

GOALS OF PERIODONTAL TREATMENT

- Elimination of microbial aggression
- Elimination & control of inflammation of periodontal tissues
- Correction/elimination of all conditions leading to the inflammation
- Creation of a healthy periodontal environment to assure efficient self-performed plaque control

OBJECTIVES OF PERIODONTAL TREATMENT

IN EVERY PATIENT DIAGNOSED WITH PERIODONTITIS, A TREATMENT STRATEGY, INCLUDING THE ELIMINATION OF THE OPPORTUNISTIC INFECTION, MUST BE DEFINED AND FOLLOWED. THIS TREATMENT STRATEGY MUST ALSO DEFINE THE CLINICAL OUTCOME PARAMETERS TO BE REACHED THROUGH THERAPY.

Salvi GE, Lindhe J & Lang NP

OBJECTIVES OF PERIODONTAL TREATMENT

- Reduction or resolution of gingival inflammation (BoP)
- Reduction of PPD (< 4mm)
- Elimination of Class III furcation involvement
- Absence of pain
- Satisfactory esthetics & function

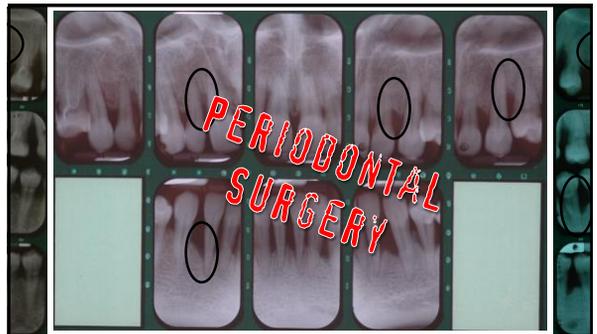
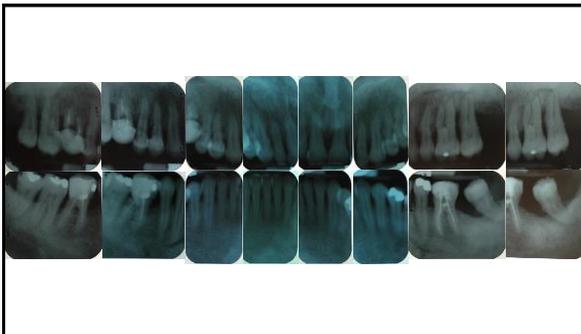
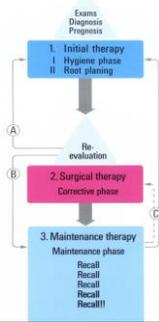
PHASES OF PERIODONTAL TREATMENT

Systemic phase, i.e. consultations with other medical disciplines

Initial phase, i.e. cause-related therapy

Corrective phase, i.e. surgery, endodontic therapy, restorative, orthodontic, &/or prosthetic treatment

Maintenance phase, i.e. Supportive Periodontal Therapy (SPT)



GOALS OF PERIODONTAL SURGERY

THE MAJOR GOALS OF PERIODONTAL SURGERY ARE TO CREATE AN ORAL ENVIRONMENT THAT IS CONDUCIVE TO MAINTAINING THE PATIENT'S DENTITION IN A HEALTHY, COMFORTABLE, AND FUNCTIONAL ESTHETIC STATE, AND, WHEN FEASIBLE, TO REGENERATE AND PRESERVE THE PERIODONTAL ATTACHMENT.

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ROLE OF PERIODONTAL SURGERY

Patient factors (local & systemic)

Effective & beneficial surgery

Type of defect morphology, indications & contraindications

Best therapeutic approach for best results

ROLE OF PERIODONTAL SURGERY

4 therapeutic choices at reevaluation stage

1. Maintenance program if good level of oral health achieved with initial therapy
2. Re-treat persistent diseased sites non-surgically
3. Surgical phase
4. Intensive program of maintenance & reevaluation if disease is not amenable to surgery

OBJECTIVES OF PERIODONTAL SURGERY

Access to roots & alveolar bone

Enhance visibility
Increase SRP effectiveness
Less tissue trauma

Modification of osseous defects

Establish physiologic architecture of hard tissues (regeneration or resection)
Treat alveolar ridge defects

