Anesthesia

- Intraosseous anesthetic placement is the only technique that will increase success of inferior alveolar nerve block Reader et al
Intraosseous Anesthesia

- PDL
- Stabident
- X-tip

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• When the inferior alveolar nerve block failed to provide profound pulpal anesthesia in mandibular posterior teeth of patients presenting with irreversible pulpitis, the intraligamentary injection was successful approximately 56% of the time.

Nusstein J et al JOE May 2005
Intraosseous Anesthetic Delivery

- Success in irreversible pulpitis, 91% after injection of full carpule 2% Lido with 1/100K epi - Parente et al JOE 1998
Articaine Update

Occurrence of Paresthesia After Dental Local Anesthetic Administration in the United States

Gabriella A. Garisto, Andrew S. Gaffen, Herenia P. Lawrence, Howard C. Tenenbaum and Daniel A. Haas

J Am Dent Assoc 2010;141;836-844
Study period Nov. 1997-Aug. 2008

- 248 Cases of paresthesia reported
- 95% involved IANB
- Lingual nerve 89% of time
- 4% prilocaine 7.3 X more likely than expected
- 4% septocaine 3.6 X more likely than expected
Articaine Infiltration

- Labial plus lingual infiltration 98% compared to 76% for labial infiltration alone for lower anteriors. Nuzum FM et al JOE Jun 2010
- Repeated infiltration of a cartridge of 4% articaine with 1:100,000 epinephrine given 25 minutes after initial dose significantly improved the duration of pulpal anesthesia for mandibular 1st molar. Pabst et al Anesth Prog 2009
- Compared with L100, only the A100 induced statistically greater pulpal anesthesia after mandibular buccal infiltration. Abdulwahab M JADA Aug 2009
- Supplemental buccal infiltration injection of a cartridge of 4% articaine with 1:100,000 epinephrine would be successful 58% of the time for mandibular posterior teeth in patients presenting with irreversible pulpitis. Matthews et al, JOE Mar 2009
- Efficacy of 4% articaine was superior to 2% lidocaine for maxillary buccal infiltration in posterior teeth. Srinivasan et al, OOOOE Jan 2009
- No difference for PDL injection. Nusstein et al anesth prog 2004
Articaine

- Not more effective for IANB
- More effective for infiltration
- Increased incidence of post IANB problems

Conclusion of JADA article:
- dentists should consider these results when assessing the risks and benefits of using 4 percent local anesthetics for mandibular block anesthesia.
Isolation

- Use rubber dam every time.
Access

• Magnification and Illumination

• Endo Z bur by Dentsply

• Axxess burs by Sybron Endo
Operating Microscope

• Enhances fine motor skills. Bowers et al JOE July 2010
• 90% of endodontists surveyed have OM. Kersten JOE 2008
• ADA mandated OM skills be taught in Endo residencies in 1996.
• Finding canals: MB2 detection OM 71.1%, loupes 62.5%, and eyes only 17.2% Burhley JOE 2002
• Crack location
• Improved surgical endo success. Rubinstein and Kim JOE 1999
Cleaning and Shaping

- M wire files-Vortex
- Twisted File-TF
- Self adjusting file-SAF
- Irrigation- Tsunami, Endo-Vac, Nuss(tein)- wacker
- MTA sealer
- Ultrasonics
Files

- Vortex made with M wire by Tulsa Dental
- Twisted file by Sybron
M Wire


Twisted File

- Sybron Endo file manufactured by twisting during heat treatment, instead of milling.

TF showed a significantly higher resistance to cyclic fatigue than other nickel-titanium files that were manufactured with a grinding process Kim HC et al JOE Jan. 2010
Self Adjusting File

- SAF is a hollow cylinder of thin-walled, delicate NiTi lattice with an abrasive surface.

