

# **The surgical phase of therapy**

## **Phase II Periodontal Therapy**

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### **Surgical Instruments**

Periodontal surgery is accomplished with numerous instruments.

**Periodontal surgical instruments are classified as follows:**

- 1. Excisional and incisional instruments.**
- 2. Surgical curettes and sickles.**
- 3. Periosteal elevators.**
- 4. Surgical chisels.**
- 5. Surgical Files.**
- 6. Scissors.**
- 7. Hemostats and tissue forceps.**

### **Excisional and Incisional Instruments**

#### **Periodontal Knives (Gingivectomy Knives).**

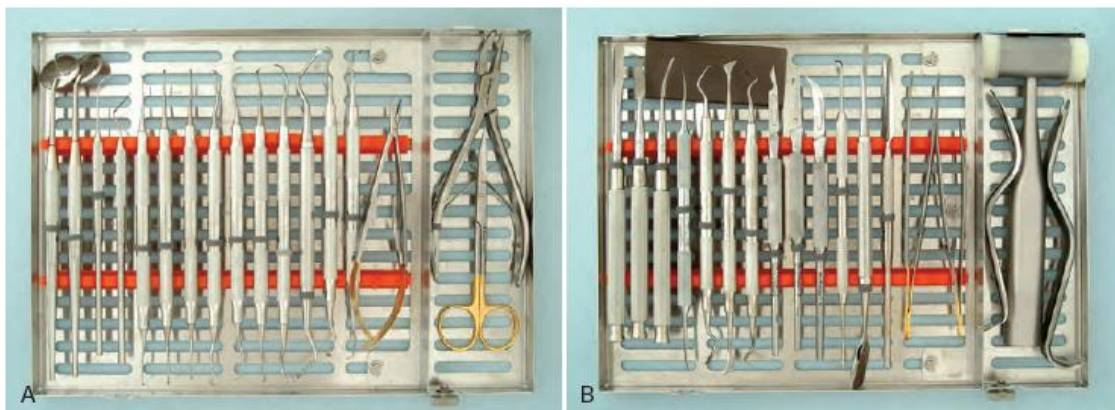
The Kirkland knife is representative of the knives that are typically used for gingivectomy. These knives can be obtained as either double-ended or single-ended instruments. The entire periphery of these kidney-shaped knives is the cutting edge.

## Interdental Knives:

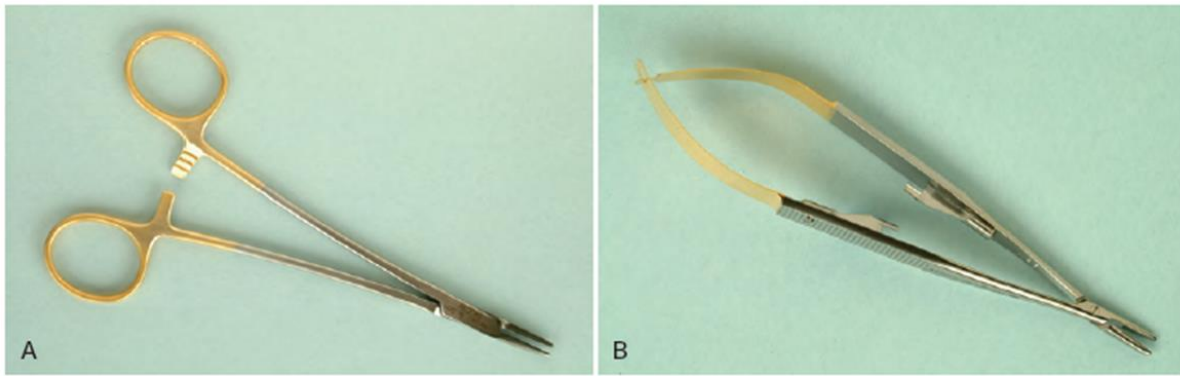
The Orban knife (#1 and #2) and the Merrifield knife (#1 through #4) are examples of knives that can be used for interdental areas. These spear-shaped knives have cutting edges on both sides of the blade, and they are designed with either double-ended or single-ended blades.

