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RESEARCH ARTICLE

COMPARISON OF TWO DIFFERENT CROWN-LENGTHENING PROCEDURES

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Key words:-

Crown lengthening, apically displaced flap, osteotomy.

Abstract

Background: Surgical crown lengthening procedure is done to increase the clinical crown length lost due to caries, attrition & fracture. In such cases before going for restorative treatment crown lengthening procedure has to be performed because violation of biologic width may compromise periodontal health. Several techniques have been proposed which includes gingivectomy by external bevel incision, flap procedure with osteotomy & apically positioned flap with osteotomy.

Aim: To compare clinically two different surgical techniques of crown lengthening procedures: Group A - apically displaced flap with osteotomy, Group B - flap procedure with osteotomy.

Materials and methods: Fourteen patients who were advised CLP included & divided in two groups: Group A included patients who underwent apically displaced flap with osteotomy & Group B included patients who underwent flap procedure with osteotomy. Clinical measurements such as clinical crown length, width of attached gingiva, PPD, CAL & plaque index were taken at baseline and at 3rd month post-operatively.

Results & Conclusion: present study showed that there were no statistically significant differences in PPD, CAL in both groups. Clinical crown length is increased in both groups from baseline to 3 months. In group A where apically positioned flap with osteotomy was performed width of attached gingiva was more at 3rd month from baseline.

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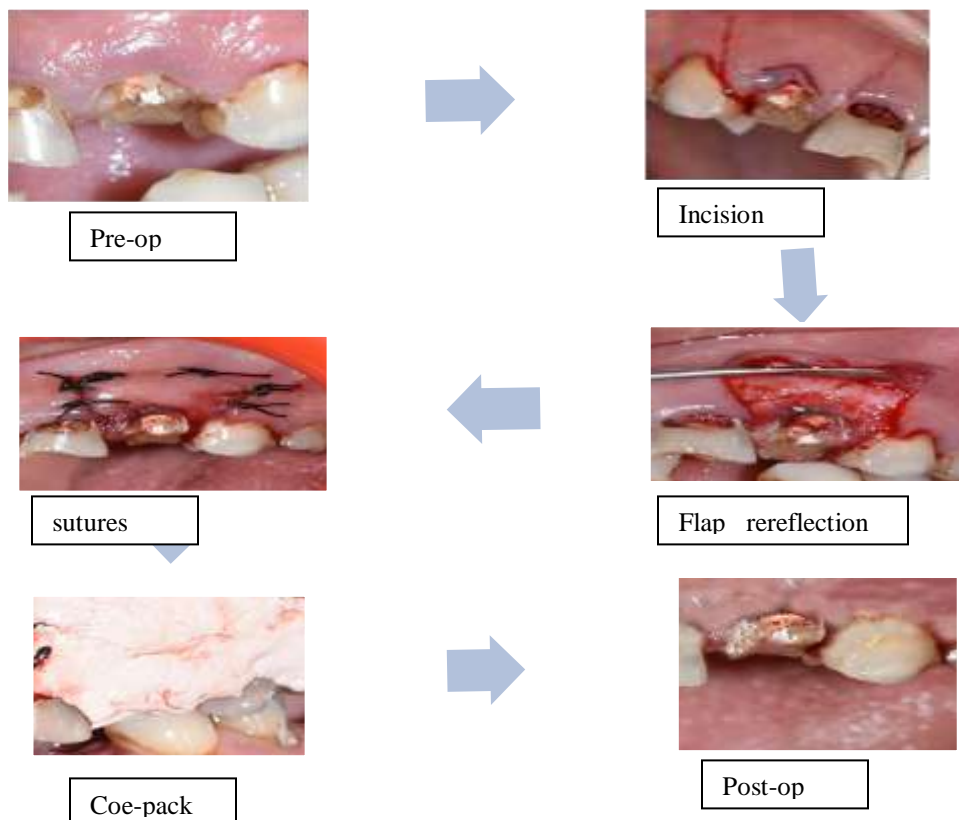
Introduction:-

