Bone Management After Extractions for the GP

Karl R. Koerner
Welcome to the Greater New York Dental Meeting

Greater New York Dental Meeting™ Executive Headquarters
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Sponsored by New York County & Second District Dental Societies

General Registration Hours
Friday, November 29          12:00 Noon-4:30 P.M.
Saturday, November 30         8:00 A.M. - 4:30 P.M.
Sunday, December 1 - Tuesday, December 3
9:00 A.M. - 5:30 P.M.
Wednesday, December 4        8:00 A.M. - 4:30 P.M.

Exhibit Hall Hours
Sunday, December 1 - Tuesday, December 3
9:30 A.M. - 5:30 P.M.
Wednesday, December 4 - 9:30 A.M. - 5:00 P.M.

COURSE REGISTRATION
Pre-registration is required for all continuing education courses with the exception of the “Live” Dentistry and Affiliated Groups. Your seat will be held for 15 minutes after the start of the course; after that, those without tickets will be seated according to space availability. When the room is filled, no additional people will be admitted due to fire department regulations. If you have not pre-registered, please be prepared to select an alternate session to attend.

Tickets
Tickets are required for all courses excluding Live Dentistry. Tickets for all functions can be purchased at all general registration booths located in the Registration Area on the Upper Level in the Crystal Palace and online.

6 Days of Education Seminars, Hands-on Workshops & Essays
Friday - Wednesday

4 Days of Exhibits
Sunday - Wednesday

FREE “Live” Dentistry
Hi-Tech 450 Seat Arena

SUNDAY
9:45 - 11:45
VOCO America, Inc.
Drs. Ron Kaminer & Marc Geissberger
Restorative

PHILIPS SoniCare
Dr. Gerard Kugel
Whitening

MONDAY
1:30 - 2:45
First Fit
Drs. Frederick E. Solomon
Cyrus Tahmasebi
Digital

First Fit
Drs. Frederick E. Solomon
Cyprus Tahmasebi
Digital

MONDAY
3:30 - 5:15
Align I Invisalign
I iTero
Drs. Karla Soto &
Christian Coachman
Restorative

TUESDAY
2:00 - 4:15
Glidewell
Dr. Justin Chi
Digital

WEDNESDAY
9:45 - 12:00
Apa / CareCredit
Drs. Michael Apa
Aesthetic

9:45 - 11:45
Shofu
Dr. Ron Kaminer
Restorative

John Quiñones
Monday, December 2nd
12:00 - 2:00 - Ticket 4010
$125.00

Celebtrity Luncheon Speaker

Fifth Annual Global Orthodontic Conference

3rd Annual Pediatric Dentistry Summit

12th Annual INVISALIGN® - GNYDM EXPO
4 Days of Programming:
Sunday - Wednesday

Botox and Facial Fillers Seminar & Workshop

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The GNYDM CE Passport Bundle includes Seminar and Essay courses.

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Registration for all courses is required.

6 Days of Education Seminars, Hands-on Workshops & Essays
Friday - Wednesday

4 Days of Exhibits
Sunday - Wednesday

$595.00
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Dr. Karl R. Koerner

Surgical Extractions, Part 1

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Partial bony impaction (mesioangular): Flap with distal and buccal releasing incisions, follicle removal, root retrieval.

Multiple extractions (4) with alveoplasty, root retrieval, continuous-lock suturing.

Mandibular (vertical) third molar impaction, with flap and buccal bone removal.

Maxillary surgical extraction with crown sectioning, root sectioning, root retrieval, Hedstrom endo file application, preventing root from going into the sinus on the model.

Surgical extraction, root tip removal, socket bone graft with barrier membrane, cross and interrupted sutures.

Maxillary surgical extraction with crown sectioning, root sectioning, root retrieval, Hedstrom endo file application, preventing root from going into the sinus on the model.

Incision and drainage of lesion.

Excisional biopsy.

Frenectomy

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-Patient of record
-Current health history reviewed
-Base-line vital signs, pre-op vital signs
-Treatment plan
-Consent form
-Sedation?
-Radiographs
Case Report
85 y.o. lady

“Surgical” Extraction

Tooth #30
How much time for the procedure?
• Elevator?

Soft tissue reflection
• scalpel in sulcus
• periosteal elevator in sulcus
• enough room to slip in forcep beaks down to bone (Most likely cowhorn.)

Section cut.

Crown part breaks off.

How deep is the section cut? How wide M-D? How wide B-L?
Do all you can luxating one root against the other.

• Luxator into mesial PDL
• Push and wiggle 4 mm down
• Turn clockwise/counterclockwise Hold for 8-10 seconds (sustained pressure)
• Don’t pry back

• Periotome bur in PDL
• 6 mm past Luxator depth
• Turn clockwise/counterclockwise

Straight OR highspeed!
• Then Luxator into mesial PDL 10 mm
• Turn each way and hold 8-10 sec.
• Try larger instrument (34 elevator)

3 & 5 straight (3 & 5 curved)

• Inter-radicular bone removal - if necessary and
• Instead of buccal bone removal....

