THE NORTHERN HOSPITAL

DIGITAL NERVE BLOCK

"Jonah Cast Up by the Whale", oil on canvas, 1577, Jacopo Tintoretto,
Scuola Grande di San Rocco, Venice.

Yahweh spoke to the fish, which then vomited Jonah onto the dry land.

Jonah: 1-11

Now Yahweh ordained that a great fish should swallow Jonah, and Jonah remained in the belly of the fish for three days and three nights. From the belly of the fish, Jonah prayed to Yahweh his God, he said:

Out of my distress I cried to Yahweh
and he answered me,
from the belly of Sheol I cried out;
you heard my voice!

For you threw me into the deep,
into the heart of the seas,
and the floods closed around me….

The waters around me rose to my neck,
the deep was closing around me,
seaweed twining round my head
To the roots of the mountains
I sank into the underworld,
and its bars closed round me for ever

But you raised my life from the Pit…

Yahweh spoke to the fish, which then vomited Jonah onto the dry land.

Jonah: 1-11

It ain't necessarily so
no it ain't necessarily so
The things that you're liable
To read in the Bible,
It ain't necessarily so.

David was small But Oh my
David was small but oh my
He slew Goliath
Who lay down and dieth
David was small but oh my

Oh Jonah he lived in a whale
Oh Jonah he lived in a whale
That man made his home in
That fishes abdomen
Jonah he lived in a whale

To get into heaven, don't snap for no seven
Live clean forget your faults
I take the gospel whenever it's possible
But with a grain of salt

Little Moses was found in a stream
Little Moses was found in a stream
He floated on water
Till ole Pharaoh's daughter
Fished him, she says, from that stream

To get into heaven, don't snap for no seven
Live clean and have no faults
I take gospel whenever it's possible
But with a grain of salt

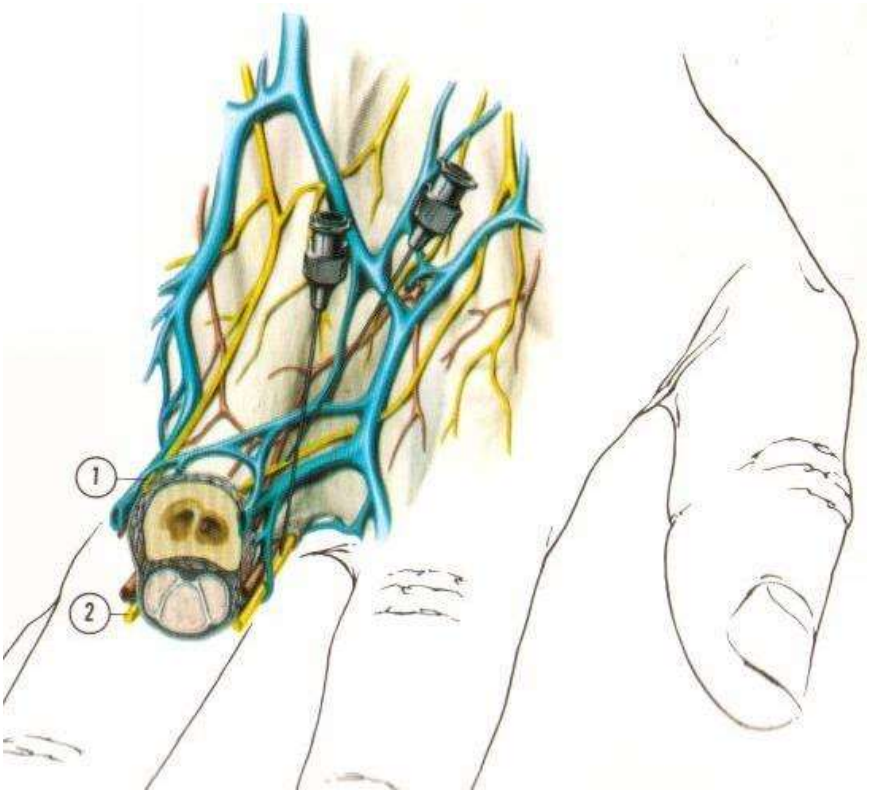
Methuselah lived 900 years
Methuselah lived 900 years
but Who calls that livin'
When no gal will give in
To no man what's 900 years

It ain't necessarily so
no it ain't necessarily so
The things that you're liable
To read in the Bible,
It ain't necessarily so.

"It Ain't Necessarily So" Music George Gershwin, original lyrics Ira Gershwin 1935.

For many years, unquestioned Gospel, told of the potential disasters of using dilute adrenaline (1:100,000 or more dilution) as an adjunct to lignocaine for local anaesthesia near end arteries, such as the digits. However a number of studies have not demonstrated any long term adverse outcomes with the use of dilute adrenaline in digital nerve blocks, on patients without pre-existing vascular disease and so the things that you're liable to read in textbooks on this issue.....ain't necessarily so!

