Rev Bras Anestesiol. 2016;66(1):63–71

REVISTA BRASILEIRA DE ANESTESIOLOGIA
Official Publication of the Brazilian Society of Anesthesiology
www.sba.com.br

REVIEW ARTICLE

Digital block with or without the addition of epinephrine in the anesthetic solution

Almiro dos Reis Júnior[a,b,c,*], **Denise Quinto**[a,b]

[a] *Serviço Médico de Anestesia (SMA), São Paulo, SP, Brazil*
[b] *Hospital Alemão Oswaldo Cruz, São Paulo, SP, Brazil*
[c] *Sociedade de Anestesiologia do Estado de São Paulo (Saesp), São Paulo, SP, Brazil*

Received 27 October 2013; accepted 3 December 2013
Available online 25 November 2015

KEYWORDS
Anesthesia, regional;
Local anesthetics, cocaine, lidocaine, bupivacaine, ropivacaine;
Surgery, fingers;
Ischemia, epinephrine

Abstract
Background and objectives: Review of various techniques for digital blocks with local anesthetic, with or without epinephrine.
Contents: Description of various procedures and comparison of results reported in the literature, mainly on latency and quality of anesthesia, details on vasoconstrictor effect of epinephrine, intraoperative bleeding, necessity of tourniquet use, duration of anesthesia and postoperative analgesia, blood flow and digital SpO_2 behavior, local and systemic complications, and also approaches and drugs to be used in certain situations of ischemia.
Conclusions: The advantages of adding epinephrine to the anesthetic solution are minor when compared to the risks of the procedure, and it seems dangerous to use a vasoconstrictor in the fingers, unless the safety of the technique and the possibility of discarding the tourniquet are definitely proven.

PALAVRAS-CHAVE
Anestesia, regional;
Anestésicos locais, cocaína, lidocaína, bupivacaína, ropivacaína;

Bloqueios em dedos de mãos com epinefrina incluída ou não nas soluções anestésicas

Resumo
Justificativa e objetivos: Revisão das diversas técnicas para bloqueios em dedos de mãos, com anestésico local associado ou não à epinefrina.
Conteúdo: São descritos os procedimentos usados e comparados os resultados obtidos na literatura, principalmente em relação a: latência e qualidade da anestesia, detalhes sobre o efeito vasoconstritor da epinefrina, sangramento intraoperatório, necessidade ou não do uso de torniquete, duração da anestesia e da analgesia pós-operatórias, comportamento do fluxo arterial e

* Corresponding author.
E-mail: almiroreisjr@uol.com.br (A. Reis Júnior).

http://dx.doi.org/10.1016/j.bjane.2013.12.004

Cirurgia,
dedos de mãos;
Isquemia,
epinefrina

da SpO_2 digitais, complicações locais e sistêmicas e, ainda, condutas e medicamentos a serem usados em determinadas situações de isquemia.
Conclusões: As vantagens da inclusão de epinefrina na solução anestésica são de pouca importância quando comparadas aos riscos do procedimento e parece perigoso usar o vasoconstritor em dedos de mão, a não ser que fiquem definitivamente comprovadas a inocuidade da técnica e a possibilidade do descarte do torniquete.

Introduction

Blockades are used in fingers for small surgical interventions, with or without the use of digital tourniquets, since the use of general anesthesia for such surgical procedures is of greater risks, unnecessary most of the time and far more expensive. However, due to the possibility of serious consequences, digital anesthetic blocks, particularly those with the use of tourniquet, should be done carefully and with good knowledge of the regional anatomy and its contraindications.

The latest national treaties of anesthesiology assess the subject in an extremely simplified form. So it seems to be the time to update it, as it is of interest not only to orthopedic surgeons, hand surgeons, and dermatologists specialize in nail disease processes, but also for anesthesiologists who should be aware of these subjects as they may be involved in cases of complications for having performed such anesthetic acts or just taken part in the surgery.

Digital anesthetic blocks consist fundamentally of local anesthetic deposition in the vicinity of nerves; to this end, first, major regional anatomical details should be well known (Fig. 1). The dorsal digital nerves derive from the radial and ulnar nerves, pass through the dorsolateral region of the fingers, and innervate almost all regions of fingers to its proximal joints, as the distal regions of the index, middle, and part of the ring fingers are innervated by the median nerve.[1–3] The median and ulnar nerves give rise to digital nerves that supply most of the palmar, adjacent side, ends of fingers, and nail bed regions; they are accompanied by blood vessels and pass through the ventrolateral regions of the fingers and the side of the flexor tendon sheaths.

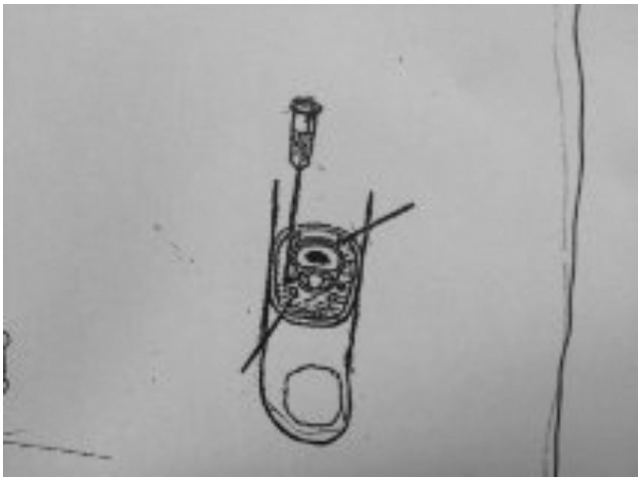

Figure 1 Cross section of the base of proximal phalanx of finger. Note the positioning of dorsal (right arrow) and ventral (left arrow) digital nerves and vessels. Also note the needle for these nerves blockade by dorsolateral route of finger base. Modified from Figures 10–17 (A) by Ref. 1.

Techniques for digital anesthetic blocks

First, one must know the contraindications for performing these anesthetic blockades. These are as follows: absolute, such as patient's refusal to undergo the procedure, peripheral vascular disease in the region, and infection next to the injection site. Relative, when it is absolutely necessary to test nerve function early in the postoperative period due to blockade establishment of sensory and motor conduction whenever this condition can mask the establishment of a postoperative compartment syndrome. And in a patient already with nerve damage or paresthesia, due to the always present possibility of causing nerve injury.[1–4] There are several techniques with minor modifications that vary from author to author.[1–3,5–9]

The subcutaneous block of palmar and dorsal digital nerves can be done by inserting a 25G and 16 mm needle at a point of the lateral region of the finger dorsal base for infiltration of the entire region (Fig. 2). Then, one of the finger side regions is punctured (Fig. 2), without pain, and advanced toward the palm and moved vertically to the side of the flexor tendon sheath until resistance is felt on palmar dermis or pressure on ''protective'' finger placed under the patient's finger and directly opposite to the needle path (Fig. 2). After it is withdrawal over 2–3 mm, 1 mL of the anesthetic solution is deposited under the skin on the palm side of the hand to anesthetize the palmar digital nerve and another 1 mL just under the needle entry point to block the dorsal digital nerve.[1] The same procedure must be reproduced on the other side. Some practitioners prefer the palmar region approach to enable the reduction of nerve and digital artery lacerations by the needle bevel; however, this area is much more sensitive and creates more discomfort to the patient and it is technically a bit more difficult to apply because the skin of that hand side is thicker.[2] Optionally, the injection can be done at the proximal region of the finger crease with the use of needle