


**Course schedule for today:**

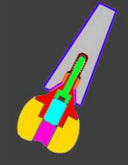
SESSION 2, DAY 2  
Saturday February 22nd

**Morning**  
Soft tissue management  
Overview of paperwork  
IPC / operator setup

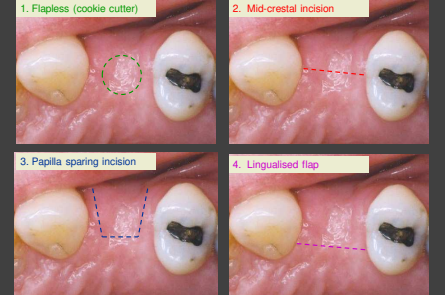
**Afternoon**  
Managing common complications  
CBCT  
Drilling guides—an overview  
Case presentations and live surg prep  
Bonus material if time: more top cases

And lots more opportunities to "Drill, baby, drill!" 

**Soft tissue management**



2SA2



1. Flapless (cookie cutter)  
2. Mid-crestal incision  
3. Papilla sparing incision  
4. Lingualised flap



Remember: we are teaching you concepts related to soft tissue around POSTERIOR implants. Some, but not all, of these would apply to cases in the aesthetic zone.

**Our goals**

- A thick band of keratinised gingiva circumferentially around the eventual implant crown
- Access for vision and bone manipulation

**The way to achieve this**


- Lingualised incisions to split the limited remaining KG
- Reflect tissue from area to be manipulated only

**Flap design concepts**

1. There are two kinds of flaps in implant dentistry: small flaps and big flaps
2. Small flaps need only expose the buccal "edge of the cliff"
3. Releasing incisions "1 + 1", one tooth and one papilla away
4. Releasing incisions never over center of root
5. Broad based full thickness flaps
6. Spare papilla over crown margins
7. Thin bone will die if exposed

### Scalpel choices

- Very much a personal preference thing
- If in doubt, start with a #15 or 15C blade
- #12 blade popular for getting right up against distal of adjacent tooth
- Change blade often in larger procedures



### Closure of a surgical incision may involve the use of:

- Sutures
- Staples
- Tissue adhesive/adhesive strips
- Laser welding of the tissues
- Adherent dressings
- No material at all

### Suturing armamentarium:

- Needle drivers (NOT haemostats)
- Suture scissors
- Tissue forceps
- Surgical thimbles...not often used in dentistry

Not an area to go cheap on. Buy good quality, and treat them like jewelry.


### What suture to buy and stock?

For implant dentistry, you probably need to stock three kinds of sutures:


- A short term resorbable (e.g. plain/chromic gut)
- A long term resorbable (e.g. Vicryl PGA )
- A skinny papilla suture (e.g. 6-0 polyviolene) with a dainty round-cross-section needle

Silk is now rarely used due to wicking.  
And cheap sutures suck, you get what you pay for.

Occasionally you will need a vertical mattress suture.




Overview of paperwork



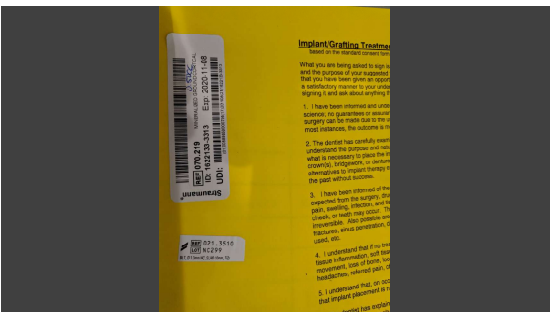
2SA3

- Implant paperwork includes:
- A. Your regular chart w medical history
  - B. Surgical consent form
  - C. Surgical report
  - D. Post op handouts, medication handouts
  - E. Implantable device record
  - F. Steriliser load records to chart
  - G. Steriliser test/mtce log
  - H. Laboratory prescriptions