DIGITAL NERVE BLOCK



1: Dorsal branch, 2: Ventral branch. [1]

Introduction

Digital nerve block is a simple procedure used for painful treatments or manipulations of the fingers or toes.

Anatomy

Each digit of the hands and feet are supplied by four nerve branches which run forward along the lateral edges of the digit.

The 2 main digital nerves, accompanied by digital vessels, run on the ventrolateral aspect of the finger immediately lateral to the flexor tendon sheath.

Two smaller dorsal digital nerves run on the dorsolateral aspect of the digits and supply the back of the fingers as far as the proximal joint.

Indications

These include

1. Simple surgical procedures of the digits, (e.g. suturing).

2. Pain relief in injured digits

3. Painful manipulation of the digits, (reduction of dislocations or fractures)

Contraindications

These include:

1. Infection over the site of injection.

2. HFl burns - where pain is used as an indication for calcium treatment and pain resolution as an end point (a relative contraindication).

3. Severely agitated/uncooperative patient.

The use of adjunctive dilute adrenaline:

Long held tradition states that the use of dilute adrenaline is contra-indicated in digital blocks because of the risk of vasospasm induced ischemia.

*However a number of studies have **not** demonstrated any long term adverse outcome with the use of dilute adrenaline (1:100,000 - 1:200,0000) in digital nerve blocks, on patients without pre-existing vascular disease, and so this practice in contradiction to established dogma, in fact appears safe.* [3]

Nonetheless it is common sense to avoid adrenaline, in those patients that do have **significant peripheral vascular disease**, such as Raynaud's, where there is less evidence for outcome.

Technique

The nerves of the fingers and toes are readily blocked at the level of the base of the digit, (or webspace level - as shown above).

A fine 25-gauge 1½ inch needle is used.

Note that the block should be done with the palm of the hand placed downwards on a firm surface and the needle inserted from the dorsal aspect, (as shown above). Blocks that are attempted from the palmar surface (with the palm facing upwards) are more problematic due to the tendency for the patient to clench the fist in response to pain.

Swab the skin with topical antiseptic.

Two methods can then be used.

Before injecting anesthetic, always aspirate the needle first to ensure that it is not placed within a blood vessel.

- Inject at a point on the dorsolateral aspect of the base (or webspace area) of the finger on both sides of the digit.

  After aspirating to ensure that a vessel has not been entered, 1-2 ml of local anaesthetic is injected to block the volar branch and, as the needle is withdrawn, a further 0.5-1 ml is injected to block the dorsal branch.

Alternatively:

- To **avoid two injections** the initial injection can be made in the midline, advancing the needle until bone is contacted. The needle is then withdrawn slightly and directed laterally and ventrally to then inject anaesthetic in that side of the digit.

  Following this the needle is then withdrawn (but not entirely from the skin) and then directed to the opposite side, then further anaesthetic is injected. In this way both sides can be anesthetised via a single skin puncture.

  A slight swelling should be seen following injection of the anaesthetic agent on each side of the finger.

Complications

1. Excessive volume may cause vascular compromise.

2. Possible ischemic vasospasm with inadvertent use of adrenaline in **high risk** patients.

   The digital arteries are end arteries and ischemia or necrosis can occur if adrenaline is injected.

   Should this occur:

   - A GTN patch can be applied to the digit to help induce vasodilation.

- Infiltrate with Phentolamine, a short acting α blocker.

3. Inability to adequately assess nerve injury in trauma cases.

    - This should be carefully assessed and documented before any digital block is given.

Appendix 1

Anesthetic agent	Preparations	Duration of action	Maximum dose (without adrenaline)	Maximum dose (with adrenaline)
Lignocaine	1%, 2%	Duration of action: 45-60 min (plain) 150-180 min (with adrenaline).	**4 mg/kg (plain)**	7 mg/kg (with adrenaline).
Bupivacaine	0.25%, 0.5%	150-180 min (plain) 4 hours (with adrenaline).	**2 mg/kg (plain)**	3 mg/kg (with adrenaline).
Prilocaine	0.5%		**6 mg/kg**	NA
Ropivacaine	0.75%	3-6 hours	**3mg/kg**	Not defined

References

1. Illustrated Handbook in Anesthesia Ejnar Eriksson 2nd ed. 1979.

2. Digital Nerve Block Demonstration:

   - www.youtube.com/watch?v=25kZWI_MYrg

3. Ilicki J; Safety of Epinephrine in Digital Nerve Blocks: A Literature Review. J Emerg Med. August 4, 2015.

Dr J. Hayes
Reviewed October 2015.