ORIGINAL RESEARCH PAPER
Volume-6 | Issue-11 | November-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPARISON OF SINGLE VERSUS DOUBLE VY CLOSURE AFTER LE FORT 1 OSTEOTOMY: A PROSPECTIVE STUDY

Dental Science

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ABSTRACT

Orthognathic surgery is performed to alter the shape of the jaws to improve dental occlusion stability, temporomandibular joint function and patient's facial proportions. Patients undergoing orthognathic surgery show considerable changes in both hard and soft tissues. The purpose of this study was to evaluate the changes in lip morphology after single VY closure and double VY closure in lefort I osteotomy. 20 patients were included in this study in which 12 were females and 8 were males. Vermilion length was measured in midline and lateral lip region. The results showed a beneficial effect using the technique of DVY closure.

KEYWORDS

Le Fort I, Single VY closure, Double VY closure , Vermilion length.

INTRODUCTION:

The soft tissue response to orthognathic surgery has been studied for many years. Several studies have shown that upper lip morphology changes after Le Fort I osteotomy. This change is influenced by the amount and direction of movement, type of closure, surgical soft tissue healing & orthodontic treatment. Timmis et al[1] showed that the maxillary midline height and width was maintained after V-Y closure. Hackney et al[2] showed that a double V-Y closure was more predictable in the postoperative vermilion height change than single V-Y closure.

Understanding the precise changes in the upper lip after Le Fort I osteotomy is essential for prediction of the final appearance of the patient. The amount of teeth and gingiva showing after surgery could be affected by the movements of osseous tissue and changes in morphology of upper lip. This study evaluates the difference between single midline V-Y closure (SVY) and double V-Y closure (DVY) technique in final lip morphology.

Schendel and Williamson [3] noted unaesthetic soft tissue changes after maxillary osteotomies such as decreased vermilion border, thinning of lips & loss of lip pout and widened alar base.

Figure-1 Simple primary closure

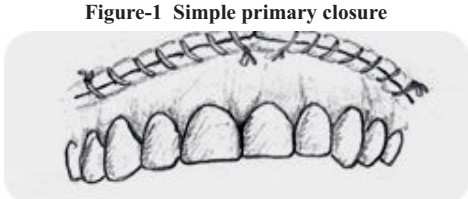


Figure-2 Single V-Y closure with alar cinch suture.

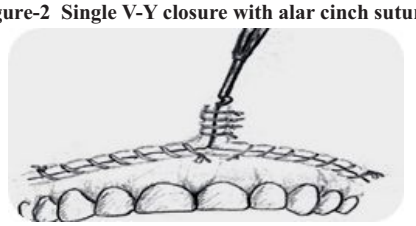
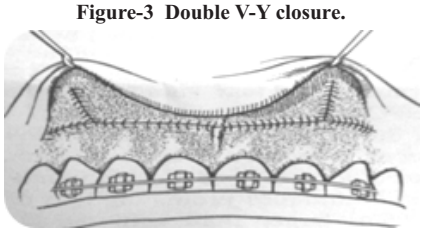


Figure-3 Double V-Y closure.



Effectiveness of a single V-Y closure and alar cinch in controlling post-op changes has been evaluated. Timmis et al[1] concluded that this technique maintained maxillary midline vermilion height and maintained alar base width. However, loss of exposed vermilion at the lateral third was not prevented. So a double V-Y closure was employed in an effort to better control the exposed maxillary vermilion.

MATERIALS AND METHODS:

All 20 patients were operated with a similar technique for the Le Fort I osteotomy. The sulcular incision was created with a scalpel, and site was either closed with single V-Y closure or with double V-Y closure by using 3-0 vicryl suture. All surgeries were performed under general anaesthesia.

Table-1 Distribution of subjects

Sr no.	Suture	Sex	Procedure
1	SVY	F	Lefort I
2	SVY	F	Lefort I + AMO
3	SVY	M	Lefort I
4	SVY	F	Lefort I + AMO
5	SVY	M	Lefort I + BSSO
6	SVY	F	Lefort I
7	SVY	F	Lefort I + AMO
8	SVY	M	Lefort I
9	SVY	F	Lefort I
10	SVY	M	Lefort I + AMO
11	DVY	F	Lefort I
12	DVY	F	Lefort I + AMO
13	DVY	M	Lefort I
14	DVY	F	Lefort I + BSSO
15	DVY	F	Lefort I + AMO
16	DVY	M	Lefort I
17	DVY	F	Lefort I + BSSO
18	DVY	F	Lefort I + BSSO
19	DVY	M	Lefort I
20	DVY	M	LeFort I + AMO

Maxilla was mobilized and fixed into the preplanned location with rigid internal fixation plates. The incision was subsequently closed with a single V-Y of 7 to 8mm length in the midline of upper lip versus double V-Y on both sides in canine region. In each case, the continuous part of the closure included bites of mucosa and submucosa with 3-0 vicryl.

Figure-4 Double VY closure

RESULTS:

With the measurements of the vermilion height change, there was pattern of both increases and decreases with SVY but only decreases with DVY closure. In the midsection of upper lip there was a decrease in the lip length of 1.3 mm to an increase of 1.1 mm in SVY closure where as in DVY there is decrease of 0.1 to 0.6mm, which denotes a permanent gain in the prominence of vermilion of upper lip in midsection.

A decrease from 1.2mm to 1.6mm and an increase of 2.5mm were found in the left lateral and right lateral vermilion show of upper lip after SVY closure, making the outcome of vermilion show in the lateral part of upper lip unpredictable. The DVY cases show only decrease from 1.1 to no change which point to the predictability and less alteration in the morphology of upper vermilion border after Lefort I osteotomy

Figure 5:Single V

Pre Op **Post Op**

Figure 6 Double VY

Pre Op **Post Op**

DISCUSSION:

The treatment plan for orthognathic surgery depends on the predictable and stable position of soft and osseous tissues after surgery. Several studies have suggested less vertical loss in upper lip length with single V-Y closure. The results show that the DVY closure method produces a consistent decrease in the height of vermilion.

With the vertical height measurement for the SVY group, the correlation values range from 0.33 to 0.81. The DVY correlation values between the preoperative and postoperative measurements.

ranged from 0.92 to 0.98. Clinically this significant, strong positive correlation translates into a higher level of predictability with the DVY technique.

The most salient lateral change that Phillips et al.[5] discovered was a more definite appearing cupids bow with SVY closure. The DVY technique appears to have an opposite effect. All the vertical measurements decreased but the largest decreases were noted at the lateral sides.

Thus, with the DVY closure, the cupids bow would appear relatively less prominent. The placement of the V-Y closures laterally may make them more effective in controlling the group of muscles that serve as retractors of the upper lip and intertwine with the orbicularis oris muscle along its superior border, as described by Nairn.[6]

CONCLUSION:

To the best of our knowledge this is the first study addressing the possible influence of single versus double V-Y closure. The results point towards a beneficial effect using the technique of DVY closure. Another finding noted during this study is less upward rotation of nasal tip with the double V-Y closure group.

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