IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 12, Issue 2 (Nov.- Dec. 2013), PP 32-35
www.iosrjournals.org

Non-invasive correction of gummy smile- a case report

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Abstract: *Gummy smile has lead many patients to undertake various dental treatment. The treatment of gummy smile varies from periodontal surgeries, orthodontic correction to extensive orthognathic surgeries.*
These treatment include a very skilful invasive approach and in terms are very costly.
This article deals with an non-invasive, affordable and acceptable approach to deal with the problem.

I. Introduction :

Excessive display of gingiva during smiling has always thought to be unsightly, driving the patients to undertake dental treatment. The feature is termed as gummy smile / gingival smile line.

Gummy smile is considered as a normal variation of human anatomy, but many people with gummy smiles are very self-conscious when smiling.

Gummy smile according to Tjan& Miller is defined as more than 2mm of maxillary gingiva exposed above the central incisors at maximum smile.

Etiological factors for gummy smile-

1. Vertical maxillary excess (VME)
2. Delayed passive dental eruption
3. Greater muscular activity to raise the lip.
4. Short upper lip

Rubin et al have attributed the gummy smile to the hyperactivity of

1. Levatorlabiisuperioris.
2. Levatorlabiisuperiorisalaquenasii
3. Zygomaticus minor

II. Case report :-

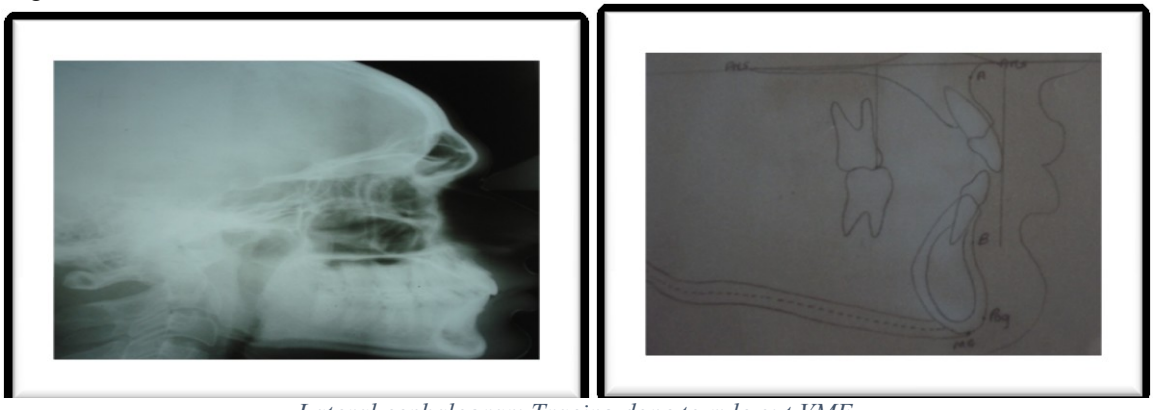
A male patient named RohitMuluk of age 23 years, reported to the department with a chief complaint of gummy smile.

III. Records taken :-

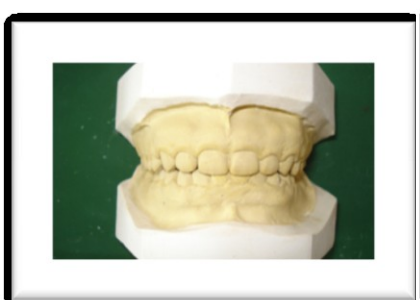
Lateral cephalogram was obtained and traced to rule out vertical maxillary excess.

Model analysis was done to check the eruption of various teeth.

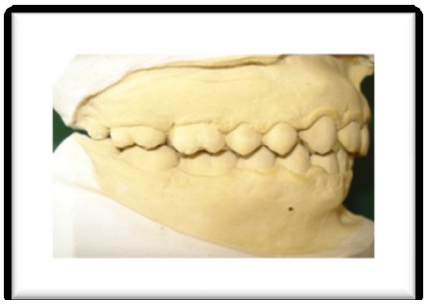
Clinical examination & photographs were taken during rest and smiling to check the amount of gingival display during smile.