(Courtesy ReDent-Nova, Raanana, Israel.)
Conforms to canal shape from 1.5mm down to an ISO size 20
The problem
A flat root canal prepared with a rotary file. (Top) Buccal and mesial views of the root canal before treatment. (Bottom) Cross-sections at 4 and 6 mm from the apex. A micro-CT analysis. Red, before; blue, after. (B) Obturation of a flat root canal prepared by rotary files. The root canal of a maxillary premolar prepared with rotary files and obturated with warm gutta-percha and AH-26 sealer (Dentsply-DeTrey, Konstanz, Germany). Cross-sections at 2, 4, and 6 mm from the apex. Note the untreated recess full of debris that prevented the flow of the gutta-percha and sealer. Metzger Z et al JOE April 2010
(A) SAF preparation: an upper second bicuspid with a flat root canal. (Top) Buccal and mesial views. (Bottom) Cross-sections at 4 and 6 mm from the apex. A micro-CT analysis. Red, before; blue, after.

(B) SAF preparation: distal root of a first lower molar. (Top) Two views presenting a curved flat canal with a mesial, spoon-shaped concavity. (Bottom) Cross-section at 6 mm from the apex. A micro-CT analysis. Red, before; blue, after.
No apical damage
Conclusions

The SAF represents a new approach in endodontic file design and operation. Its main features are as follows:

1. A three-dimensional adaptation to the shape of the root canal, including adaptation to its cross-section.
2. One file is used throughout the procedure, during which it changes from an initially compressed form to larger dimensions.
3. Canal straightening and canal transportation of curved canals are largely avoided because of the lack of a rigid metal core. The file does not have “a will of its own.”
4. High mechanical durability, thus overcoming the issue of separated nickel-titanium instruments.
5. Hollow design that allows continuous irrigation with constant refreshment of the irrigant throughout the procedure.

Conclusions-Mechanical Analysis

1. The SAF file may be elastically compressed from a diameter of 1.5 mm to dimensions resembling those of an ISO # 20 K-file.
2. Compressing the SAF file generates circumferential force.
3. The rough surface, combined with the circumferential force and the in-and out vibration, allows for the removal of dentin by filing.
4. The circumferential force and the ability to remove dentin declines as the diameter of the canal enlarges.
5. The ability to remove dentin declines if the file is reused.
6. The SAF file is mechanically durable for continuous operation for 29 minutes.
7. Application of the SAF does not push the irrigant beyond the apical foramen.

SAF cleaning/irrigation
Conclusions

1. The SAF, operated with the continuous flow of irrigants alternating between sodium hypochlorite and EDTA, resulted in root canals that were free of debris and almost completely free of the smear layer.

2. The difference was also pronounced in the apical third of the canal, in which the SAF protocol resulted in debris-free canal walls in all samples and smear layer-free surfaces in most of the samples.
Irrigation with SAF

• The VATEA continuous irrigation unit used with the SAF instrument. The unit has two containers and provides a continuous flow (low pressure, 5 ml/min) of either irrigant (i.e., sodium hypochlorite and EDTA) through double silicon tubes that are connected to the hubs on the front of the device. It is controlled by finger-operated switches located on the handpiece.
WOW!

• One file is used throughout the procedure.
• The unique feature of this file is that it adapts to the shape of the canal.
• The inherent tendency to straighten curved root canals and transport their apical part is greatly avoided.
• The absence of a metal core also makes the SAF extremely resistant to fracture. File separation has not been reported to occur.
Only available in Israel and Europe!

IF One file per molar, they could charge $50-$100 per file and it would be still be a deal!
Goals of Irrigation

- Remove pulp tissue and/or microorganisms
- Remove smear layer and dentine debris that occur following instrumentation
- Deliver irrigation solutions that kill microbes and remove smear layer.
Irrigation tools

• EndoActivator-sonic vibration
• EndoVac-negative pressure
• “Nuss-wacker” –ultrasonic irrigation tip form of PUI is Passive Ultrasonic Irrigation
• Gutta percha agitation
• Plastic endo cleaning “file”
• Rinsendo- hydro-dynamic rinsing
• Vibringe-sonic flow irrigation
• Manual positive pressure irrigation