Repair or regeneration of the periodontium



OBJECTIVES OF PERIODONTAL SURGERY

Pocket reduction & elimination of inflammation
 Enhance maintenance by patient & practitioner
 Improve long-term stability

Provide acceptable soft tissue contours
 Enhance plaque control & maintenance
 Improve esthetics



INDICATIONS OF PERIODONTAL SURGERY

1. Accessibility to roots & osseous defects
2. Resective surgery
3. Regeneration of the periodontium
4. Pre-prosthetic surgery
 - i. Crown lengthening
 - ii. Gingival augmentation
 - iii. Ridge augmentation
 - iv. Tori reduction
 - v. Tuberosity reduction
 - vi. vestibuloplasty



INDICATIONS OF PERIODONTAL SURGERY

5. Periodontal plastic surgery
 - i. Esthetic anterior crown lengthening
 - ii. Soft tissue grafting for root coverage
 - iii. Soft tissue grafting to obtain physiologic gingival dimension
 - iv. Papilla reconstruction
6. Gingival enlargement
7. Implant surgery
8. Biopsy
9. Treatment of periodontal abscesses
10. Exploratory surgery



CONTRAINDICATIONS OF PERIODONTAL SURGERY

Poor oral hygiene (poor plaque control)

Uncontrolled medical conditions:

- Unstable angina
- Hypertension
- Diabetes
- Myocardial infarction or stroke within 6 months

High caries rate

Unrealistic patient expectations or desires

PRINCIPLES OF PERIODONTAL SURGERY

Know your patient

Thorough & complete treatment plan

Anatomy of surgical sites

Profound anesthesia

Aseptic surgical technique

PRINCIPLES OF PERIODONTAL SURGERY

Atraumatic tissue management

- Sharp & smooth incisions
- Careful flap reflection & retraction
- Avoid flap tension

Attain hemostasis

Atraumatic suturing techniques

- Smallest needle & suture that can be used
- Sutures in keratinized tissue when possible
- Adequate bites of tissue
- Minimum number of sutures to achieve closure

PRINCIPLES OF PERIODONTAL SURGERY

Obliterate dead space between flap & bone (wound management)

Promote stable wound healing



KNOW YOUR PATIENT

- Thorough medical history
- Complete dental history & examination
- Allergies
- Drugs
- Patient's expectations
- Habits (smoking)
- Consultations with treating physicians

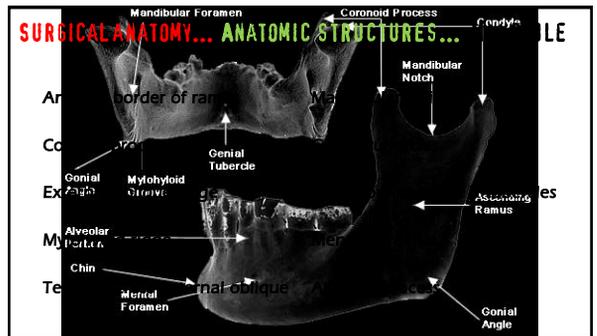
COMPLETE & THOROUGH TREATMENT PLAN

- Etiologic factors
- Aggravating factors
- Diagnosis
- Prognosis
- Morbidity
- Expected result of the treatment

SURGICAL ANATOMY

WHAT SEPARATES THE SUCCESSFUL SURGEON FROM ALL OTHERS IS HIS OR HER KNOWLEDGE OF ANATOMY AND WOUND HEALING. THE SELECTION OF AN APPROPRIATE SURGICAL TECHNIQUE THAT CAN BEST SATISFY THE TREATMENT GOALS AND OBJECTIVES IS DIRECTLY INFLUENCED BY ANATOMIC RELATIONS BETWEEN BONE, SOFT TISSUES, AND TEETH. IT IS ALSO IMPERATIVE THAT THE SURGEON BE FAMILIAR WITH THE LOCATION OF IMPORTANT ANATOMIC STRUCTURES. ESPECIALLY NERVES AND BLOOD VESSELS. TRAUMA TO VITAL STRUCTURES MAY COMPROMISE PATIENT SAFETY AND COMFORT AND ADVERSELY AFFECT PROPER WOUND HEALING.

