerating oral fluids not mandatory, unless specified by physician (ie, patient is diabetic, frail, and/or elderly; not able to tolerate an extended period of NPO status)
BAD (British Association of Day Surgery) concorded that procedures for ambularoty surgery should:

- be short (maximum 2 hours)
- lead to minimal physiological insult
- not cause excessive blood loss or fluid shifts
- not be associated with serious postoperative complications
- involve only pain that can be controlled with oral analgesics.
Surgery

Breast surgery
Herniorrhaphy
Abdominal wall surgery
Endovascular abdominal aortic aneurisma repair

Gynecological surgery
Herniorrhaphy
Pediatric patients
Laparoscopic procedures

Upper extremity surgery
Hemi- and total arthroplasty
Arthroscopy
Subacromial decompression
Instability of the rotator cuff
Frozen shoulder
Hand surgery

Lower abdominal surgery

Lower extremity surgery
Hip surgery:
Arthroplasty
Arthroscopy
Knee surgery
Lower leg and ankle surgery

Regional anesthesia and ambulatory surgery
Jeffrey G. Moorea, Scott M. Rossa, and Brian A. Williamsa; 2013 Wolters Kluwer Health | Lippincott Williams & Wilkins
Types of RA

Advantage
- Rapid onset
- Minimal expense
- Easy administration
- Better postoperative analgesia

Limitations
- Transient neurologic symptoms
- Urinary retention
- Prolonged block

Solutions
Local anesthetic selection:
- Chloroprocaine
- Ultra-low-doses of bupivacaine
- Unilateral spinal anesthesia

-Catheter placement
- Long lasting postoperative analgesia
Types of RA

Advantages:
- May avoid General Anesthesia
- Better postoperative pain control
- Decreased incidence of PONV
- Less narcotic side effects/sedation
- Faster discharge readiness

- Single Shot
- Continuous Catheter

- Evolved in ultrasound-guided regional anesthesia (with or without separate nerve stimulation)
Principal PNB

Nerve block technique

- **Upper Limb - brachial plexus blocks**
  - Axillary
  - Infracavicular
  - Supraclavicular
  - Intercalene

- **Upper limb peripheral nerve blocks**
  - Radial nerve
  - Median nerve
  - Ulnar nerve

- **Lower Limb**
  - Femoral nerve
  - Popliteal sciatic nerve
  - Saphenous nerve

- **Trunk Blocks**
  - Transversus Abdominus Plane
1. Avoid use of systemic analgesics
2. Minor waste burden
3. Adequate analgesia
4. Minor alteration of respiratory, hemodynamic, metabolic, hemostasis
5. Avoid intubation
FACTORS INFLUENCING S.A. OUTCOME IN AMBULATORY PATIENTS

- Technique
- Choice of the patient
- Postop management
- Drugs
- Monitoring
- Complications
• age/status of the patient
• positioning
• hypotension

STERILE FIELD

SA technique

LANDMARKS
C7 sporgente alla base del collo
T3 spina della scapola
T7 apice inferiore della scapola
L4 cresta iliaca
S2 spina iliaca posteriore superiore
TARGET: SUBARACHNOID SPACE
Ambulatory Spinal anesthesia management is effective when:

- DEVICE CHECKINGS
- MOTOR-SENSORY DIFFERENTIAL ACTING DRUG
- NEUROMONITORING POSTOP
- POSTOP PAIN CONTROL BY PCA
- HEMODYNAMICS
- RESPIRATORY
- URINARY - GI
- **EARLY RECOVERY** and close MONITORING
Technical problems related to primary pathology

- Scoliosis, kyphosis
- Neuromuscular disorders
- Tumors
- Trauma
- Rx, NMR, CAT?
LowBack surgery

Arthrosis
Side effects-complications

- Technical problems
- Nausea and vomiting
- Urinary retention
- Backache
- Post-dural puncture headache (pdph)
- Transient radicular irritation
- Prolonged or permanent neurologic deficit
- Hemodynamic impairment, hypotension, cardiac arrest
- Epidural hematoma
- Thromboembolic prophylaxis (LMWH) – ASA guidelines
EPIDURAL HEMATOMA: SPINAL REFLEX MONITORING = H reflex