• Then Luxator at 10 mm again.

Then...
• Mini-Cryer from within the socket, and
• Luxator in the PDL on the distal of the distal root

THEN SUCCESS!
Roots out, BUT buccal plate fractured in the process. See video clip below.

Bone was attached to the periosteum so the root was kept and not removed.

2.5 year postop

“Another removal technique is to take a long, thin diamond [or carbide] and go around the tooth on the mesial, distal, and the palatal (if the bone is thick).”

“To preserve bone, it is preferable when creating a trough around the tooth, to cut slightly into the tooth rather than the adjacent bone.”

3 mm luxator with the MB root of an upper 1st molar.

Elevator Luxator

No elevator

Elevator Luxator

Don’t try one modality for too long. When things aren’t working for you (after 2-3 minutes), do something different.

Oral surgeons pride themselves in taking out teeth quickly. When rules change that you can’t remove facial bone to extract a tooth, how can you still do it in a short time? You need a viable alternative to facial bone removal.

Solution: Periotome (skinny) bur vertically into the PDL.

Use 700 (or 701) bur into the PDL
- mesial and distal 2/3 to 3/4 of root length
- half root, half bone removal
- only cut as wide as the bur

Then Luxator to depth (white lines)
- turn clockwise and counter-clockwise (sustained pressure)
- for a few minutes

Which handpiece is easier to cut apically along the tooth toward the apex? RPMs don’t matter.

Be careful.
The 700 or 701 bur is slender and effective but is also weak and cannot be moved “off-angle” without breaking. It is not a “default” bur for surgery. That would be the 702.
Addition: Another way.

Root fractured, leaving a 7 mm long root tip.

With 701 bur in a straight handpiece, trough around the root cutting about 2-3 mm apically.

Be careful of the mental nerve.

Then Luxator, elevator, root-tip pick, mini Cryer, Molt #2 curette OR ...

Some other instruments used.

- Heidbrink root tip pick
- #2 Molt curette

Root tip deep in the socket. Try removing with some hand instruments first. But if it doesn’t work...

Root tip deep in the socket. Try removing with some hand instruments first. But if it doesn’t work...

Root tip deep in the socket. Try removing with some hand instruments first. But if it doesn’t work...

Algorithm for difficult single root.

- Good x-ray
- Sever soft tissue attachments
- Elevator
- Forcep
- Luxator or similar instrument (4 mm deep)
- Periotome bur THEN Luxator (mesial/distal)
- Root tip? Hand instruments. (elevator, Luxator, Molt #2 curette, root tip pick, or small Cryer...) OR ...
- If does not work then periotome bur:
  - One side
  - Two sides
  - Circumferentially
  - Cut root tip in half
- Followed by a hand instrument again.

Successfully and smoothly removed. Buccal crestal bone totally preserved.
Cervicofacial subcutaneous emphysema: a clinical case and review of the literature

Lower 1st molar extraction.

- Tooth sectioning with regular highspeed handpiece.
- Acute subcutaneous swelling.
- Extension to contralateral side, crepitus.
- Hospitalized, IV antibiotics, discharged in 2 days, swelling down in 1 week. Can go to thorax and mediastinum.

TX: Observation, diagnosis, may want referral, CT scan, hospitalization, IV antibiotics.

Which is better?

“Surgical” highspeed: no air.

No air in the water is best.

Can’t find a rear exhaust air turbine highspeed (surgical) without the 45-degree head.

Mandible and neck.

Sinus and orbit level.

3.0 mm (15P3A)

2.0 mm (03EA)

Wire to clean it out.

(Also 1.0 mm diameter: 02BA w/wire too.)
The following are alternatives to the Luxator and periotome bur for removing a root. They were not presented first (above) because they:

- Use devices that are too expensive, or
- Are too slow, or
- Are somewhat unpredictable, or
- Are somewhat ineffective, or
- Have a more difficult learning curve

- Double-ended periotome
- Straight periotome
  - Use mallet?
  - Spear-point
  - Leverage device 1-3
- Bone-cutting piezo
- Autotome
- Physics Forceps

Double-ended Periotomes
(also have single-ended that can be hand-held or malleted.)
Straight “periomoses”. More effective than double ended.

3 devices where you screw a drill into the root and leverage the root out.
- Pry-bar: The one shown here.
- 2 other types...

Piezo-type bone-cutting devices taken into the PDL.

Autotome. Similar to the PowerTome. Pneumatic.

