MODIFIED WIDMAN FLAP TECHNIQUE: THE CASE SERIES

Dr Neelam Gavali[1], Dr Yogesh Khadtare[2], Dr Abdul Aziz[3], Dr Pramod Waghmare[4], Dr Priya Lele [5]

1] Department of Periodontology, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital-Pune, Assistant Professor.

2] Department of Periodontology, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital-Pune, Assistant Professor

3] Periodontist, Working at Abeer Medical Centre, Jeddah, KSA

4] Department of Periodontology, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital-Pune, Professor.

5] Department of Periodontology, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital-Pune, Associate Professor.

ABSTRACT:

The Modified Widman flap (MWF) is the most common and conservative surgical therapy to eliminate the inflamed gingival tissue, to provide accessibility and visibility and also for root debridement. It is classified with the "access flap operations" because the goal of the flap reflection primarily provides improved visual accessibility to the periodontally involved tissues[8]. The Modified Widman flap surgery is not aimed at surgical elimination of pocket wall. It is aimed at pocket reduction in areas of previous periodontal pockets with minimum loss of periodontal tissues during and after the surgery[6].

KEYWORDS: Modified Widman Flap, Gingival Inflammation

INTRODUCTION:

Dr. Widman introduced the reverse bevel scalloped gingival incision in 1916 as a modification of Neumann's periodontal flap surgery[2]. Dr. Widman made a scalloped gingival incision around the gingival margin about 1 mm away from the teeth, raised a high mucoperiosteal flap beyond the apices of the teeth, curetted the soft tissue collar around the teeth, did a thorough root planing of the teeth and minor trimming of bone for flap adaptation, and closed the flap by individual interproximal sutures[3]. The procedure mainly aimed at treatment of periodontal pockets and reattachment and readaptation of the pocket walls rather than surgical eradication of the outer walls of the pockets. The method is mainly characterized by precise incisions, partial flap reflection and is an atraumatic procedure. The goal is not necessarily pocket elimination but "healing" (regeneration or a long junctional epithelium) of the periodontal pocket with less tissue loss.

Indications:

• The Modified Widman Flap is a preferred for the treatment of all types of periodontitis but is mostly effective with pocket depths of 5-7mm.

• Dependent upon the pathologic and morphologic situation on the individual teeth, the MWF may be combined osseous surgeries such as resective methods and special procedures such as root resection, hemisection, osseous implantations and infrequently also with gingivectomy/gingivoplasty (combined surgical procedures, p.366).

Contraindications:

There are few contraindications for the MWF:

• In cases with very thin and narrow attached gingiva the technique can be difficult, because a narrow band of attached gingiva does not allow the initial incision (internal gingivectomy). In such situations, it may be necessary to use the classic marginal or even an intrasulcular incision.

• MWF is contraindicated extensive osseous surgical procedures (osteoplasty or ostectomy) with very deep osseous defects and irregular bone loss facially and orally, and if apical flap repositioning is planned.

This article discusses Modified Widman Flap procedures in patients with chronic generalized periodontitis with localized idiopathic gingival enlargement.

MODIFIED WIDMAN FLAP PROCEDURE [6, 7,10]:

Step 1-

The initial incision is an internal bevel incision to the alveolar crest which starts from 0.5mm to1mm away from the gingival margin. Scalloping follows the way of gingival margin. Care should be taken to insert the blade in such a way that the papilla is left with a thickness which is similar to that of the facial flap. Vertical relaxing incisions are not necessary .

Step 2-

With a periosteal elevator a full thickness flap should be reflected atraumatically. The flap is reflected only to permit direct visualization and accessibility of the root surface and the alveolar crest.

STEP 3-

A crevicular incision is made from the bottom of the pocket to the bone, circumscribing the triangular wedge of tissue containing the pocket lining.

STEP 4-

After the flap is reflected, a third incision is made in the interdental spaces coronal to the bone with curette or an interproximal knife and gingival collar is removed carefully.

STEP 5-

Tissue tags and granulation tissue are removed with a curette and irrigation is done for cleaning the area for better visualization. The root surface are checked, then scaled and planed if needed. Residual periodontal fibres attached to the tooth surface should not be disturbed.

STEP 6-

Bone architecture can be corrected if it prevents good tissue adaptation to the neck of the teeth. The flaps are adapted to the bone with finger pressure. If the adaptation between the flap and the teeth or between the buccal and lingual flaps is incomplete, the flap can be thinned and some bone may be removed from the outer aspects of the alveolar processes in order to enhance the flap adaptation and reattachment.

STEP 7-

Interrupted sutures are placed in each interdental space[10].