- INFLUENCED BY:
  - Halogenates
  - Hypotermia
  - Hypotension

- hematoma
- ischemia
Prilocaine hydrochloride 2% hyperbaric (Prilotekal®)

- Local Anaesthetic with a similar duration of action to Lidocaine
- New hyperbaric formulation of Prilocaine for use in spinal anaesthesia
- The duration of action is dose-dependent. A dose of 40 to 60mg would be expected to provide extension of sensory blockade required T10 for approximately 100 to 130 minutes. As a general guideline, the maximum recommended dose is 80 mg of Prilocaine hydrochloride.
Secondary amine
Advantages : degradation and toxicity:
- The highest clearance of all the local amino – starch anesthetic drugs.
- Its clearance is twice the lidocaine clearance.
- Higher volume of distribution.
- Plasmatic concentration is lower than lidocaine and mepivacaine concentrations.
- Toxic plasmatic concentrations are rare.
- Maximum dose is twice the lidocaine dose.
- *Intermediate duration, power and fast onset.*
Pharmacodynamic

Mechanism of Action:
Block of the voltage-dependent Na⁺ - channels on nerve cell membrane; action on K⁺ and Ca⁺ - channels.
The block of the channels decreases the impulse propagation in nerve fibers and consequent complete functional block.
Effects on CNS and cardiovascular system

- They are caused by systemic absorption.
- With regard to the cardiovascular system, at therapeutic blood concentrations are described changes in cardiac conduction, excitability, refractoriness, contractility, and peripheral vascular resistance.
- At toxic blood concentrations depression of cardiac conduction and myocardial excitability may occur, leading to AV block, ventricular arrhythmias, ACC. The myocardium-depression and the peripheral vasodilation may also lead to a concomitant reduction in cardiac output and hypotension.
- Systemic effects of local anesthetics on the CNS can be irritative and / or depressive. Stimulation effects include restlessness, tremors, chills to seizures. The depressant effects include impairment of consciousness up to coma, cardiorespiratory arrest. Complications of depressive CNS excitatory effects may occur without any precedent, given that the primary neurological effect of local anesthetics is depressive on the spinal cord and the cerebral centers.
Prilo vs lido/mepiva

- the plasma concentration of toxic prilocaine is higher (almost double compared to lidocaine and 50% more than the mepivacaine)
- higher safety level, even in case of erroneously higher dosages (2.3).
- incidence of TNS:
- the greater safety of bupivacaine compared to lidocaine and prilocaine
- in most studies the incidence of TNS was statistically significantly lower when drugs as prilocaine or bupivacaine were used, with a relative risk higher for lidocaine of 5.5 and 6.7 respectively.
Meta-hemoglobinemia

The formation of meta-hemoglobin (MHb) after spinal anesthesia with prilocaine is due to the powerful oxidant action of its metabolites σ-toluidine and nitrous toluidine. The amount of MHb is in relation to the dose of the drug used. After a dose of 300-600 mg can be detected a concentration of about 15% MHb: these levels are considered safe for the general population but can be dangerous for patients with anemia or with compromised cardiopulmonary function (6).

... This dosage is far above the dose used for spinal anesthesia (60-80mg). A study tried to define the risk factors associated with increased formation of MHb and the patients at risk: patients undergoing peripheral nerve block were receiving 400 mg of prilocaine 2% or 300-400 mg of prilocaine 1%. The largest concentrations of MHb were observed in younger patients treated with higher doses. Female gender and high doses in low volumes was significantly associated with MHb (6).
Let's enter in the heart of the matter...