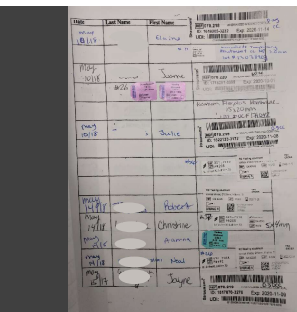
9. A dentist in obtaining informed consent for treatment must discuss:

- a) The diagnosis or differential diagnosis,
- b) the exact nature and the anticipated benefits of the proposed procedures, tests or treatments and the cost,
- c) reasonable and accepted alternative procedures, tests, or treatments that are generally available, including no treatment and their estimated cost,
- d) the consequences of not undertaking the proposed procedures, tests or treatments,
- e) the common and significant risks of the proposed procedures, tests or treatments,
- f) serious risks, even if unlikely,
- g) future costs of care and life expectancy of treatment,
- h) special risks, that although uncommon, may have particular relevance to the patient, and
- i) responses to any questions the patient may have about their medical history and dental treatment.

*(Can be written or implied, but written sure works better in defense!)*



- E. Implantable device record
- We STRONGLY suggest you keep a separate duo-tang or binder for this purpose
  - Pt name, date, and 2<sup>nd</sup> sticker from vial or package
  - One sticker goes in the patient **chart**, the other goes in the **record book**
  - If paperless, sticker goes on the paper consent form prior to scanning into the computer "chart"
  - **If you move, a copy goes with you**
- In the next section we will discuss what constitutes an "implantable device".



Implantable device record

Implants, bone, dermis

Does not include screws, tacks, or collagen

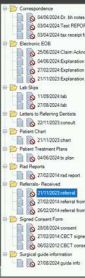
Remember, second sticker goes here

A copy follows you for your whole career

### Other random *implant* paperwork

- incoming and outgoing referral slips
- incoming and outgoing letters
- radiology or other reports
- pt medication lists
- drawings from consultation appointment
- treatment plan/estimates
- surgical guide printouts
- insurance correspondence
- copies of pt texts and emails
- WHMIS, MIFU, RPB, IPC, EIEIO

"if in doubt, scan it in"



Also: start a spreadsheet of every CDE course you take/teach



Course ID	Course Title	Date	Instructor
001	Implant planning and guide design	September 23, 2022	Dr. Cory Olson
002	Lab challenge to fabricate a modern implant prosthesis	September 23, 2022	Dr. Edgar Challa
003	Are you relevant? Surgical topics in a modern dental world	September 23, 2022	Dr. Jeff Gries
004	Aluminum casting and dental discussion	September 26, 2022	Dr. Bart Schramm
005	Implants and the dental assistant-CCI College	September 26, 2022	Dr. Bill Holden
006	Implants and the dental assistant-CCI College	October 22, 2022	Dr. John Voss
007	Implants and the dental assistant-CCI College	October 22, 2022	Dr. Bill Holden
008	Implants and the dental assistant-CCI College	December 14, 2022	Dr. Bill Holden
009	Implants and the dental assistant-CCI College	December 14, 2022	Dr. Bill Holden
010	Implants and the dental assistant-CCI College	January 10, 2023	Dr. Bill Holden
011	Implants and the dental assistant-CCI College	March 11, 2023	Dr. Bill Holden
012	Implants and the dental assistant-CCI College	March 11, 2023	Dr. Bill Holden
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### Infection control and operator setup



2SA4

### For starters, we need to understand what is a...

- Critical item
- Implantable device
- Class 5 or 6 indicator
- A biologic monitor, or "BI"

