Periodontal Flap Surgery with Gingival Fiber Retention

by

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The principal objectives of periodontal surgical therapy are the establishment of a healthy gingival unit in the most coronal position possible on the root of the tooth and the preservation and retention of attachment apparatus. A great deal of data has been offered which demonstrates reduction of pocket depth and reattachment of soft tissue to previously denuded root surfaces. The surgical modality of these therapeutic endeavors is based upon the removal of supracrestal gingival fibers, attached epithelial cuff, pocket epithelium and granulation tissue adjacent to the pocket. It is fully recognized, however, that little definitive data is yet available regarding a surgical technique that will permit the optimum postsurgical repair to occur on a predictable basis as well as the predictability of the level at which gingival attachment will occur postsurgically.

The mechanism of gingival repair has been speculated upon in the past. The exact manner in which the collagen fibers from the cut surface of the wound fuse with new fibers that attach them to the denuded root surface is still vague and controversial. In this presentation, a surgical technique is described that is designed to retain part of the gingival fiber apparatus and its ental insertion (Sharpey's fibers). The advantage of retaining inserted collagen fibers is predicated upon the speculation that fusion of these retained gingival fibers with newly forming connective tissue fibers from the healing margin may provide a connective tissue barrier to prevent apical migration of the epithelial attachment thereby permitting predictable repair of the gingiva in its most coronal position and without loss of supporting bone.

Operative Procedure

An internally bevelled incision is made in the gingiva in a scalloped line using a number 15 Bard Parker blade (Fig. 1, Diagram A). Vertical releasing incisions may be utilized and are particularly desirable when a single tooth or only a few teeth are being operated. Vertical releasing incisions may also be useful when a partial thickness flap (split thickness flap) is employed. A gingivo-mucoperiosteal flap is then reflected (Fig. 1, Diagram B). Pocket depths, having been previously noted, are now rechecked. Markings may be made on that portion of the gingiva remaining attached to the tooth to outline and record pocket depth just as one does in the performance of a gingivectomy. Excision of the detached gingiva coronal to the attached epithelial cuff is accomplished using a number 12 Bard Parker blade or other suitable instruments (Fig. 1, Diagram C). This latter procedure must be executed with delicacy and precision so that the gingival unit attached to the tooth is not excised. If osseous surgical recontouring procedures are necessary, they may be performed in the conventional manner using rotating burs or hand chisels. Osteoplasty procedures, such as interproximal grooving, elimination of shelves or ledges, and the correction of interproximal crater, will not present problems even though complete visualization of the bony crest and interproximal bony septa may not always be possible. Extensive osseous surgical procedures, in association with infrabony defects requiring osteotomy or grafting procedures, may be more difficult to perform without incision or removal of the attached gingival fibers. This type of therapy, however, can still be performed. The surgeon must be cognizant of the anatomy of the area, and proceed cautiously, knowing that a zone of attachment of gingival fibers is existent coronal to the alveolar bone in all infrabony pockets. The flap is then replaced, and preparation for suturing is made. The flap is sutured into the desired position (Fig. 1, Diagram D) set forth at the original plan of the surgical procedure. Interrupted, or suspensory, sutures may be employed. A surgical dressing is placed over the operated area and may remain in position for ten days. Redressing of the wound is seldom required.
Figure 2. A. Periodontal flap surgery with the retention of gingival fibers was performed on buccal and lingual surfaces. Preoperative pocket depth ranged from 4 to 7 mm. Internally beveled incision was performed on the buccal surface extending distal to the last molar. B. Gingivomucoperiosteal flap was reflected. C. Gingiva is in contact with the bottom of the pockets was excised. D. Flap was sutured into position covering retained gingival fibers. Interrupted sutures were used suturing buccal flap to lingual flap. E. Postoperative 12 months. Gingiva is healthy. Minimal recession has occurred.
FIGURE 3. A. Shows area to be operated after definitive scaling and curetage. B. Internally bevelled incision in the attached gingiva extending from mandibular left first bicuspid to mandibular right first bicuspid has been performed. C. Gingiva coronal to the bottom of the pockets has been removed. Supracrestal defects requiring ostectomy are evident. D. Ostectomy has been performed without excision of supracrestal gingival fibers. E. Flap was replaced and sutured using suspensory sutures. In this situation no lingual flap was used.
Figure 4. A. Periodontal flap surgery with retained gingival fibers on the lingual surface of the mandibular arch is demonstrated. Area to be operated is shown after definitive scaling and curetage, with pocket depths ranging from 6 to 8 mm. B. Internally bevelled incision extending anterior to the first bicuspids and distal to the last molar was performed. C. Supracrestal gingival fibers remaining attached to the tooth after the removal of the diente cortical to the bottom of the pocket are shown. Osteotom defects are present which were treated with osteoplasty. D. Flap was replaced over the retained gingival fibers and sutured using interrupted sutures. E. Three weeks postoperative.
Figure 5. A. Indicates the application of flap surgery with gingival fiber retention where a deep infrabony pocket of 8 mm existed on the mesial of the maxillary left canine. A rootseal attachment operation without grafts was employed on this surface. Interproximal pockets existed around the posterior teeth as well as buccal bifurcation involvement on the molars. It was necessary to use an anterior vertical releasing incision and a distal wedge posteriorly. Scalloped internally bevelled incision, and deflected flap are shown. B. Detached gingiva has been excised. Osteoplasty will be performed interproximally in the bifurcation areas and on the distal of the last molar. C. Gingival fibers were retained in the infrabony defect. D. Flap sutured covering gingival fibers. E. Closure of vertical releasing incision with some apical repositioning of flap over the maxillary canine. F. The area 10 m. in after surgery.
Figure 6. A. The zone of attached gingiva that existed before surgery was to be increased by apical repositioning of the flap which is shown reflected with gingival fibers retained. B. Osteoplasty was performed by interdental grooving and reshaping the alveolar crest. C. Flap was apically repositioned using suspensory sutures. D. Nine days post-surgery shows the apparent union of the flap edge with the retained gingival fiber unit. E. Six weeks post-surgery.
Apically Repositioned Flap and Retention of Gingival Fibers