- Prilocaine: relatively new drug, approved in July 2011, but only available in Italy by the end of December 2011.
- The scientific literature concerning prilocaine agrees in affirming its equi-power compared to other medium duration of action local anesthetics. Several studies confirm its greater safety and they highlight its speed during the onset phase and especially during the remission phase of the sensory-motor block, presenting prilocaine as the ideal drug for outpatient procedures or procedures that last no more than 60-90 minutes.
What does the literature say?

- Several clinical studies have been conducted to compare the different local anesthetic drugs used in loco-regional anesthesia.
- In most of the studies early hemodynamic effects of intrathecal administration of local anesthetics in obstetrics were assessed. The effects described in these case studies, however, can be influenced by the pregnancy paraphysiological conditions, for example: the compression of the inferior vena cava by the fetus with reduction of the venous return from the lower body district and the reduction of cardiac pre-load.
- Studies in patients undergoing orthopedic surgery and urology evaluate the effectiveness of different drugs, with few data on the hemodynamic changes during anesthesia (measured without the use of invasive monitoring pressure or precise hemodynamic evaluation, anyway)
OUR FINDINGS...

- The aim of our study was to evaluate, in patients undergoing spinal anesthesia with hyperbaric prilocaine 2%, the early hemodynamic stability, defined by a change in heart rate less than 10% and maintenance of Cardiac Index 2.5-4 L / min / kg.

- Hemodynamic stability defined by the absence of:
  - Reduction of baseline blood pressure less than 30%
  - A change in heart rate less than 10%
  - Cardiac Index in the normal range 2.5-4 L / min / kg
  - Stroke Volume Variation ≤ 15%.

- At the same time: the effectiveness of the anesthetic block and the block level reached by the drug (BROMAGE scale).
MATERIALS

- Vigileo / FloTrac in patients undergoing spinal anesthesia with prilocaine.
- 20 evaluated patients undergoing major orthopedic surgery of the lower limbs.
- Primary end points:
  - assessment of hemodynamic stability through invasive monitoring of BP, IC, SVV
  - Standard monitoring of heart rate (HR) and peripheral oxygen saturation (O2 saturation).
- Secondary end points:
  - effectiveness of anesthesia
  - level reached
  - ONSET speed (measured as sensory block, lack of response to pin-prick test at a level T12).
Monitored hemodynamic parameters

- Blood Pressure (BP) invasive via radial artery catheter
- Cardiac Index (CI) via FloTrac / Vigileo;
- Stroke Volume Variation (SVV) via FloTrac / Vigileo;
- Heart rate (HR) by ECG.
- For the evaluation of the secondary end point, dermatomal level of analgesia achieved, we used the *pin-prick test* to determine the level of cutaneous anesthesia.
RESULTS

HEART RATE

The heart rate has been stable during the study period, with a statistically significant data at time 3 ($p = 0.03$) (Figure 2). The maximum variation in the HR was 6% at T3, in line with the data reported in the literature.

Fig. 2: Heart rate over time
It was possible to detect a statistical significance in the values of SBP between times 0 and 1 (between basal and 2 minutes after the anesthesia) with a $p = 0.011$, and between times 1 and 2 (so between 2 and 4 min after the execution of anesthesia) with a $p = 0.044$ (figure 3).

The maximum percentage variation from baseline has occurred at T6, 12 minutes after the spinal anesthesia, with a variation of 23%. This value remained within the start parameters of our study which defined a reduction of pressure as clinically significant if more than 30% compared to baseline.

Medium blood pressure and diastolic blood pressure did not provide statistically significant values.

Fig.3: SBP $\rightarrow$ average vs. time.
Fig. 4: Changes in Cardiac Index over time.

Non vi stono state variazioni statisticamente significative per quanto riguarda l'indice cardiaco. Al tempo 5, quindi 10 minuti dopo l'esecuzione dell'anestesia, si è registrata la massima variazione percentuale che è stata dell' 11% in riduzione (da 2,91 a 2,61, VN 2,5 - 4 L/min/m²).
In the analysis of data related to stroke volume variation (SVV) has been shown a statistically significant value at time 2 (4 minutes after the anesthesia) compared to baseline ($p = 0.034$). The maximum percentage variation was detected in this very measurement with a 23% increase from baseline.