Category	Description	Management	Examples
<b>Critical Items</b>	Items that are not single-use disposable and must be sterilized and stored in a sterile container until point of use. Single use disposable items must not be re-processed.	Items that are not single-use disposable must be sterilized, and stored in a sterile container until point of use. Single use disposable items must not be re-processed.	Acu-Order syringe tips Anesthetic syringe Endosseous instruments, including files (hand and engine), mirrors, and brackets Gauze for surgery Hemostatic Instrument trays Metal Antra Bands Much wires (when used during a procedure when tissue is not re-processed) Orthodontic Bands Perforated instruments including stainless steel tips Retaining pins, screws and stainless Restorative / operative instruments Remy bars and diamonds Rubber dam clamps Scales Stainless Steel Crowns Surgical instruments Surgical section tips
<b>Semi-Critical Items</b>	Touches intact mucous membrane or non-porous skin.	Items that are not single-use disposable, must be cleaned, and stored in a container until point of use. Single use disposable items must not be re-processed. Heat sensitive items must be re-processed in a high-level disinfectant between patient care between patient care.	Articulating rubber holder Cotton swab Cover removing instruments Gauze for non-surgical procedures Impression trays Lab keys Mouth mirror (when used for examination only) Single-use disposable Nasal block Orthodontic plans Rubber dam frame Rubber dam and rubber dam clamp frames Suction tips other than for surgery Wedges

Source: ADA/C IPC Standards of Practice

ISO 13485 2003  
PLAIN ENGLISH DEFINITIONS

**Implantable Medical Device**

An *implantable medical device* is a medical device that:

- is partly or totally inserted into the human body or a natural orifice and is expected to stay there for 30 days or more, or
- is used to replace an epithelial surface or the surface of the eye and is expected to stay in use for 30 days or more.



Surgical or medical procedures are used to insert or apply implantable medical devices and surgical or medical procedures must be used to remove them

Class 1 monitors only confirm that a given item has gone through the steriliser system. The most obvious example is tape.

**Chemical indicators**

Class 5 monitors measure multiple parameters of sterilisation (e.g. temperature AND pressure AND time) and can conclude a package has been sterilised.

Class 6 monitors (emulators) are cycle specific.


**In addition to your regular IPC practices...**

1. Recognition of single use items
2. Cleaning drills and surg kit
3. Surgical gloves, PPE, and drapes
4. Sterile irrigant and tubing
5. Increased steriliser monitoring requirements

**1. Single use items**

"A single-use device is designed to be used on one patient for a single appointment and then discarded, not re-processed for use on that same patient at a later date, or on another patient (e.g., cleaned, disinfected or sterilized).

"Examples of single-use or disposable devices include syringe needles, prophylaxis cups and brushes, **implant parts**, temporary anchorage devices, bone grafting materials and certain orthodontic brackets. Single-use materials and devices are often marked with the following symbol:



**In Alberta it's tougher...**



Some manufacturers list their implant drills and other parts as single-use in order to increase sales.

*(But then it gets worse...)*

Items where the manufacturer does not provide written re-processing instructions become single use by default.

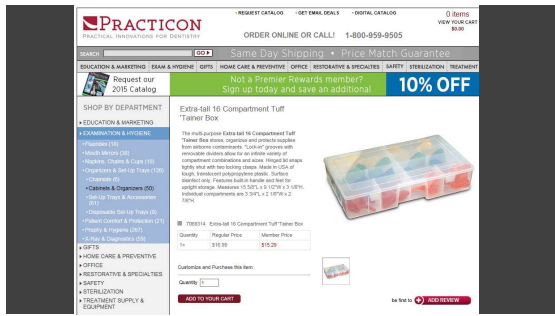
**It gets better ☹️**

Any item for which manufacturer's reprocessing instructions do not exist, defaults to become single use



**What does all this affect?**


- Many restorative burs
- SOME implant drills, notably the Nobel Precision (lance) and 2mm Pilot
- All healing abutments, cover screws, temp abuts, Locator abuts
- Cookie cutters are okay
- Items "tried in" are okay
- Items replaced in pt are okay
- Some (not all) impression copings and analogs are ok



*When do we replace our implant drills?*

When they are dull. Well, duh. Number of uses does not correlate with dullness. However some drills, including Nobel pilot and lance, plus ALL NobelActive drills, are single use.


