Case Report
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Aesthetic Crown Lengthening Surgery: A Remedy for Excessive Gingival Display

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ABSTRACT

Excessive gingival display is a descriptive term rather than a diagnosis. Gummy smile is a non-pathological condition causing aesthetic disharmony in which an excessive amount of gingival tissue is exposed when smiling. Among several aetiologies, altered passive eruption is one responsible for gummy smile which is corrected through aesthetic crown lengthening surgical procedure. Identification, diagnosis, and classification of all factors resulting in gummy smile is imperative for appropriate management. Here a case of aesthetic crown lengthening surgery in a 24-year-old female with gummy smile is presented.

Keywords: Aesthetic; altered passive eruption; gummy smile.

INTRODUCTION

Excessive gingival display while smiling is referred as gummy smile.[1] For diagnosis, smile has been classified into low, normal, and high based upon relationship between lower border of upper lip and gingival margin.[2] High smile indicates exposure of total cervico-incisal tooth length and some amount gingival tissue.[3]Altered passive eruption, bony maxillary excess, gingival enlargement, deficient lip length, and excessive lip mobility are common causes. There are different treatment approaches for the correction of gummy smile based upon aetiology.[1] Among them aesthetic crown lengthening surgery is one which involves removal or apical displacement of gingival tissue with or without osseous reduction.

CASE REPORT

A 24-year-old female reported to the Department of Periodontology and Oral Implantology, College of Dental Surgery, B. P. Koirala Institute of Health Sciences with a chief complaint of gummy smile. She had no significant medical history. Intraoral examination revealed scanty amount of plaque accumulation with mild inflammation of marginal gingiva (Figure 1). On dynamic smile there was exposure of more than 4 mm of band of gingival tissue (Figure 2). The width and height of the maxillary anterior teeth were assessed. Based upon the measurement of dimension of the maxillary anterior teeth, transgingival probing depth, detection of cementoenamel junction (CEJ), and level of marginal gingiva a diagnosis of "altered passive eruption" was made. Approximately 3 mm of transgingival probing depth and level of CEJ coincident with osseous crest made the presented case to be diagnosed as type IB altered passive eruption.[4] For the management, aesthetic crown lengthening was planned. The patient was explained about the procedure and informed consent was obtained.

Non-surgical periodontal therapy was performed and the patient was scheduled for surgical intervention after one month. Before proceeding with the surgical procedure, blood reports were analysed and found to be within physiological range. On the day of the surgery, adequate amount of local anaesthetic agent was deposited to anaesthetise the surgical site. Bleeding points were marked (Figure 3) taking existing dimension of teeth as guide in order to maintain the golden ratio of 78% to 80%.[5] Internal

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bevel gingivectomy (Figure 4) was performed with number 15 surgical blade along the bleeding points in order to remove the excessive gingival tissue (Figures 5, 6). After excision, distance between margin of gingiva and level of osseous crest was measured and found to be less than 3 mm which led to planning for mucoperiosteal flap elevation.[4] After elevation of flap in order to prevent the violation of biologic width osseous reduction was done using low speed hand-piece and carbide bur under copious irrigation (Figure 7). Interrupted sutures were placed with 4-0 black silk suture (Figure 8). Post-surgical instructions and medications including non-steroidal anti-inflammatory drugs (NSAIDs) with chlorhexidine mouth wash (0.2%) were prescribed. Sutures were removed after one week (Figure 9) and an uneventful healing was appreciated. Oral hygiene instructions were given and patient was kept under maintenance and regular follow-up (Figure 10).

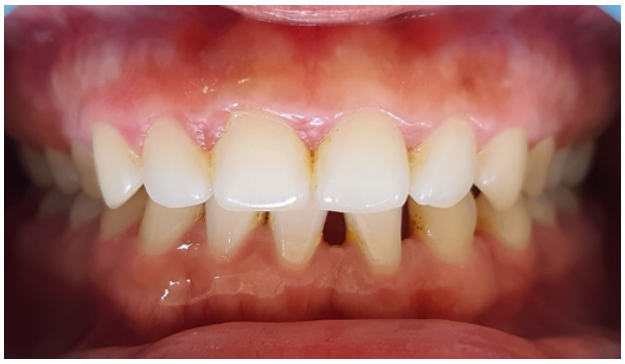

Figure 1: Frontal view (initial presentation).