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ANESTHESIA & PAIN CONTROL**Successful surgery**

- Choice of L.A. drug
- Potency (lowest concentration to block conduction of impulse)
- Onset of action (related to pKa & pH)
- Duration of action (linked to protein-binding capacity)

Knowledge of the anatomy and nerve supply to the oral cavity

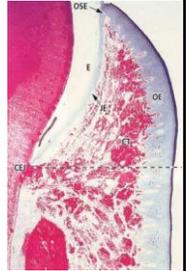
- Trigeminal nerve
 - Maxillary division
 - Mandibular division

ASEPTIC SURGICAL TECHNIQUE**Unique & complex environment**

- Continuous bacterial contamination
- Avascular radicular surface
- Communication with the oral cavity

3 aspects

- Operating room
- Operating team
- Patient

**ASEPTIC SURGICAL TECHNIQUE****Operating room preparation**

- Proper, clean & disinfected unit
- Perfectly sterilized instruments
- Irrigation with sterile saline or water
- Sterile coverings for light handles

**ASEPTIC SURGICAL TECHNIQUE****Operating team**

- Surgical caps & masks
- Disposable & sterile gowns
- Disposable sterile gloves
- Eyes protection
- scrubbing



ASEPTIC SURGICAL TECHNIQUE**Patient preparation**

Informed consent (specific for surgical procedures)

ORAL HYGIENE

Smoking cessation for 1 wk before & 3-4 wks after surgery

Pre-operative rinse with CHX for 30-60 sec

Prophylactic antibiotics for healthy patients (NO EVIDENCE)

ATRAUMATIC SURGICAL TECHNIQUE

A SURGEON MUST BE DEFT, DELICATE, AND ACCURATE IN THE MANAGEMENT OF ALL TISSUES WITHIN THE SURGICAL FIELD.

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ATRAUMATIC SURGICAL TECHNIQUE**Flap management**

- | | |
|---------------------|--------------------------------|
| 1. Incisions | 2. Flap preparation |
| 3. Flap design | 4. Flap reflection |
| 5. Flap retraction | 6. Open flap debridement (OFD) |
| 4. Flap positioning | |

PERIODONTAL SURGERY... INCISIONS

Incision selection & execution is based on careful planning that takes surgical anatomy, the surgical objective, flap design, & the principles of atraumatic tissue management into consideration.

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PERIODONTAL SURGERY... INCISIONS

Careful planning (anatomy, objective, flap design, atraumatic tissue management)

Sharp cutting instrument

Definitive & smooth movement



PERIODONTAL SURGERY... INCISIONS

Surgical predictability begins with clean, smooth incisions. This will result in faster healing & less patient discomfort.

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PERIODONTAL SURGERY... INCISIONS

1. External bevel incision (gingivectomy)
2. Internal bevel incision (reverse bevel / inverse bevel)
3. Sulcular incision (crevicular)
4. Releasing incision (vertical)
5. Thinning incision
6. Cutback incision
7. Periosteal releasing incision

PERIODONTAL SURGERY... INCISIONS... EXTERNAL BEVEL

Objectives: Pocket Elimination
Access to Roots
Improved Gingival
Contours

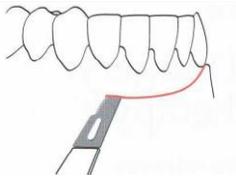
Contained to the gingiva

Coronal direction

Gingivectomy + Flap surgery

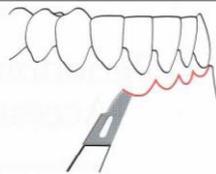


PERIODONTAL SURGERY... INCISIONS... EXTERNAL BEVEL

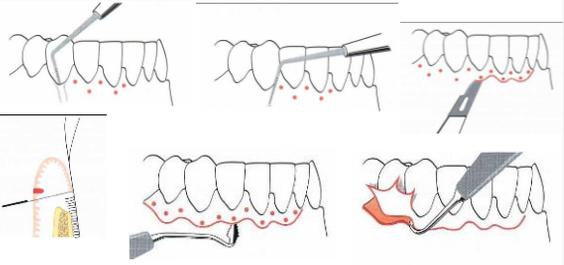


Straight incision technique
(Robicsek 1884)

Scalloped incision technique
(Zentler 1918)