*What about healing abutments?*

Healing abutments are single use. 

What constitutes a "use"? What about items tried-in but not used, can they be re-processed? Not made clear, but our interpretation is if sent home with pt.


**2. Cleaning instruments and surg kit**

- Make life easier: place all used bits & parts in dish of saline
- Everything that comes out of surg kit must be scrubbed +/- run through ultrasonic
- Demonstration of Nobel syringe to clean irrigation ports
- Items should be clean enough to use before re-sterilisation
- Always re-sterilise loaner kits, etc., in your own office
- Items that can be taken apart, take them apart
- And yes, piles and piles of biologic monitor\$




**3. Surgical gloves, PPE, and drapes**

- Surgical gloves required for dentist
- Don't fart around, get them for intra-oral assistant as well
- Consider sterile towels to dry hands
- What do you do if pt is latex allergic?
- Gowns: none vs isolation vs surgical
- Stylish hats
- What about the COVID era?



**5. Steriliser monitoring**

1. Each implant pack must have a class 5/6 strip inside it, and a BI in the same load, and the load quarantined until the BI test passes
2. The result must be recorded in the chart incl load #
3. No flashing of instruments
4. You can't fight city hall




**Suggested IPC protocols for implant placement**

1. Double CSR wrapped surg kit and instrument pack w CI 5/6 indicator, BI in load, record load # in chart
2. Separate sterile pack of disposables: gauze-Qtips-suctions-needles-drape-gowns-monoject, etc. Simplest to buy pre-fab pre-sterilised packs.
3. Clean out and double wipe operator
4. Sterile irrigant and disposable irrigation tubing
5. Sterile table drape to work from—can be the inside of the instrument pack CSR wrap

### Suggested IPC protocols for implant placement

6. Sterile barrier protection to light handle and implant handpiece, plus tray/table if used
7. Patient drape of some kind, swab face and surgical site with disinfectant or rinse with chlorhexidine
8. DDS and RDA to wear isolation gowns, scrub and wear sterile surgical gloves; head cover is optional
9. All staff clear on where sterile field is on work surface; all additions (implant, blade, suture) dropped in

### Common complications



2SA5

### How to get yourself in trouble with dental implants—a recipe:

1. Don't do a complete examination
2. Don't formulate a (written) treatment plan and estimate
3. Place the implants first
4. Treat one side/arch at a time
5. The "implant of the year" club

Beware of "Less Syndrome"


### Common complications, their recognition and management

- Informed consent should include warnings of **reasonably foreseeable** complications
- You do have a legal and ethical obligation to recognise complications and either manage or refer
- If your work is within the standard of care, and the patient does not advise you of problems or does not return for recommended follow up (and you document this), you are **not liable**

10 x ☹

1. ☹ Not enough bone on access
2. ☹ Bleeding
3. ☹ Drill/implant in wrong position
4. ☹ Poor initial stability
5. ☹ Post op pain or infection
6. ☹ Recession or attached gingiva problems
7. ☹ Bone loss
8. ☹ Impression material
9. ☹ Implant screw loosening
10. ☹ Implant failure

### ...if time... Advanced grafting options



1FA6

### Sometimes the implant gods will let us make more bone

- Particulate grafts to augment ridge
- Block grafts to augment ridge
- Splitting and spreading the ridge
- Distraction osteogenesis
- Orthodontic extrusion
- Grafting of the pneumatized maxillary sinus

### The next grafting skill you should learn?

- Obviously socket grafting, but then...
- Probably the internal sinus bone graft ("sinus bump")
- AFTER you have at least 100 basic implant placements under your belt
- Even we do not do every type of graft here in the centre

Canada's food guide

Have plenty of vegetables and fruits

Eat protein foods

Choose whole grain foods

Make water your drink of choice

Lunchtime!

