



Evaluation of columellar scar by three types of incision in open rhinoplasty and patient satisfaction

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ABSTRACT

Introduction: Open rhinoplasty is very common now a days and the number of candidate for this type of surgery are increasing. This research was conducted regarding to the prevalence of rhinoplasty surgery, the importance of the residual scar analyze including columellar scar after surgery, different results caused by the effect of incision type in this surgery and lack of enough data and experimental report on it.

Materials and Methods: The research was conducted by COHORST STUDY plan. 120 patients with indications of open rhinoplasty was selected by sampling method and located in three groups with three incision types including V, Invert V and Step incision. The surgery was done in same condition from surgical aspect and followed for 6 months. The analyze of columellar scar was investigated in three indexes of scar outbreak, notching and depression or bump in three groups by K2 test and satisfaction level of the patients was measured with VAS criteria, and was analyzed with MANN-U-WHITNEY test.

Results: The research was conducted on 120 samples including V type of incision with 74 samples, Invert V with 33 samples and STEP incision with 13 samples. Scar formation in 25/7 %, 27/2 % and 23/8 % respectively was found ($p < 0.8$) and notching and depression or bump outbreak was the same in three groups ($p < 0.9$). The satisfaction in 3 groups was as follow 7.8 ± 1.7 , 7.7 ± 3.2 , 7.6 ± 1.8 ($p < 0.8$).

Conclusion: It seems all three incision types lead to the same result in open rhinoplasty.

Key words: Columellar scar, incision type, open rhinoplasty, patient satisfaction.

Introduction

One of the concerns in rhinoplasty surgery by open approach is columellar scar [1]. Scar is remained in all types of surgeries without any exception [2]. Modern rhinoplasty Subject was discussed for the first

time at the end of 18th century. In the beginning, the surgeons used to apply the closed techniques and intranasal incisions and finally they found that the closed methods, prevented complete viewing of the nasal bone and cartilag

-e with its Rhinoplasty is one of the common surgeries and because there might be different deformities need to be correct by this type of surgery there are different approaches for gaining those aims. Despite more possibilities for the surgeons to access the intranasal parts via open method, most of them suppose a more visible scars via this method [5].

The remained scars from this incision can be reduced by selecting the appropriate incision type, closing the cutting edges together, appropriate suturing and using the anti-scar materials. If none of the above solutions can omit or reduce the columellar scar, rhinoplasty will come under threat and the surgeon and patients' dissatisfaction will happen [4-6].

One of the mentioned methods being able to effect on the scar reduction is incision type. Although there are different type of incision mentioned in the references including z, v, Invert v, Step, w and direct transected, most emphasized of them in all the books and publications are V, Invert V and Step type incision.

After all in order to reduce scar, there are some researches regarding to the incision type in rhinoplasty in which some specific methods are pointed [5-10]. In some researches, the same results for both incision types were reported [10] and it also was founded that the incision type had no role in the process [7] There is no comparison regarding the effect of these three incision types in Iran and if yes, Unfortunately it isn't available; so in the current research, the effect of three incision types Including V, Invert V and Step on the scar of columellar was analyzed for the patients Undergo rhinoplasty surgery by open approach in Boo Ali hospital in years 2014-2015.

Materials and Methods

In this historical study, open rhinoplasty was performed on 120 patients between 2013 and 2016. None of these patients had complaints about the scar on the columellar and all the patients with former rhinoplasty surgery were omitted.

All the patients were referred to Buo Ali hospital for rhinoplasty and agreed to cooperate in this research. Samples compromised 102 woman, 18 male with the average age of $24/4 \pm 3/3$. In V incision, Invert V and Step there were 74, 33 and 13 samples, respectively. Sex, age, education and smoking was shown in table 1 for each incision type group.

The entire surgical procedure was performed by three oral and maxillo facial surgeons. The samples with the indications of rhinoplasty surgery selected by sampling method based on purpose in three groups with three incision types including V, Invert V and Step.

