High lip line treatment: a case study and recent developments

Dr Peter JM Fairbairn BDS (Rand) looks at the treatment of high lip lines

The move to less invasive treatment options in aesthetic Dentistry driven by GDP-provided orthodontic programs has been a step forward in patient care, supported by the British Academy of Cosmetic Dentistry (BACD). The straighten and whiten mantra (Figs 1 and 2) with associated composite bonding is the future but there are still complex issues and the extreme high lip line (more than 5mm of visible gingivae above the laterals on smiling hard, Fig 5) or “Gummy” smile is one of the most difficult to treat.

“Expectation is merely premeditated disappointment” is the pervading fear in all aesthetic treatment plans, especially the more complex cases.

Balance (Fig 4) is the key to achieving both our own, and our patients’ desires, especially in high lip line cases where even at rest all of the anterior teeth may be visible. Thus in these cases, achieving balance in the soft tissue can see a beneficial result.

There are many ways to achieve this balance; either orthodontically, by gingival contouring, or crown lengthening (hard and soft). Orthodontics is the least invasive method, and with the use of the Inman Aligner introduced five years ago by Dr Tif Qureshi, this option to improve the tissue balance is routinely utilised. This can be done in as little as four weeks (Fig 5) and as we see in this case where the patient did not want any surgery, the balance has been improved.

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The aetiology of the extreme high lip line is often multi-factorial, a combination of the four main causes. Skeletal deformity often leads to the most difficult cases and they are often associated with another of the main causes, muscular hyper-activity, which can result in an unsatisfactory outcome even after orthognathic surgery. The other factors are over-eruption which can with difficulty be treated with orthodontic intrusion and finally merely a short upper lip which is rare.

Treatment modalities for these cases can be divided into non-surgical and surgical. Non-surgical solutions are orthodontic intrusion mainly in younger patients but this can be difficult and needs specialist attention. The use of Botulinum Toxin is the other solution and here the use of 40 units, 15 at each corner (for Levator Labii superiorus aeq. uae nasi) of the nose (Fig 6) and 10 units in the centre (for Depressor septi). Whilst good results can be achieved in the muscular hyper-activity group, it appears to wear off in three months and it has been noticed that on further applications the effect may not be as satisfactory.

Surgical solutions are orthognathic surgery, surgical crown lengthening and finally lip repositioning surgery. The first requires a specialist team and is generally only suited for the most extreme cases as long-term side effects such as paraesthesia are a possibility. It has also been seen that even after hard tissue correction further soft tissue work (lip repositioning) may be needed for the desired aesthetics.

The last two surgical modalities only need GDP or Periodontist skills and are both low risk, low pain solutions although crown lengthening may require extensive dental restorative processes. They can be used together but the biology must be respected and a minimum of 5mm of attached gingiva must be retained (Figs 7 and 8).

Case

This 26-year-old patient fitted in with the type seen routinely; 95 per cent of the cases seen are young females who all show the same photographs of their smiles when at a social function (un-restrained and under the influence of alcohol) which they really dislike to the point of having developed a habit of covering their mouth with a hand when smiling hard. Seeing a case or two every week the same features and characteristics are repeated and there is an immense effect on these patients psychologically, with some even having discussed events of bullying.

In these cases there is often...
exhibited 5mm of gingivae. It is important to remember that post-surgery the patient will have the smile they dreamt of but some may relapse, which may in turn lead to disappointment even if it is still much better than the original situation. For this reason it is highly advised to keep photographic records. Colleagues should also be aware that the desire to help desperate patients can cloud case judgment, and some may relapse, which may in turn lead to disappointment even if it is still much better than the original situation. For this reason it is highly advised to keep photographic records. Colleagues should also be aware that the desire to help desperate patients can cloud case judgment, and cases with especially bowed up-front teeth are very prone to relapse and the patients must be pre-warned.

Even at rest the patient exhibited 5mm of gingivae (Fig 9) and when smiling hard (Fig 10) she showed why this is often more reconstructive than aesthetic surgery. This also shows why it is important that we straighten and whiten these cases as patients teeth are always on show and thus need to be an asset.

After consent we can then proceed with the surgery and always begin with a chlorhexidine mouthwash. The distal buccal corridors are packed with gauze to prevent blood seeping back and with a scalpel (number 15 blade) start with the incision on the mucosa of the inner surface of the lip first using a brushing stroke so as to merely cut the surface. Starting at the frenum and making an ovoid shape to the canine area (we used to go back further but now see benefits of making a shorter deeper ovoid) then make the second incision at mucro-gingival margin back to the frenum. The surface mucosa then may be peeled off (Fig 11, another case) and then repeated on the other side until you have the full ovoid removed (Fig 12). This is then sutured together finely yet tightly using 5.0 silk interrupted sutures, remembering to always start at the centre to assure correct assimilation of the borders.

The patient must not use any excessive lower facial expressions in the two weeks healing period following the treatment. After this point the remaining sutures are then removed (some fall out after 10 days). The patient is then shown the result and it is recorded and again asked to refrain from smiling for another week.

After six months the patient returned and whilst the rest position now had balance (Fig 14) but there was still not ideal balance. After a detailed discussion with the patient, including careful periodontal probing and assessment, it was decided to lengthen the crowns as well without any associated dentistry due to the shape of the teeth and position of the enamel cementum junction.

A flap was then raised from 5 to 5 (Fig 15) and a small amount of bone removed with a round bur (Fig 16) and a small amount of bone removed with a round bur (Fig 15) and a small amount of bone removed with a round bur prior to the flap being re-sutured closed with Prolene. Electrosurgery was then used to remove the excess gingival tissue to the correct level (Fig 16) and the scar from the lip surgery can be seen.

After a further three months the patient came in for a follow-up (she lived 200 miles away) and further photographic records were taken to show the case at nine months post the initial surgery. The rest position now had balance (Fig 17) and on hard smiling (Fig 18) the patient was very contented with the outcome and even consented to a full-face photograph (Fig 19) which she had declined prior to the surgery. She felt her expectation had been met, and the case was a satisfying result with very low trauma and no long-term side effects to the patient. Her new, more confident approach to life was also particularly pleasing.

Conclusion

Being a soft tissue procedure, relapse can always be an issue especially in cases with very hyperactive musculature. More than 360 cases in the last eight years it is felt that the vast majority of them have fulfilled the patients expectation but follow-up is complicated by the distance most patients have to travel.

Case assessment and selection as well as careful consent procedure is critical in under-

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standing our patients and their desires. More recent changes to procedure to minimise relapse in the more complex cases include using shorter but wider ovoid incisions (3 to 3 inch width), deeper connective tissue suturing (Fig 20) and Myectomies done by a plastic surgeon.

A multi-disciplinary approach to the solution of this complex emotional problem with a variable aetiology may require specialist referral as this type of solution is often the best option. We are currently working with a US Dental School, carrying out long-term research into the situation of this surgical procedure.

For further enquires about the British Academy of Cosmetic Dentistry (BACD) and to register for the BACD 2012 Annual Conference in November:

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REFERENCES