### Drilling guides — an overview

2SP1

### Drilling guides are...

- a way to "measure twice and cut once"
- a way to prepare by doing the surgery in advance

### A horse with many names

- Surgical stent
- Surgical stint (sic)
- Surgical guide
- Implant placement index
- Surgical template
- Drilling guide\*

\*we prefer this term



### What do we want to achieve?

- Faster implant placement
- Safer implant placement
- Better final implant position for optimal restorability
- Communicate desired placement to another operator

Remember: drilling, and therefore implant position, has three components:

**Platform location**—"Where do we start drilling?" Easy to learn

**Implant angulation**—"What direction should it point?" Harder

**Platform depth**—"How deep do we sink the implant?" Hardest part to teach and learn!

### Position of the implant platform

In most instances, the adjacent or contralateral teeth will dictate. Knowledge of average tooth M-D dimensions is essential. Remember the rule of 7s and 10s.

### Orientation

Implants are ideally oriented perpendicular to load.  
In reality, the bone and adjacent teeth dictate direction to a large degree, especially in the maxilla.  
The implant should point at the opposing tooth's central groove or functional cusp.

### When should I consider making a guide?

- Free end space
- Challenging restorative situation
- Bulk of bone ≠ desired implant position
- Limited opening or visibility
- Communicating desired restorative position to another operator
- While still learning

### But....

Implant drilling guides can lead to a false sense of security. They are NOT a substitute for careful intraoperative analysis.

Some drilling guides can be a weak link in the infection control chain.

Many drilling guides we see are unstable in the mouth and are therefore useless.


Guides interfere with irrigation, vision, and tactile sensitivity.

### Different types of guides used

- Stock rings, snowmen, etc.
- Edentulous vacuform
- Dentulous vacuform
- Acrylic
- Acrylic with single sleeve
- Acrylic with nested sleeves
- Stock denture tooth with a hole in it

*—and can be tooth, tissue or bone supported*

### So let's construct a model-based guide




### Requirements for an acrylic drilling guide with sleeve(s)

- Model and opposing model, and bite record if not hand articable
- Pencil, felt pen, ruler or Boley gauge
- 2 mm pilot drill—old dull drills handy for this
- Drilling sleeve(s)
- Separating medium or vaseline, Q-tip
- Acrylic material—Triad gel clear works well, so does light-cured baseplate material
- Slow speed handpiece and light cure unit

### Using your model-based drilling guide

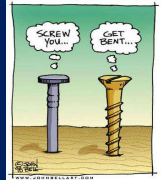
- Store on model at least first night overnight
- Disinfect with spray-soak protocol
- Be prepared to cut down if inadequate opening for drill/handpiece
- Be prepared to cut off chunks if it won't fit
- Sleeves can be sterilised and re-used many times

### Basic crash course in reading CBCT scans



2SP5

### Screws, screwdrivers, and torque wrenches



1SP3



**So use a torque wrench**

- different styles available
- different implant companies and different components require different amounts of torque
- long-style torque wrenches come apart to clean
- always store breakneck torque wrenches in broken position, and calibrate them q 2 yrs
- most Straumann restorative applications are at 35 N-cm

**Exceptions to 35 N-cm for Nobel and Straumann**

- prosthetic screws, which go into
- multi unit abutments (MUAs) or screw retained abutments
- NobelActive 3.0
- abutment screws into 30 degree MUAs

all of the above go to 15 N-cm

prosthetic screw

**Torque wrenches hands-on / demo**

**Crown insertion technique**

1SP5

**Screw ret implant crown insertion**

We will require

- Completed case from lab
- Screwdrivers (long and short), torque wrench
- Screw blockout material
- Opaquing agent, flowable composite
- Floss, articulating paper, shimstock
- Regular exam kit
- Handpieces and burs to adjust, polish

Now we need to close the screw access hole...and we need three layers:

- Something to block out screw head
- Something to opaque any of the metal core or abutment that shows
- Tooth-coloured restorative material


What should we use to block out the screw head?