The markings for the V columellar incision were as shown in Fig.1 with 5 key points. Points 1 and 5 are the narrowest parts of the columellar. The markings for the inverted-V incision were according to Fig. 2 with 5 key points. Invert V incision is made in the same zone of V incision and the tip of V and the tip of nose have the same direction. Step incision was shown in fig3 with 4 key points. The method of rhinoplasty surgery of all the samples in three groups was open and all of them received the same time, material, graft and sutures (Table 1). The samples were followed up for 6 months after surgery. The V incision was used in 74 patients. The inverted-V incision was used in 33 patients and the step incision was used in 13 patients. Scars was studied by their color, scar width, notch and bump. The scar width was measured by a ruler, the notching, bump and depression in columellar was evaluated by observation.



Fig 1. V type incision, Points 1 and 5 are the narrowest parts of the columellar. Point 3 is the middle of Points 1-5. Point f is 2 mm under Point 3 and the upper part of the V. Points 2 and 4 are the middle points of 1-3 and 3-5 and the base of the V.



Fig 2. Invert V incision, Points 1 and 5 are the narrowest parts of the columellar. Point 3 is the middle of Points 1-5. Point f is 2 mm above Point 3 and the upper part of the inverted V. Points 2 and 4 are the middle points of 1-3 and 3-5 and the base of the inverted V.

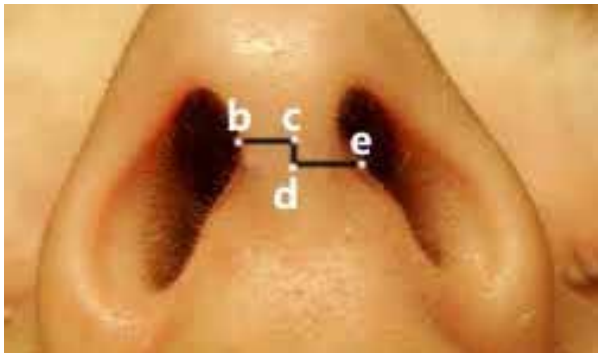


Fig 3. step incision: Points b and e are the narrowest parts of the columellar. Point c is the middle columellar . Point d is 2 mm under Point c.

It was conducted via historical study method. The satisfaction level was investigated according to Vas scale in ten grade and level of satisfaction in three groups (dissatisfied, natural / ok, very satisfied).

Statistical plan

The amount of notching, bump and scar outbreak in three groups as well as their satisfaction was measured statistically via K2 and MAAN-U-WHITNEY respectively.

Results

The research was conducted on 120 patients. They were classified by one of three methods including v, Invert v and Step incision. In V incision, Invert V and Step there were 74, 33 and 13 samples, respectively. None of the patients had a former rhinoplasty surgery. All of the patients were at same condition for time of surgery and also time of presence in the hospital (in terms of social and economic condition). The related tests indicated that their condition and distribution in three groups was the same and there was no significant difference between them ($p < 0.2$).

The area from which the graft was selected nasal septum for all of them and there was no unexpected factor during or after the surgery.

The available results of surgery and treatment in table 2 as per the incision type indicate that:

- The minimum and maximum possibility of notching in three groups was 10/8 and 15/1 percent respectively; and K2 test showed no significant difference ($p < 0.9$).

- The minimum and maximum possibility of bump was 12/1 and 13/7 percent, respectively; and there was no important difference in three groups

($p < 0.9$).

- The minimum and maximum grade of satisfaction was 7/6 and 7/8 in three groups; and there was no significant difference.

- In the scar as the most common problem in Inverted and Step cut was 27/2 and 23/8 percent respectively; and there was no significant difference ($p < 0.8$).

- There was no dissatisfaction in three groups and the intermediate satisfaction was maximum and minimum 38/5 and 33/8 respectively; and there was no significant difference ($p < 0.8$).