PERIODONTAL SURGERY... INCISIONS... EXTERNAL BEVEL



PERIODONTAL SURGERY... INCISIONS... EXTERNAL BEVEL

Contraindications

- Intrabony defects**
- Narrow zone of KG**
- PD apical to MGJ**
- Anatomical considerations (shallow vault, pronounced EOR)**
- Esthetic concerns (root exposure)**
- High caries index**
- Preexisting root sensitivity**

PERIODONTAL SURGERY... INCISIONS... INTERNAL BEVEL

- Useful in apically positioning the palatal flap margin
- Facial surfaces when adequate KG
- Scalloped incision (ANATOMY)
- ANTICIPATED amount of apical positioning

PERIODONTAL SURGERY... INCISIONS... INTERNAL BEVEL

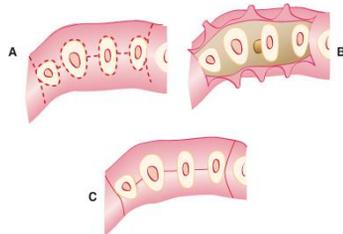


PERIODONTAL SURGERY... INCISIONS... INTERNAL BEVEL



PERIODONTAL SURGERY... INCISIONS... SULCULAR

Preserve tissues



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PERIODONTAL SURGERY... INCISIONS... VERTICAL

Line angles of teeth

Increase access to alveolar bone

Decrease tension of flaps

Limit inclusion of non-diseased sites

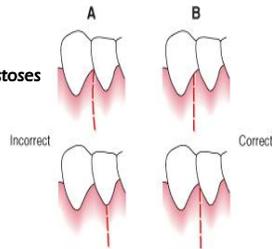


PERIODONTAL SURGERY... INCISIONS... VERTICAL

Placement

- Pronounced concavities**
- Prominent bony ledges or exostoses**
- Root prominences**
- Middle of dental papilla**

Include papilla (blood supply)

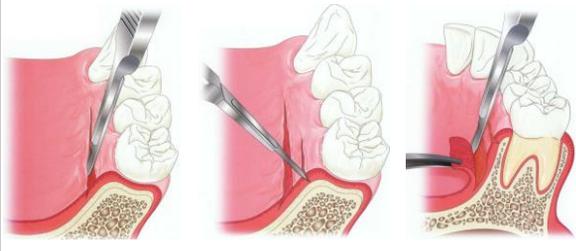


PERIODONTAL SURGERY... INCISIONS... THINNING

Reduce bulk of connective tissue from underside

- Better flap adaptation
- Greater comfort

PERIODONTAL SURGERY... INCISIONS... THINNING



PERIODONTAL SURGERY... INCISIONS... THINNING



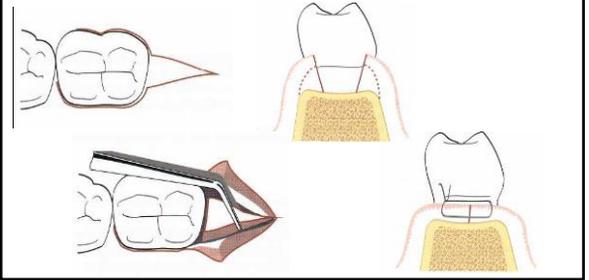
PERIODONTAL SURGERY... INCISIONS... THINNING (TUBEROSITY & RETROMOLAR PAD)

Triangular wedge

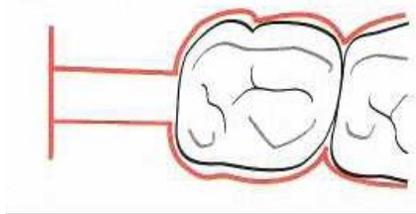
Linear wedge

Trap door

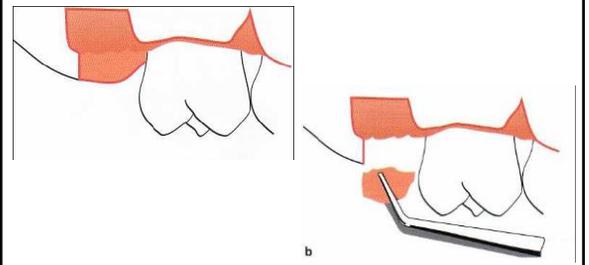
PERIODONTAL SURGERY... INCISIONS... THINNING (TUBEROSITY & RETROMOLAR PAD)