Fig. 5 Variation SVV with over time
Concerning with the stroke volume (which we have maintained indexed for body weight) a data is found at the limits of statistical significance at time 6, with a p = 0.055 (Figure 6).

In correspondence of this data we have also the maximum percentage variation with a reduction of the SV by almost 15%.

Fig.6: Variation of Cardiac Output over time
MOTOR AND SENSITIVE BLOCK

The secondary end-point:

the speed of a complete motor block (Bromage score 3): > 50% of patients had a Bromage score of 2 at time 3 already, and over 75% at time 4. At time 5 99% of patients had a complete motor block.

Pin Prick test:

At T4 only 4 /17 patients had not reached that level yet; at T5 100% of patients had already achieved an effective level of anesthesia and analgesia.

If we look at the average level reached to every survey we see that already in T4 patients achieved an optimal level of analgesia and anesthesia
Sensitive block:

Pin Prick test level T12

- T4 = only 4/17 patients had not reached that level yet
- T5 = 100% of patients had achieved a degree of effective anesthesia and analgesia.

Fig. 7 Performance of sensory block in time
CONCLUSIONS

- The data collected show that prilocaine is a drug highly effective and extremely safe.

- Its safety from the hemodynamic point of view is shown by the values of the parameters that have never fallen below the level of security (both in absolute and percentage terms), showing a good stability of HR, SBP, SV and SVV. One interesting fact comes from the association between level of the block and reduction in blood pressure, regardless of the time.

- The effectiveness of prilocaine has been demonstrated by the fact that all patients studied have reached the complete motor block, and the majority of them in a time less than 10'.

- The level of the sensory block achieved was more than satisfactory, reaching in all patients the level of T12 in less than 10 'and the level T10 and over in maximum 12'.
CONCLUSIONS

- safe and effective use of prilocaine
- confirmation of performance characteristics
- Scarce, never clinical hemodynamic impact.
References


Hemodynamic effects of subdural 2% Prilocaine

**Background and Aims**

Hyperbaric 2% Prilocaine is a medium acting local anesthetic for spinal use. The aim of our study was to investigate hemodynamic effects of this local anesthetic recording invasive measurements of hemodynamic variables: arterial pressure, cardiac index, stroke volume variation, cardiac frequency. Meanwhile we evaluated its efficacy on sensory and motor block and speed onset.

**Methods**

Ethical committee approval obtained (January 21, 2012, Ethical Committee of ASL Milano 2). All patients received an arterial catheter placement in radial artery and were connected to Vigilieo/FloTrack system: basal parameters were recorded 5 minutes before anesthesia. After combined spinal-epidural anesthesia and subdural administration of the drug, hemodynamic parameters were recorded every 2 minutes, as well as level of sensory and motor block, for the first 12 minutes (total of 7 points of measurements).

**Results**

*No clinically significative hemodynamic events were recorded.* At 10 minutes Bromage 3 score was obtained in all patients, in 8 minutes skin analgesia level of T10 was reached by all patients.

**Conclusion**

*Prilocaine has demonstrated an optimal hemodynamic stability with no clinically significative hemodynamic effects recorded and good anesthetic efficacy, with fast and efficient sensory and motor block.*

**Bibliography:**

**Authors:**
Botticelli MM, Somenzi A, Matteazzi A, Cavalleri G, Grossi P.
Is it effective?

Despite RA presents numerous potential advantages over GA (CNB: ↓VAS score, ↓need of postanesthesia analgesia; PNB: PACU bypass, ↓VAS score, ↓need of postanesthesia analgesia, incidence of nausea, shorter PACU time, patient satisfaction)

None translates into shortened ASU (ambulatory surgery unit) time.

Anesthesia & Analgesia, volume 101(6), December 2005, pp 1634-1642
CONCLUSION

We know RA is better......but only......

...All the others have to present data.......