## Surgical Blades:

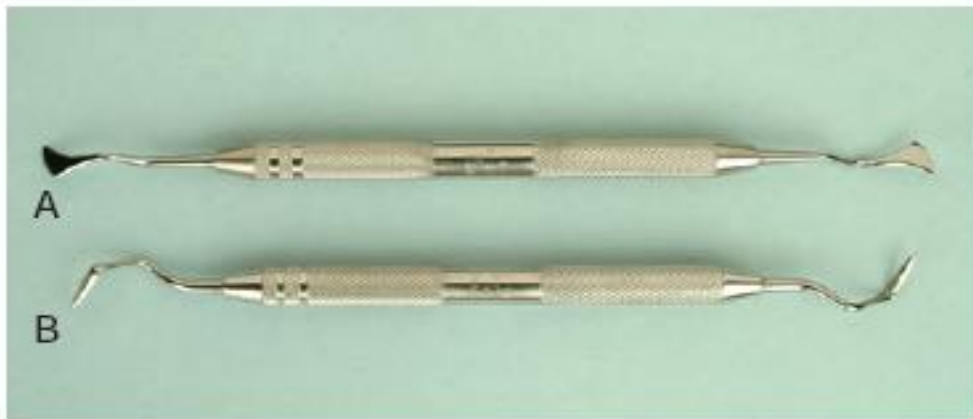
Scalpel blades of different shapes and sizes are used in periodontal surgery. The most common blades are #12D, #15, and #15C. The #12D blade is a beak-shaped blade with cutting edges on both sides that allow the operator to engage narrow, restricted areas with both pushing and pulling cutting motions. The #15 blade is used for thinning the flaps and is also used for general purposes. The #15C blade, which is a narrower version of the #15 blade, is useful for making the initial, scalloping-type incision. The slim design of this blade allows for incising into the narrow interdental portion of the flap. All of these blades are discarded after one use.



**Figure 55-5** A typical series of periodontal surgical instruments, divided into two cassettes. **A**, From left, Mirrors, explorer, probe, series of curettes, needleholder, rongeurs, and scissors. **B**, From left, Series of chisels, Kirkland knife, Orban knife, scalpel handles with surgical blades (nos. 15C, 15, and 12D), periosteal elevators, spatula, tissue forceps, cheek retractors, mallet, and sharpening stone. (A, Courtesy Hu-Friedy, Chicago, IL. B, Courtesy G. Hartzell & Son, Concord, CA.)



**Figure 55-14** A, Conventional needleholder. B, Castroviejo needleholder.



**Figure 55-6** Gingivectomy knives. A, Kirkland knife. B, Orban interdental knife.

### **Surgical Curettes and Sickles:**

Larger and heavier curettes and sickles are often needed during surgery for the removal of granulation tissue, fibrous interdental tissues, and tenacious subgingival deposits. The wider, heavier blades of these instruments are suitable for surgical procedures that require the removal of tenacious tissues and calculus.

### **Periosteal elevators:**

The periosteal elevators are needed to reflect and move the flap after the incision has been made for flap surgery.

### **Surgical Chisels:**

The back-action chisel is used with a pull motion, whereas the straight chisel are used with a push motion.

### **Tissue Forceps:**

The tissue forceps are used to hold the flap during suturing. This instrument is also used to position and displace the flap after the flap has been reflected.

### **Scissors and Nippers:**

Scissors and nippers are used in periodontal surgery to remove tabs of tissue during gingivectomy, to trim the margins of flaps, to enlarge incisions in periodontal abscesses, and to remove muscle attachments in mucogingival surgery.

### **Needleholders:**

Needleholders are used to suture the flap at the desired position after the surgical procedure has been completed.



**Figure 55-7** Surgical blades. *Top to bottom, Nos. 15, 12D, and 15C. These blades are disposable.*



**Figure 55-8** A Prichard surgical curette. The curettes that are used in surgery have wider blades than those that are used for conventional scaling and root planing.