PERIODONTAL SURGERY... INCISIONS... THINNING (TUBEROSITY & RETROMOLAR PAD)

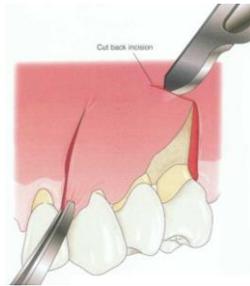


PERIODONTAL SURGERY... INCISIONS... THINNING (TUBEROSITY & RETROMOLAR PAD)



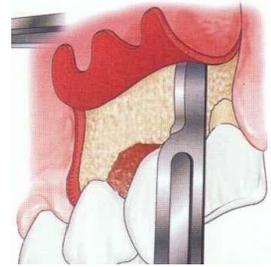
PERIODONTAL SURGERY... INCISIONS... CUTBACK

- Allow greater movement
- Less tension
- Used with pedicle flaps



PERIODONTAL SURGERY... INCISIONS... PERIOSTEAL RELEASING

- Coronal advancement
- Lateral advancement



ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP PREPARATION

- Full thickness flap or muco-periosteal flap
- Partial thickness flap or split-thickness flap



ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP PREPARATION

Table 1-7 Comparison of Full-Thickness Flap and Partial-Thickness Flap

	Full Thickness	Partial Thickness
Healing	Primary healing	Secondary healing
Technical difficulty	Relatively easy	Difficult
Bone defect treatment	Possible	Difficult
Blood supply to flaps	Sufficient	Decrease
Elimination or reduction of periodontal pocket	Possible	Possible
Use with mucogingival surgery	impossible	Possible
Bleeding	Less	Much
Postoperative swelling	Less	Severe
Postoperative pain and discomfort	Less	Much
Fixation of flaps	-	Firm fixation with periosteal suture
Possibility of flap penetration	Less	Much
Thin flap preparation by primary incision	Difficult	Easy
Augmentation of the band of attached gingiva	Possible	Possible

ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP DESIGN

Maintain optimal blood supply

Type of flap preparation (partial vs. full thickness)

Releasing incisions

Flap length (height)-to-base ratio

Different flap designs according to the indication of surgery & the objective of treatment

Apically positioned flap, coronally advanced flap, modified Widman flap

**ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP REFLECTION**

Atraumatic elevation

Papillae are reflected first then marginal gingiva

Across anterior/posterior extent of the flap

GENTLE FORCE

Follow bone morphologic contours

**ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP RETRACTION**

PASSIVE retraction

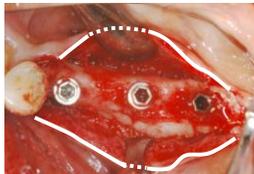
Proper flap design

Adequate flap reflection

Retractor edge always on bone

Continuous flap retraction should be avoided

Frequent irrigation of the surgical site

**ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... OFD**

Prototypical periodontal flap surgery

↑ Effectiveness of SRP

Allows debridement of granulosomatous inflammatory tissue

"Simply stated, roots are planed, defects are degranulated, & flaps are closed either at or apical to their original position."



ATRAUMATIC SURGICAL TECHNIQUE... FLAP MANAGEMENT... FLAP POSITIONING

Repositioning, apical, coronal, or lateral repositioning

The final position should be planned before the start of the surgery

Determined by goals of therapy and the surgical technique

PASSIVE positioning

HEMOSTASIS

Intra-operative



Post-operative

**HEMOSTASIS... INTRA-OPERATIVE... PREVENTION**

Thorough medical history

Surgical anatomy

Good tissue health after initial therapy

Profound anesthesia (vasoconstrictor)

Atraumatic flap management

HEMOSTASIS... INTRA-OPERATIVE... MANAGEMENT

Pressure

Vessel ligation

Full thickness suture

Bone burnishing

Bone wax

Topical hemostatic agents

Cellulose

Collagen

Thrombin

Ferric sulfate

L.A. with vasoconstrictor III

HEMOSTASIS... POST-OPERATIVE

Prevention

The same principles as for intra-operative bleeding
Direct pressure for 5 min after suturing

Management

Locate source of bleeding
Re-open
Stop bleeding

SUTURING

AS IMPORTANT AS INCISION PLACEMENT AND FLAP MANAGEMENT ARE TO THE OUTCOME OF THE SURGICAL PROCEDURE, FLAP ADAPTATION AND STABILIZATION AT THE END OF THE PROCEDURE ARE EQUALLY IMPORTANT. [...] THE SURGEON MUST NOT RELY ON SUTURES TO PULL THE FLAP BEYOND ITS PASSIVE POSITIONING, AS TENSION IS CREATED ON THE FLAP.