Lateral cephalogram Tracing done to rule out VME



Models- Frontal view



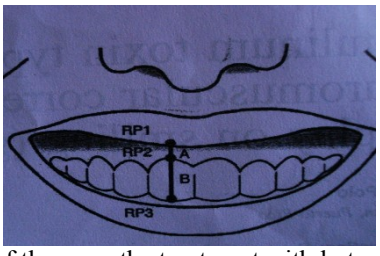
Models- Lateral view

Photograph at rest

Photograph on smile

IV. Recording the measurements-

The following reference points (RP) and linear measurements were used .
RP1- the lowest margin of the upper lip perpendicular and superior to the midportion of the maxillary central incisors gingival margin.
RP2- the maxillary central incisors gingival margin at its midpoint.
RP3- the midpoint of the incisal edge of the maxillary central incisor.
The measurements recorded were.
A= RP1 to RP2
B= (RP1 to RP3)-(RP1 to RP2)



After proper diagnosis of the case, the treatment with botox injection was decided.

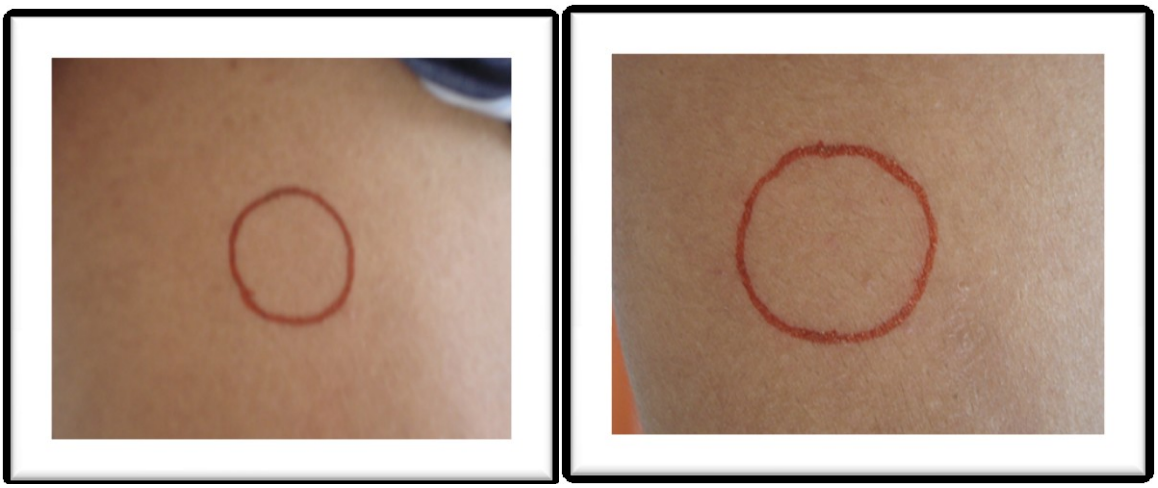
Review of literature of botox-
Botulinum toxin was discovered in 1887. It is produced by anaerobic bacteria C. Botulinum.
There are about 8 serotypes. BTX- A is most potent and commonly used.
Botox is purified BTX-A isolated from the fermentation of C. Botulinum. It is stable, sterile, vacuum dried powder that is diluted with saline solution without preservatives.
The first clinical application of botox was performed by Scott et al in 1980.
The first use of botulinum toxin for cosmetic purpose (correction of asymmetry) was done by Clark and Berris in 1989.
In 1992, Carruther and Markey used botox for smoothening of facial lines and wrinkles.
The drug was approved by FDA(Food & Drug Administration) in 1989.
In 1990, National Institute of Health Consensus Conference considered it as safe for other non-labelled uses.
Since then it is used as a neuromuscular blocker in neurology, orthopaedics, gastroenterology, ophthalmology.

Mode of action of Botox:-
Blocks neuromuscular transmission by binding to acceptor sites on motor or sympathetic nerve terminals, thus inhibiting release of acetycholine.

This inhibition occurs as the neurotoxin cleaves SNAP-25 , a protein integral to the successful docking and release of acetycholine from vesicles in nerve ending.
When injected intra muscularly at therapeutic doses, BTX-A produces partial denervation of the muscles, resulting in localized decrease in muscle activity.

Administration of Botox:-

50 units of Botulinum toxin was dilute with 1.25 ml of normal saline.