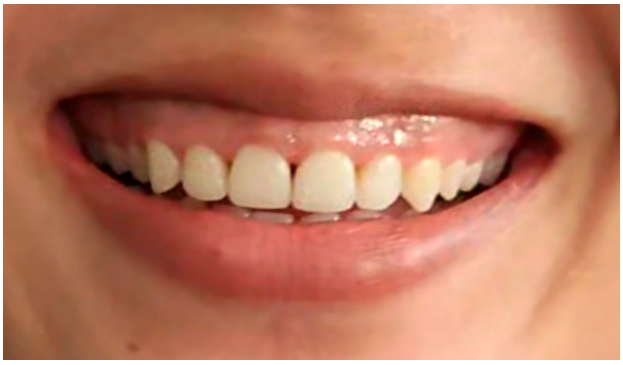

Figure 2: Dynamic smile (after scaling and root planing, photograph of videographic capture).

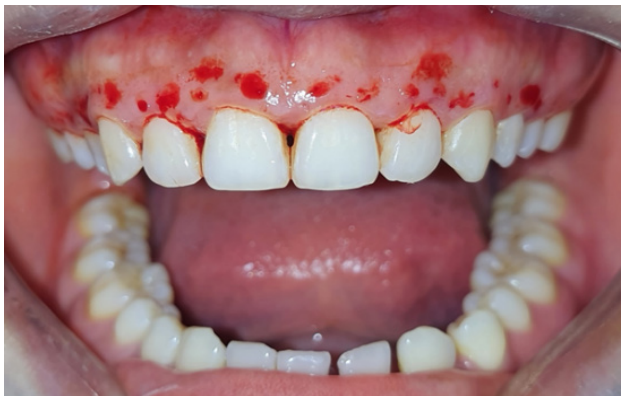

Figure 3: Bleeding points marked.

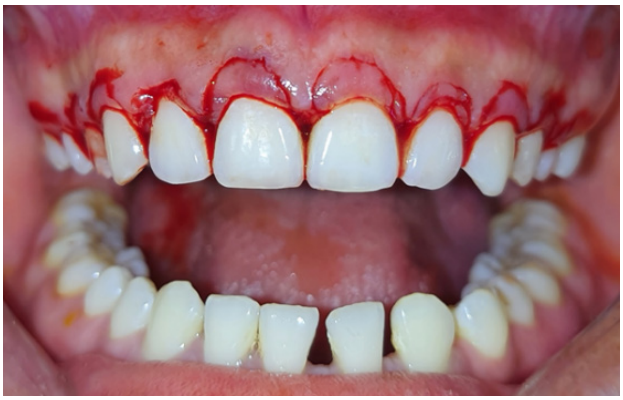

Figure 4: Internal bevel incision.

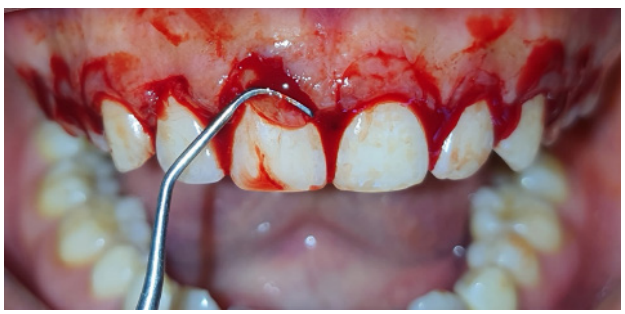

Figure 5: Removal of tissue.

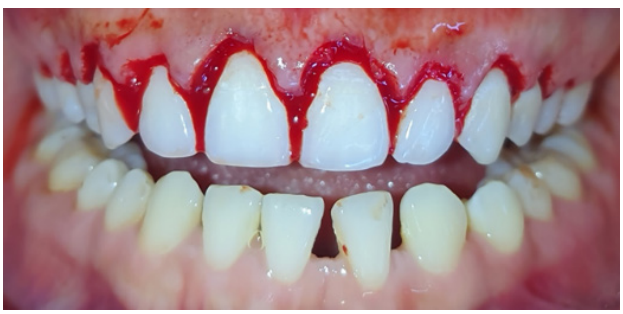

Figure 6: Tissue completely excised.

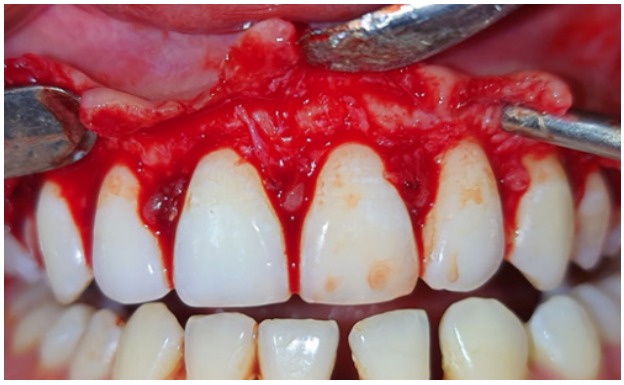

Figure 7: Elevation of mucoperiosteal flap along with osseous reduction.