- cotton pellet
- Cavit or Cimpat
- Fermit N
- PVSii or Polyether wax
- gutta percha
- plumbing tape
- pigeon poop
- etc., etc.



They all work

Can we do a fancier screw access closure?



Of course. We could porce etch and silanate, then bond in a filled resin filling. However we typically only bother in an aesthetic area or where filling has been previously lost / worn down / cracked / stained.

Cemented implant crown insertion

We will require

- Completed case from lab
- Screwdrivers (long and short), torque wrench
- Screw blockout material
- Cement
- Floss, articulating paper, shimstock
- Regular exam kit
- Handpieces and burs to adjust, polish

What cement should you use?

- Most any cement is fine as long as you thoroughly remove the excess
- Implant provisional cements used to be our first choice (e.g. Improv), but some (e.g. Premier Implant Cement) frankly aren't as good. TempBond regular is an option.
- Supposedly you should not use polycarboxylate (Durelon) in contact with titanium

How much cement should you use?

- The smallest amount you can get away with!
- If in doubt, place crown on and off to establish thin film thickness
- If in doubt, undercementing is preferable to overcementing
- Not necessary to fill chimney of abutment
- Vented crowns? Not clear if it helps
- Aside from risks from cement excess, excellent fit of implant crowns ↑ risk of incomplete seating

Occlusion and simple implant cases



2SP5

Adjusting occlusion...an implant is **not** a tooth

Teeth have a PDL. Implants do not.

- Specify light or "zero" occlusion on lab Rx
- Adjust all implant crowns carefully, WITH THE PATIENT CLENCHING FIRMLY
- Use good quality articulating paper, and shim stock
- Excess occlusal force (and parafunction) can cause late failure of implants


Adjusting occlusion...an implant is **not** a tooth

- Do we want occlusal contact at all?
- Do we put a single cuspid implant crown in canine guidance?
- Do implant cases require nightguards?
- What if the adjacent teeth are all mobile?
- What about anteriors in protrusive?
- How often should we check the occlusion at recall?

TXP concept: excess force is the enemy of implants

- Implants tolerate forces well down their long axis
- Shear (lateral) forces...not so much ☹️
- These forces are concentrated at the ridge crest
- Splinting manages this well
- Implant surface area helps manage this
- **Width** is more important than length
- Implant length beyond 10mm offers little stress reduction

What to do when the crown won't go in



2SP6

You go to insert an implant retained crown. It won't go in.

What are the five things that could be holding it up from seating in the implant?

**You go to insert an implant retained crown.  
It won't go in. ☹️**

What are the five things that could be holding it up from seating in the implant?

- An adjacent tooth (interproximal contact)
- **The gingiva**
- **Bone**
- The implant connection (inaccurate)
- The abutment screw (trapped in the crown and sticking out the bottom)

**To insert implant crowns you:**

- Often have to freeze the area
- Sometimes have to release the gingiva
- Sometimes have to adjust the adjacent contact(s)
- Rarely have to remove bone

Errors are more common with printed models.

**Case presentations and preparation for live surgery day**



2SP6


1. Make sure your case is approved and booked w Colleen
2. We assume you are confirming pt yourself
3. Expect to stay at least ½ day (or longer if you wish)
4. Your assistant is welcome but may be put to work
5. Quiet while upstairs
6. Don't wait for us to bring in your pt for LA
7. Ali and Bill are the worst assistants ever. Sorry. ☹️

**What to bring on Saturday the 23<sup>rd</sup>...**

- Patient chart incl radiographs (unless sent in)
- Patient models, etc. if you wish
- Whatever safety glasses or loupes you are used to
- Face shields available or you can bring your own
- Dress as you would for regular dentistry
- Observe what our staff do for re-processing
- Come downstairs for a break or to eat

And remember, this is not dental school, no one is judging you and we are all colleagues here with the same goals. Learning a new skill should be fun.

**Bonus material: more TXPQ cases!**



2SP7