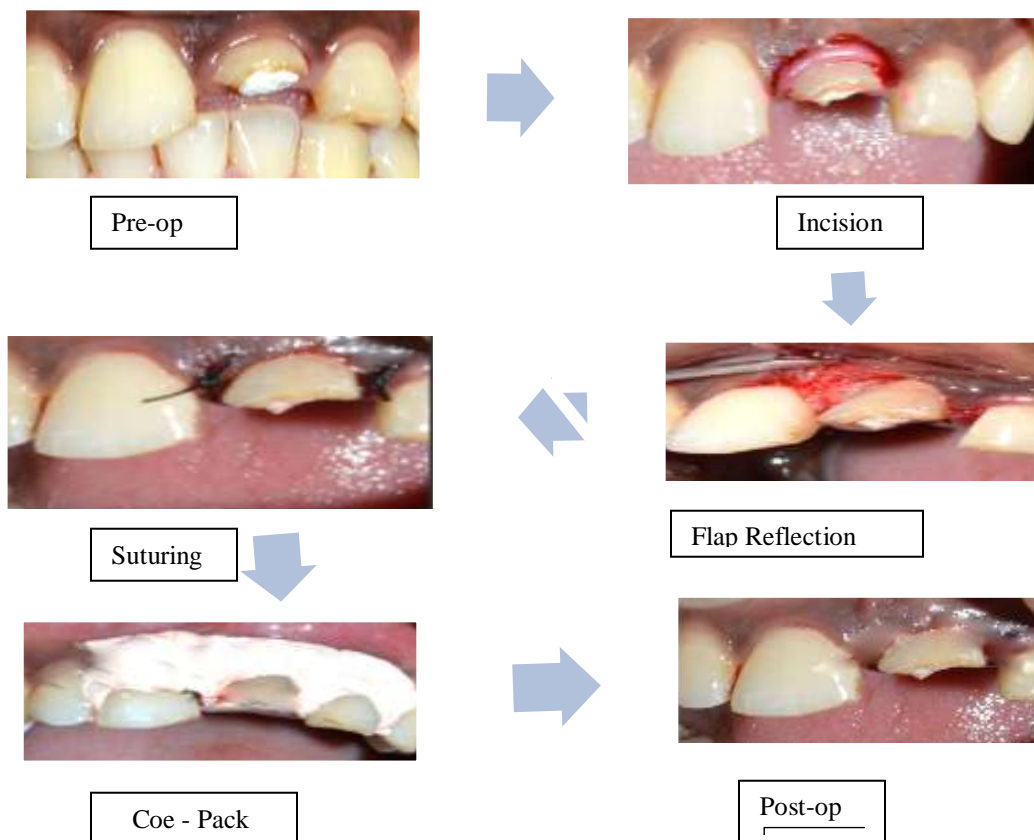
The need for crown lengthening arises when the clinical crown is insufficient for the placement of crown.¹ A short clinical crown may lead to improper tooth preparation thereby causing poor retention of the crown. Surgical crown lengthening procedure is done to increase the clinical crown length to avoid violation of the biological width. The indications for crown lengthening are restorative needs, to increase clinical crown height lost due to caries, fracture or wear, to access subgingival caries, to produce a ferrule for restoration, to access a perforation in the coronal third of the root, to relocate margins of restorations that are impinging on biological width, esthetics, short teeth, uneven gingival contour and gummy smile.² Several techniques have been proposed for clinical crown lengthening which includes gingivectomy, apically displaced flap with or without resective osseous surgery and surgical extrusion using periotome.³

Materials and methods:-

Fourteen patients who were advised CLP included & divided in two groups - Group A included patients who underwent apically displaced flap with osteotomy & Group B included patients who underwent flap procedure with osteotomy. **Inclusion criteria:** 1. Men and women aged ≥ 18 years 2. Patients with insufficient clinical crown and needing a prosthetic restoration ; **Exclusion criteria** - relevant medical conditions contraindicating surgical interventions; 1) pregnancy or lactation 2) smoking > 10 cigarettes/day 3) patients with active periodontal disease. Clinical measurements such as clinical crown length, width of attached gingiva, PPD, CAL & plaque index (Turesky- Gilmore- Glickman modification of Quigley Hein Index 1970) were taken at baseline and at 3rd month post-operatively.

Group 1:- Apically displaced flap with osteotomy



Group 2:-flap procedure with osteotomy**Results:-****Table 1:-**showing comparison of clinical parameters in both groups

	Clinical crown height (mean) mm		Probing pocket depth (mean) mm		Clinical attachment level (mean) mm		Width of attached Gingiva (mean) mm		Plaque Index (mean)	
	preop	postop	preop	postop	preop	postop	preop	postop	preop	Postop
Apically displaced flap procedure with osteotomy	1	3	2	2	2	2.2	1.8	2.2	1	0
Flap procedure with osteotomy	0.5	2.8	2	2	2	2.3	1.8	1.4	1	0
p value	>0.05		>0.05		>0.05		<0.05		>0.05	

In table 1, both the groups showed 2mm increase in clinical crown length from baseline to 3rd month whereas in intergroup comparison there were no stastically significant differences in PPD, CAL, and in clinical crown length. Width of attached gingiva was increased at 3rd month from baseline in group A i.e. where apically positioned flap

with osteotomy was performed compared to other group where flap procedure with osteotomy has been performed. P value was > 0.05 for plaque index suggesting no significance & that both groups are comparable.

Discussion:-

In the present study, we compared flap procedure with osteotomy and apically displaced flap procedure with osteotomy. On intergroup comparison for PPD, CAL there was no significant difference from baseline to 3 months. Plaque Index score from 1 to 0 showed that patients were able to maintain good oral hygiene with either of the procedures. Herrero et.al (1995) & Kiran et.al (2012) showed no significant changes in clinical parameters like PPD, plaque index, etc from baseline to 8 weeks when compared in cases of gingivectomy and apically positioned flap with or without osteotomy.^{4,5} Clinical crown height is increased by 2mm in both groups 3 months postoperatively so both techniques are comparable. The patients in whom apically displaced flap with osteotomy procedure was performed showed significant increase in width of attached gingiva at 3months from baseline compared to patients where flap procedure with osteotomy was performed. Rajesh et.al 2016 compared three crown lengthening procedures gingivectomy, apically displaced flap and surgical extrusion where he found no change in the width of attached gingiva and minimal change in the interdental papilla height between pre-operative and post-operative measurements in the crown lengthening procedure done by surgical extrusion using periotome when compared to the other conventional surgical procedures.⁶ Guerino et.al (2016) compared papilla preservation crown lengthening (PPCL), the apically positioned flap with buccal approach (APF-B), and the apically positioned flap with buccal and palatal approach (APF-BP) and found no statistically significant differences in many of the clinical parameters examined, APF-B and APF-BP showed a significantly higher interproximal clinical attachment loss when compared to PPCL.⁷

Conclusion:-

In the present study comparison of flap procedure with osteotomy and apically displaced flap procedure with osteotomy is done. As per our knowledge, no studies have been conducted till date to compare these two techniques. Present study showed that both the procedures are comparable in PPD, CAL & Plaque index. Apically positioned flap with osteotomy showed significant increase in width of attached gingiva compared to flap procedure with osteotomy. Present study concludes that when insufficient width of attached gingiva is present apically positioned flap with osteotomy should be preferred over other techniques for crown lengthening.

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