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SUTURING**Suture material & needle**

Tissue type & thickness
Location in the mouth
Ease of handling
Cost
Planned time of suture removal

Suturing technique

Final flap position
Surgical procedure (surgical technique)
Ease of placement

**SUTURING... PRINCIPLES**

1. Smallest diameter & least reactive material possible
2. Minimum amount of suture material under flap
3. Adequate bites of tissue
4. Don't place sutures close to incision lines or papilla tips
5. Sutures in keratinized tissue when possible
6. Suture from movable to non-movable tissue
7. Suture knots at side of incision line (not directly over the incision)
8. Careful suture removal without pulling tissues
9. Suture removal as soon as they stop aiding in wound stability (10-14 days)



WOUND MANAGEMENT

Periodontal dressings

Post-operative instructions

**WOUND MANAGEMENT... POST-OPERATIVE INSTRUCTIONS**

Pain medications

Avoid chewing on the area of surgery (until told otherwise)

Avoid mechanical plaque control in the area of surgery (until told otherwise)

CHX mouth wash (0.12% or 0.20%) twice daily

CHX gel applied on the surgical site 5-6 times daily

WOUND MANAGEMENT... POST-OPERATIVE INSTRUCTIONS

Soft diet for 24-48 hours post-op

Avoid hot foods & liquids for 24-48 hours

Intermittent application of ice pack for 8-10 hours

Stop smoking during the healing phase (7-10 days)

Avoid rinsing (even with water) for 24-48 hours

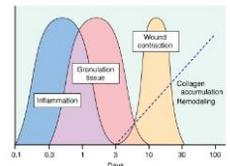
Avoid excessive physical activity for the first few days (4-7 days)

WOUND HEALING

Inflammatory phase

Proliferative (granulation) phase

Remodeling (maturation) phase



WOUND HEALING

Primary intention

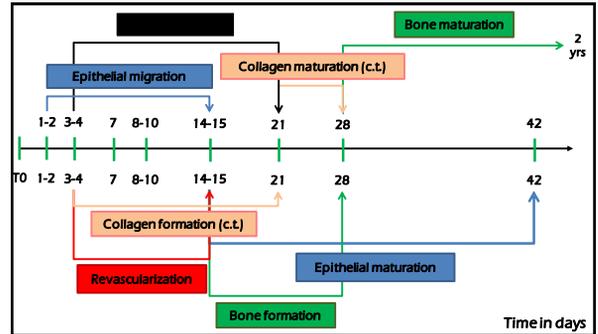
Primary closure (wound margins directly approximated)

Secondary intention

Granulation tissue formation in the gap (wound margins are not approximated)

Tertiary intention

Associated with a disrupted secondary intention healing (infection)



WOUND HEALING

Surgeon influences the course of wound healing

- Choice & placement of incisions
- Design & management of flap
- Extent of alteration to mucosa & bone
- Wound stabilization
- Postoperative care

DECISION MAKING...

WITH THE CURRENT EMPHASIS ON EVIDENCE-BASED PERIODONTAL THERAPY, SCIENTIFIC KNOWLEDGE, WHEN AVAILABLE, SHOULD BECOME THE PRIMARY DRIVING FORCE IN THERAPEUTIC AND SURGICAL DECISION MAKING. CLINICAL JUDGMENT, PERSONAL EXPERIENCE, AND PATIENT PREFERENCES ARE STILL VALUABLE ENTITIES IN THIS DECISION-MAKING PROCESS. BUT THEY MUST BE INTEGRATED WITH SOUND SCIENCE TO IMPROVE THE PREDICTABILITY, QUALITY, AND EFFICIENCY OF PERIODONTAL CARE.

McDonnell HT & Mills MP

*You cannot make men good by
law, and without good men you
cannot have a good society*

C.S. Lewis