CASE 1:

A 35 year old male arrived to the department of periodontology with the chief complaint of swollen gums. Patient desired treatment for the same. Intra-oral examination revealed that he had generalized chronic periodontitis with localized idiopathic gingival enlargement from lower right canine to left first premolar region. The patient complained of pain in the lower left canine and premolar region, the pain was dull, gnawing and was aggravated on chewing and subsided on its own after 15 minutes, the patient had taken antibiotics and anti-inflammatory drugs for the same before 15 days. The complete medical and family history was recorded and blood investigations were carried out to rule out any contraindications for the surgery. Patient had undergone full Phase-1 periodontal therapy. The entire procedure was explained to the patient and a written informed consent was obtained. Extra-oral examination showed no significant findings. His face was symmetric and had a straight profile. Clinical examination revealed plaque and calculus deposits with gingival inflammation, average probing depth of 8mm-9mm, average clinical attachment loss of 6-7mm with no mobility and inadequate width of attached gingiva in lower anterior region. Patient was given post-operative instructions and antibiotics. Patient was recalled on second day post-operatively to rule out discomfort and post-operative swelling. Patient recalled after 7 days post-operatively.

FIGURE 1: PRE-OPERATIVE

FIGURE 2: POST-OPERATIVE

CASE -2:

A 28yr old female reported to the department of periodontology with the chief complaint of swollen gums. Patient desired treatment for the same. Intra-oral examination revealed that she had generalized idiopathic gingival enlargement. The patient had severe pain in the lower front tooth region, the pain was dull, gnawing and was aggravated on chewing and subsided on its own after 15 minutes, the patient had not taken any medications for the same. A complete medical and family history was recorded and blood investigations were carried out to rule out any contraindications for the surgery. The entire procedure was explained to the patient

and a written informed consent was obtained. No significant findings revealed after extra-oral examination. Her face was symmetric and had a straight profile. Clinical examination revealed plaque and calculus deposits with gingival inflammation, average probing depth of 8-9mm, average clinical attachment loss of 6-7mm with no mobility and inadequate width of attached gingiva in the lower anterior region. Non-surgical Phase I therapy was carried out for the patient. After phase I therapy pockets still persist more than 5 mm. The Modified Widman Flap was then carried out and interrupted sutures were placed. Patient was given post-operative instructions and antibiotics. Patient was recalled on second day post-operatively to rule out discomfort and post-operative swelling. Patient recalled after 7 days post-operatively.

FIGURE 3: PRE-OPERATIVE

FIGURE 4: POST-OPERATIVE

CASE -3:

A 48yr old Male reported to the department of periodontology with the chief complaint of swollen gums. Patient desired treatment for the same. Intra-oral examination revealed that he had chronic generalized periodontitis. The patient had pain in the upper left tooth region, the pain was dull, gnawing and was aggravated on chewing and subsided on its own after half an hour, the patient did not taken any medications for the same. A complete medical and family history was recorded and blood investigations were carried out to rule out any contraindications for the surgery. The entire procedure was explained to the patient and a written informed consent was obtained. Extra-oral examination revealed no significant findings. His face was symmetric and had a straight profile. Clinical examination revealed plaque and calculus deposits with gingival inflammation, average probing depth of 9-10mm, average clinical attachment loss of 6-7mm with no mobility and inadequate width of attached gingiva in the upper left posterior region. Non-surgical Phase I therapy was carried out for the patient. After phase I therapy pockets still persist more than 5 mm. The Modified Widman Flap was then carried out and interrupted sutures were placed. Patient was given post-operative instructions and antibiotics. Patient was recalled on second day post-operatively to rule out discomfort and post-operative swelling. Patient recalled after 7 days post-operatively.

FIGURE 5: PRE-OPERATIVE

FIGURE 6: POST-OPERATIVE

DISCUSSION:

The Modified Widman flap (MWF) is one of the most routine conservative surgical therapy which aims to eliminate the inflamed gingival tissue and also to provide access for root debridement[7].The main advantage of the modified widman flap surgery is the intimate postoperative adaptation of healthy collagenous tissues to all tooth surfaces with high amount of success rate. It has been studied experimentally that in animals and humans,with a close adaptation and attachment of gingival tissues to the tooth surface, a marginal new epithelial attachment forms which tends to seal the deeper areas of separation in between the tooth and also the surrounding tissues[7]. The healing connective tissues may also adapt closely to the tooth surfaces as it gets to an implant and reattach with formation of new cementum will too develop in a period of time from the apical region of the lesion[9]. Some areas may gradually develop a very long epithelial attachment which can cause continuous irritation and may open up as a pathologic pocket again[11]. The advantage of the modified Widman flap surgery, compared with conventional reverse bevel flap surgery with bone surgery for pocket elimination, is that it is conservative of bone and optimal coverage of root surfaces by soft tissues which is esthetically beneficial and also facilitates better oral hygiene. The procedure allows less exposure of root surfaces which in turn results in less root sensitivity. Modified Widman flaps also results in more pocket closure and more regeneration of bone than conventional reverse bevel flap surgery[12]. After surgery plaque and food debris can be found on sutures and should be carefully removed with a cotton pellet to inspect all incision margins. From 7-14 days after surgery, the flap is still susceptible to mechanical trauma and after only 4-5 weeks it is completely reattached to bone and teeth so no differences with the neighboring tissue are present[14, 15].