Highspeed friction-grip burs:
For a General Dentist highspeed:
- 700 surgical length (25 mm) Brasseler
- 701 surgical length (25 mm) Brasseler
- 702 surgical length (25 mm) Brasseler
- 700 XXL extra long (30 mm long)
  (from Sabra Dental Products and Salvin)
- 1702 (round end) extra long (30 mm)
  (from Sabra Dental Products)

Straight Handpiece Burs (Brasseler 5-packs)
For a General Dentist straight handpieces
- 701 001219U0 44.5 mm long
- 701 001219U0 44.5 mm long
- 700 001218U0 44.5 mm long
- 700 001218U0 44.5 mm long
Prolonged attempt by a dentist - and still not out. Removed in 1-2 minutes with bur/Luxator.

Main surgical suction tip: 3.0 inside diameter.
“Special” surgical suction tip: 2.0 inside diameter.

Mini Cryers.
Very effective.
Not as effective.

Is it malpractice to leave a root?
Pull or not?

Not malpractice if...
1. The root is small (5 mm or less) not loose, and not infected.
2. You feel that it is in the best interest of the patient to leave it.
3. The patient is informed.
4. The occurrence is recorded in the patient’s chart.
5. An x-ray is taken for documentation.
6. Follow-up is scheduled.

Multiple Extractions – Steps to Prevent Patient Pain and Other Problems

Dr. Karl R. Koerner
Lower molar extractions.

One week post-op. Patient has been and continues to be in extreme pain. Bone not smoothed after the extractions. No suture.

One month postop.

No alveoplasty. Severe pain.

Bone bur, 703 fissure bur, bone file, Blumenthal 30 degree medium-sized rongeur.

Sockets are debrided of any infection and any granulation tissue is removed from the flaps. Papillae can be retained and even be interdigitated during suturing -- but in some cases of infection they may be excised.

Granulation tissue hiding under the papilla.

Sharpness to trim.
Treatment Sequence

- Extract
- Apical debridement of pathology
- Granulation tissue removal
- Compression of socket
- Smooth sharp bone
- Irrigation
- Suture

Ridge with periodontal disease.

Frenectomy

Maxillary – one way to do it.

Cut the frenum off on the outside of the lower hemostat.
Cut the frenum off on the outside of the upper hemostat.

Excising the frenum.

Trimming some tags.

Top: starting to close.

Right: anchor suture being placed.

The maxillary frenum and surgical treatment

As a small membrane that can obstruct the movement of the tissue, the frenum in attached to the gum. The frenum is excised, and the tissue is sutured to close the area. The incision is made in a straight line, and the tissue is trimmed to fit. The tissue is closed with sutures to ensure hemostasis and proper healing.

More suturing for hemostasis and closure.
Preop and postop.

General Dentist-friendly Socket Grafting (to compensate for not being able to do periosteal release)

- Especially for a molar (more vulnerable).
  - May need more protection for the graft for 4 weeks.
  - PTFE ($37)
  - PGA (like Vicryl) $127
  - Laminar bone (thin, bendable cortical bone) $110
  - Amnion/chorion $80

Easy-to-use socket grafts...
(more non-traditional)
(need a buccal plate)

- Foundation (J. Morita) - "bone-precursor collagen"
- OsteoGen Plug – alloplast bone mixed with collagen

How can a socket graft fail??

- Used collagen and open too wide.
- Used collagen and patient not compliant:
  - Consumes acidic foods / drinks
  - Uses alcohol mouthwashes
  - Chews on the site with hard food
  - Brushes the site too vigorously
- PTFE membrane comes out prematurely
  - Not tucked under periosteum properly
  - PTFE put in upside down (rough side down)

Effect of patient compliance?
Will the patient be compliant with:

- Taking the antibiotic properly
- Not brushing the site
- Rinsing with saline or chlorhexidine
- Not chewing on the site
- Not ingesting acidic foods/beverages (sodas, citrus drinks, etc.)
- Make it to their 2-week appointment

Everything you did can be undone.
The problem (socket).

Part of the solution (the bone graft).

Types of membranes:
• Collagen BioGide, Oslee Plus, Mem-Lok, Cross Xenoprotect, etc.
• Pericardium
• Cytoplast (PTFE / Teflon)
• Epiguide (PGA resorbable)
• Laminar bone
• BioXclude (amnion/chorion)

Example of a resorbable membrane.

Case 1
If nearly closed (within 3-4 mm) can use collagen membrane. (Unless can cover with provisional, then can be open more.) If open more than that, PTFE more predictable.

PTFE (Teflon) membrane

Non-resorbable

e-PTFE. Effective but can become infected after about 4-6 weeks if exposed.

d-PTFE. Effective but can become infected after about 4-6 weeks if exposed.

Advantages:
- Need not be submerged.
- Don’t need primary closure.
- Don’t need periosteal release.
- Can remain open the width of the socket.
- 4 week removal. Could be as long as 6.
- Assures the presence of keratinized tissue.

Disadvantages:
- Needs to be removed.
- Can blunt papillae in anterior with thin phenotype cases
- Needs to be sealed.

7 mm instead of 10-12

One month post-op.