Discussions

The studies have shown that there were no statistically significant difference in columellar scar in three different types of incision (V, Invert and Step) and patients' satisfaction. Verim in 2013 investigated columellar scar by invert V in Turkish population.

In the Verim study 60 patients that was followed up for 6 months. The skin thickness in 5 areas of the patients was measured just before the surgery and 6 months after surgery by ultrasonography. It was shown significant difference between restoration in different thicknesses of the skin, its type, its texture and smoking [10].

In the present study, three different incisions was evaluated and was compared with each other. Same the vermin study there were no statistically significant difference in columellar scar before and after surgery. In the study by Unger and et al. on 100 patients in 2013, all the patients had secondary rhinoplasty. The created scar was investigated in terms of notching and hyperpigmentation. It was resulted that there was no significant difference between two types of incision (V and Step) in terms of scar amount [9].

These two studies are like our study in this point of view, but this study was compare three types of incision. Celick et al. studied two types of incision including W running and V incision in open rhinoplasty surgery in 129 patients in 2003. The result of this research was shown scar decreasing in W running incision in comparison with V incision. The reason of scar decreasing was incision reducing in corner angle in W running incision; and it was same to the result of our research. It means more key point leads to fewer scars and more key point in VV running is the factor of scar decrease

in this W running incision in comparison with V incision.

Aksu et al. studied two cut types (Invert V and Transverse) in 84 patients in 2008 and the reports indicated a less amount of scar in Invert V [6].

In the present study three different incision were evaluated and was applied 4 to 5 anatomic key points for suturing. This item can be helpful in synchronizing the edges of the wound in the first area; and the final result between these three cuts with scar is almost the same in our study.

It is noticeable that in the transverse incision studied by Aksu, the wound edges' matching is exclusively in columellar edges and this can lead to the movement of the cut edges toward the anatomic area. Same the present study, in Aksu' study, the success of Invert V is more than columellar transverse incision with two key points; as in our study there are minimum four key points in Step incision and five key points in V and In-

vert V leading to a better matching in the wound edges and finally scar reduce in these three models.

Conclusion

In our study on the scar by three incision types (V, Invert V and Step) in 120 patients during the 6 months after surgery was evaluated, there were no statisticcally significant difference among them. It can be because of having the same type of skin in the patients and as well as equal key points for a better matching of the cut edges by three sutures with nylon [0-5] and also using the same anti scar material (Cicactive) in all three groups. On the other side, in this research, it has been tried to apply the positive aspects in terms of planning and executing. It can be resulted that there were no difference among V, invert V and step incision.

Table 1. Age, sex, education level, smoking, surgeons, suture time and number of sutures in V, Inverted V and step incision.

Incision type	Sex		Age	Education level / university degree		Smoking		Surgeors			Suture time (mm)	Suture number
	Female	Male		No	Yes	Yes	No	Surgeor 3	Surgeor 2	Surgeor 1		
V	64	10	26 1 ± 3 2	31	43	13	61	25	24	25	7	3
Inverted	28	5	25 4 ± 3 3	11	22	5	28	11	8	14	7	3
Step	10	3	23 8 ± 2 9	5	8	2	11	4	8	1	7	3

Table 2. Scar, bump or depression, notch formation and satisfaction level of pations in V, Inverted V and step incision

Incision type	Scar	Satisfaction (0- 10)	Bump And Depression	Notch Formation	Level Of Satisfaction		
					Dissatisfied	Natural / ok	Very satisfied
V	19 (25 7)	7 8± 1 7	10 (13.7)	8 (10.8)	-	33 8	66 2
Inverted V	9 (27 2)	7 7± 3 2	4 (12 1)	5 (15 1)	-	36 4	63 6
Step	3 (23 8)	7 6± 1 8	2 (12 5)	2 (12 5)	-	38 5	61 5
Result	P< 0.8	P< 0.9	P< 0.9	P< 0.9		P< 0.8	

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