TABLE 1: Healing Index of Landry, Turnbull and Howley [14,16,17]

Healing index	Tissue color	Bleeding on palpation	Granulation tissue	Incision margin	Suppuration
1 - Very Poor: 2 or more signs	≥ 50% of red gingiva	Yes	Yes	not epithelialized, with loss of epithelium beyond	Yes

are present				incision margin	
2 – Poor	≥ 50% of red gingiva	Yes	Yes	not epithelialized, with exposed connective tissue	No
3 – Good	25 - 50% of red gingiva	No	No	no exposed connective tissue	No
4 - Very Good	< 25% of red gingiva	No	No	no exposed connective tissue	No
5 - Excellent	all pink tissues	No	No	no exposed connective tissue	No

CONCLUSION:

Modified Widman Flap procedure has good results for patients who have generalized chronic periodontitis with gingival enlargement. The patient was recalled after 4-5 weeks for post-operative follow up and the results after surgery were very good as per the Healing index of Healing Index of Landry, Turnbull and Howley [14,16,17].

REFERENCES:

1: Takei H, Carranza FA. The flap technique for pocket therapy. In: Newman MG, Takei H, Carranza FA, Klokkevold PR, editors. Carranza's clinical periodontology. 12th ed., Missouri, Saunders Elsevier, 2015:593.

2: Widman, L.: The operative treatment of pyorrhea alveolaris. A new surgical method. Sv. Tandl. Tidsk., Dec., 1918.

3: Neumann, R.: Die Alveolarpyorrhoe und ihre Behandlung. Hermann Meusser, Berlin, 1920. Third ed.(First edition was published 1911, second edition 1915).These were not available.

4: Everett, F. G., Waerhaug, J. and Widman, A.: Leonard Widman: Surgical treatment of pyorrhea alveolaris. J. Periodont., 42:571, 1971.

5: Levine, H. L.: Periodontal flap surgery with gingival fiber retention. J. Periodont., 43:91, 1972.

6: Sigurd P. Ramfjord , L.D.S, Ph.D, Robert Nissle, D.D.S ,M.S. The Modified Widman Flap; J. Periodontol. August, 1974

7: Jaber Yaghini 1, Vahid Sakhaei Manesh 2, Noushin Janbakhsh; Effect of Modified Widman Flap Surgery on Maximum Molar Bite Force: A Clinical Trial; Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran , September 2016; Vol.13, No.5

8: Carranza's Clinical Periodontolgy: 10th edition; Michael Newman

9: Sullivan, H., Carman, D., and Dinner, D.: Histological evaluation of the laterally positioned flap. #467. I.A.D.R. abstracts 1971.

10: Bodine, R. L., and Mohammed, C. J.: Histologic studies of a human mandible supporting an implant denture. Part II. J. Prosth. Dent. 26:415, 1971.

11: Levine, H. L., and Stahl, S. S.: Repair following periodontal flap surgery with the retention of gingival fibers. J. Periodont., 43:99, 1972.

12: Kelly, G. P.: Relationships radiographic bone height, pocket depth and attachment level in a longitudinal study of periodontal disease. Ann Arbor, The Univ. of Mich., 1973. viii + 76 p. typed thesis.

13: Aus: Rateitschak u. a., Periodontology (ISBN 3-13-675003-9) © 2005 Georg Thieme Verlag "Access Flap" Surgery, Open Flap Debridement (OFD)—Modified Widman Flap (MWF)

14: Roberto Pippi: Post-Surgical Clinical Monitoring of Soft Tissue Wound Healing in Periodontal and Implant Surgery; Int J Med Sci. 2017; 14(8): 721–728. Published online 2017 Jul 18. doi: 10.7150/ijms.19727

15: Sculean A, Gruber R, Bosshardt DD. Soft tissue wound healing around teeth and dental implants. J Clin Periodontol. 2014;41(Suppl. 15):S6–S22. [PubMed] [Google Scholar]

16: Landry RG, Turnbull RS, Howley T. Effectiveness of benzydamyne HCl in the treatment of periodontal post-surgical patients. Res Clin Forums. 1988;10:105–118. [Google Scholar]

17: Masse JF, Landry RG, Rochette C. et al. Effectiveness of soft laser treatment in periodontal surgery. Int Dent J. 1993;43:121–127. [PubMed] [Google Scholar]