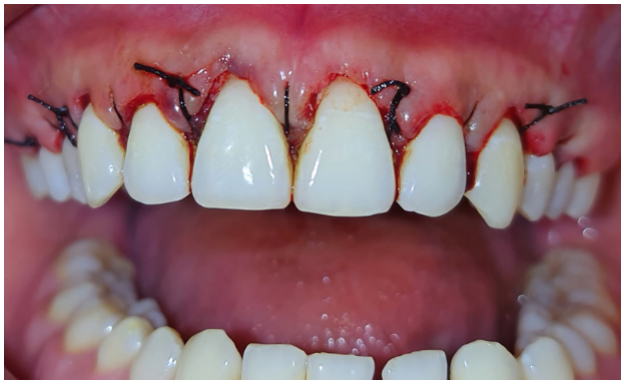

Figure 8: Multiple interrupted sutures with 4-0 black silk.

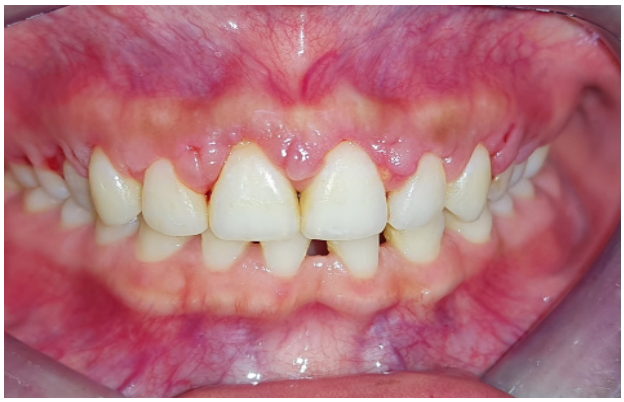

Figure 9: After suture removal.

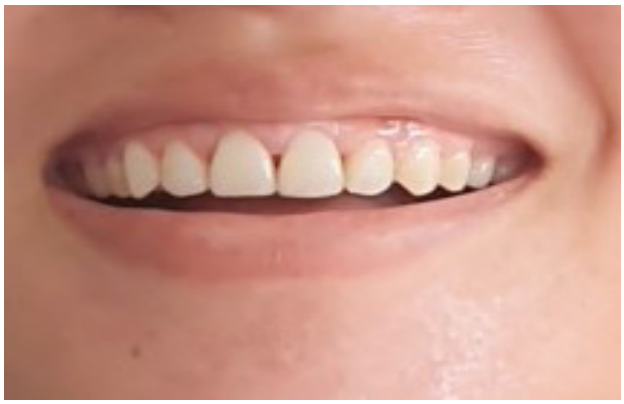

Figure 10: Follow-up at eleven months (photograph of videographic capture).

DISCUSSION

Among multiple aetiologies of gummy smile, the case presented here is of altered passive eruption. Altered passive eruption is the clinical state in which there is failure of tissue to adequately recede to the level apical to the cervical convexity of crown.[6] There are multiple existing classifications regarding smiles with excessive gingival display. According to Wu et al., the presented case falls under Type I due to exposure of continuous band of upper gingival display. Besides, gingival zenith is considered another important parameter for enhancing aesthetics. According to Chu et al., gingival zenith level is at same level for central incisor and canine and 1 mm coronal in relation to lateral incisor.[7] The desired golden ratio of 80% was also kept in consideration in relation to the width/height ratio of upper anterior teeth. All these aesthetic parameters were applied during surgery bilaterally up to second premolar to achieve the harmony between the gingival architecture and tooth structure.

Complete wound healing after crown lengthening must be allowed to achieve optimal aesthetic results. Any disruption of healing process leads undesirable consequences as periodontium continues to remodel and mature. According to Bragger et al., gingival recession can occur between six weeks and six months after surgery.[8] According to Arora et al., tissue rebound at six months was for thick periodontal phenotype as well as suturing flap at a distance less than or equal to 3 mm from osseous crest.[9] In this case, certain amount of tissue rebound was seen due to thick periodontal phenotype.[8] Aesthetic crown lengthening surgery is performed with or without gingivectomy based upon amount of keratinised gingiva. In the present case, there was

adequate amount of width of keratinised gingiva so gingivectomy was done and to maintain the biologic width, osseous reduction was done.

The case report concludes that though there are multiple complex treatment options for the correction of gummy smile, aesthetic crown lengthening surgery alone is sufficient where the underlying cause is merely an altered passive eruption.

Conflict of interest: None.

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