Injection site of sensitivity test *24 hrs after sensitivity test*

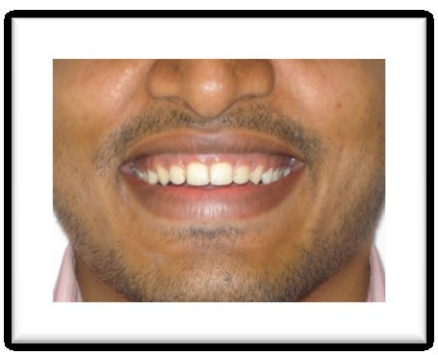
Sensitivity test was done. After 24 hours there was no redness, itching , pain , numbness on the test side. The patient was considered safe for the administration of botox.
Under sterile conditions 1 unit of botox was injected per side. The botox was injected at 2 sides per side in both overlapping points of the right and left levatorlabiisuperiorisalaquenasii (LLSAN) and levatorlabiisuperioris (LLS) and LLS and zygomaticus minor (ZM) muscle sites.

Site- 2 per side *Dose- 1 unit per side*

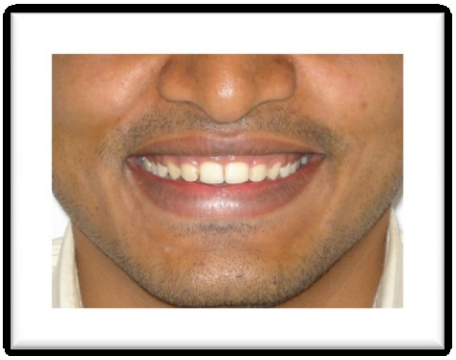
The injection sites were determined by muscle contraction and palpation to ensure exact site for the injection delivery.
EMG activity was not recorded , neither any local anaesthesia was administered.
Gingival display on smile were recorded by the above stated measurements .
The records were done 1 day prior to botoxadministration , on the day of botox administration, 7th day of botox administration and 14th day of botox administration.
Thus 4 recordings were done.

V. Results:-

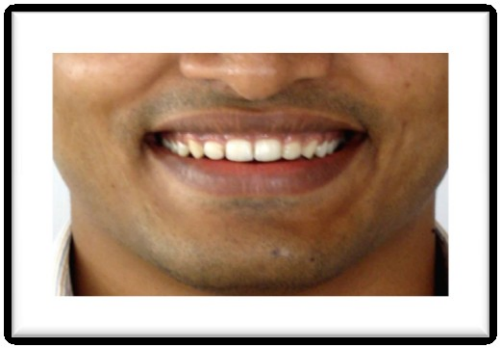
Preinjection gingival display was 6 mm.
At 14th day mean gingival display was declined by 4 mm. Gingival display at maximum smile was 2mm.
Definitive change upon smiling was noticed between 1-7 days.
Patient did not report any pain, bruising, dizziness, headache postinjection.
No redening , inflammation , swelling, tenderness was seen at the site of injection.
When asked regarding the treatment outcome, the patient was very positive and commented on recommending this treatment procedure to others.



day of injection



7th day post injection



14th day post injection

VI. Discussion :-

Excessive gingival display on smiling has a negative quotient of patients self esteem.
Muscles of facial expression responsible for upper lip elevation and lateral retraction upon smiling are LLSAN, LLS, ZM, risorius and to a lesser degree the depressor septinasi muscle.
All these muscles interact with the orbicularis oris muscle in production of smile.
Botox , due to its muscle weakening action , is thought to do wonders with patients suffering from gummy smile.

VII. Conclusion:-

Botulinum toxin, once known as a substance to be feared, is now perceived as a **"Wonder drug".**
Botulinum toxin due to its muscle weakening action can be drug of choice in treatment of hyperactive muscles.
BTX-A proves to be efficient for gingival smile secondary to hyperfunctional upper lip elevators.
Long term local and systemic effect of these drug has yet to be extensively studied, and hence this wonder drug has to be cautiously used.

References:-

[1]. Kane.M. : the effect of botulinum toxin injections on nasolabial fold. Plas. Reconstructive Surg. 112(Supp):66S;2003.
[2]. Matarasso. A. et al. :Botulinum toxin, safety and efficacy report. Plas. Reconstructive Surg. Oct Supp 2003.
[3]. Mascarehas R, Shetty S : Factors contributing to gingival smile line. JIOS, 1995;26(4):127.
[4]. Peck S, Peck L : The gingival smile line. Angle Orthodontisst, 1992;629(2):91-100.
[5]. Peck S, Peck L : Some vertical lineaments of lip position. Am. J. OrthodDentofacialOrthop 1992;101:519-24.
[6]. Polo Mario :Botulinum toxin type A for neuromuscular correction of excessive gingival display on smiling. Am Orthod&DentofacialOrthop 2008;133:195-203