**Figure 55-9** Woodson periosteal elevator.



**Figure 55-10** Back-action chisel.



**Figure 55-11** Ochsenshein chisels are paired, with their cutting edges in opposite directions.



**Figure 55-12** DeBakey tissue forceps.



**Figure 55-13** Goldman-Fox scissors.

## **Incisions**

Periodontal surgery involves the use of horizontal (mesial-distal) and vertical (occlusal-apical) incisions. The #15 or #15C surgical blade is used most often to make these incisions.

### **Horizontal Incisions**

Horizontal incisions are directed along the gingiva in a mesial or distal direction. Flaps can be reflected with the use of only horizontal incision if sufficient access can be obtained in this way and if apical, lateral, or coronal displacement of the flap is not anticipated. If vertical incisions are not made, the flap is called an **envelope lap**.

### **Straight and Scalloped Incisions**

A horizontal incision that follows the scalloped morphology of the gingival architecture is called a scalloped incision, as opposed to a straight incision, which follows a straight line. The scalloped incision is advantageous in preserving the interdental architecture in gingivectomy and in creating surgical papillae and preserving soft tissue over the interdental areas to allow coverage of the interdental bone in flap surgery.

### **External Bevel and Internal Bevel Incisions**

The external bevel incision starts at the surface of the gingiva apical to the periodontal pocket and is directed coronally toward the tooth apical to the bottom of the periodontal pocket. The external bevel incision, or **simply bevel incision**, is used primarily in gingivectomy, and it can be made with a scalpel or a knife. The **internal bevel incision**, also called the **reverse bevel incision** and **inverse bevel incision**, is the opposite of the external bevel incision. The internal bevel incision starts at the

surface of the gingiva and is directed apically to the bone crest. It is the incision from which the flap is reflected to expose the underlying bone and root.

**The internal bevel incision accomplishes three important objectives:**

(1) it removes the pocket lining.

(2) it conserves the relatively uninvolved outer surface of the gingiva, which, if apically positioned, becomes attached gingiva.

(3) it produces a sharp, thin flap margin for adaptation to the bone–tooth junction. The internal bevel incision is basic to most periodontal flap procedures. Both bevel and internal bevel incisions can be straight or scalloped.

### **Crevicular, Crestal, and Submarginal Incisions**

**The crevicular incision** is also called **intercrevicular incision, intracrevicular incision, sulcular incision, intrasulcular incision, and intersulcular incision**. It starts in the gingival crevice and is directed apically through the junctional epithelium and connective tissue attachment and down to the bone.

**The crestal incision** is also called the **marginal incision**. It starts at the surface of the gingiva at the gingival margin and is directed apically down through the epithelium and connective tissue to the bone. Both the crevicular and crestal incisions are internal bevel incisions.

**The submarginal incision** starts at the surface of the gingiva apical to the gingival margin and can be external bevel or internal bevel. In flap surgery, the submarginal incision is an internal bevel incision, whereas in gingivectomy, it is an external bevel incision. The use of a crevicular, marginal, or submarginal internal bevel incision in periodontal flap surgery depends on the objectives of the surgery and the anatomy of the area.



The transgingival interdental probing depth is used to provide a guide for the placement of the submarginal scalloped incision. The transgingival probing depth is the distance from the gingival margin down to the bone. It is measured by inserting the probe into the gingival crevice through the attachment apparatus and down to the bone. Transgingival probing is also called **bone sounding**.

### **Vertical Incisions :**

Vertical or oblique releasing incisions can be used on one or both ends of the horizontal incision, depending on the design and purpose of the flap. Vertical incisions at both ends may be necessary if the flap is to be apically displaced. Vertical incisions must extend beyond the mucogingival junction to reach the alveolar mucosa; this allows for the release of the flap to be displaced.

In general, vertical incisions in the lingual and palatal areas are avoided.

Facial vertical incisions should not be made in the center of an interdental papilla or over the radicular surface of a tooth.

Incisions should be made at the line angles of a tooth either to include the papilla in the flap or to avoid it completely.

The vertical incision should also be designed to avoid long (coronal-apical) and narrow (mesial-distal) flaps.