The circumstances requiring the zone of attached gingiva to be increased and the location and design of the internally bevelled incision in relation to the gingival margin have been delineated previously. The same principles apply when surgery is performed with retention of gingival fibers. Consequently, when deep pockets are present and the bottom of the pocket is close to the mucogingival junction, or when the amount of gingiva is minimal, the internally bevelled incision must be made close to the gingival margin. In this way, gingiva is retained and sutured apical to its former position so that the zone of attached gingiva will be increased.

Pocket Elimination Requiring Osseous Surgery without Mucogingival Problems

Occasionally, pockets may exist in conjunction with bony defects where there is an adequate zone of attached gingiva. In such circumstances, the surgical plan may be modified by making the scalloped internally bevelled incision in the gingiva apical to the pocket. This enables the surgeon to retain a greater bulk of attached gingival fibers after pocket elimination. Surgery is thereby simplified and the flap more easily placed back into its former position by suturing it to the retained fiber unit (Fig. 7).
SUMMARY AND CONCLUSIONS

A surgical technique has been presented which is predicated upon a principle of retention of a viable portion of the periodontium. Removal of the supra-crestal gingival flap apparatus that must regenerate postsurgically is not in the interest of good surgical technique. In addition, it is suggested that the retention of viable collagen fibers already inserted into the cementum may insure the most coronal postsurgical repair with maximum protection against the loss of supporting bone. The suggestion that a union between the inserted collagen fibers and the flap margin does occur has been substantiated in a histologic study performed using human beings and designed to test this hypothesis.

BIBLIOGRAPHY


FIGURE 8. A: Shows operated area from mandibular left central incisor to mandibular left second bicuspids. An adequate zone of attached gingiva existed and extensive surgery was to be performed. B: Exposed alveolar process indicates the area where osseous surgery will be performed. C: Detached gingiva was excised and osteoplasty was performed. D: Flap was sutured to retained gingival fiber and using interrupted sutures. E: Nine months postsurgery.