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PRS GLOBAL OPEN

ORIGINAL ARTICLE
Cosmetic

Rhinoplasty and External Nasal Splinting: Is It Really a Must?

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Background: Rhinoplasty is a common and challenging procedure. Lateral osteotomy is routinely performed in most cases. Most of the surgeons have the habit of applying external nasal splints to stabilize the nasal tissues and bone in their new position postrhinoplasty. These splints are widely used despite the absence of any evidence supporting this practice. Moreover, these splints have a lot of disadvantages, so we conducted this study to evaluate the cosmetic result in their absence.
Patients and Methods: A retrospective cross-sectional study was performed. Medical records of 211 patients operated on for rhinoplasty by the same surgeon from 2015 to 2017 were reviewed. All patients were operated using open technique. After surgery, a Steri-Strips dressing with an overlying layer of surgical tape was applied to the nose without the use of an external nasal splint. Most of the patients were followed up for 18 months. Complication rates, revision rates, and nasal bone widths were recorded.
Results: Complication rates and revision rates were as follows: skin infection 0.99%, skin necrosis 0.99%, and secondary revision 3.48%. Finally 79.60% of patients had a decrease in their nasal bone width postsurgery.
Conclusion: Based on the present study, external nasal splinting postrhinoplasty should not be routinely used. Satisfactory cosmetic results can be obtained while avoiding the complications, cost, and bulky dressings associated with external splints.
(Plast Reconstr Surg Glob Open 2019;7:e2374; doi: 10.1097/GOX.0000000000002374; Published online 9 August 2019.)

INTRODUCTION

Rhinoplasty is a common procedure in cosmetic surgery. This procedure requires a good facial analysis, a good knowledge of nasal anatomy, a wise technique selection, and a strong knowledge of the ethnic variations. All of the above make rhinoplasty a challenging and controversial surgery.[1,2]

In rhinoplasty, a lateral osteotomy is performed at the end of the surgery to correct nasal asymmetry, to close an open roof posthump resection, or to narrow a wide nasal bone.[1] A nasal bone is considered wide if the bony base width is 80% greater than the width of the alar base.[3] The majority of surgeons have the habit of applying external nasal splints regardless of the technique used during the surgery. The rationale behind this practice is the stabilization of the nasal tissues and nasal bones in their new position postosteotomies. Furthermore, most claim that nasal splints can diminish the edema postsurgery.[2]

External nasal splints are not only considered by most surgeons postrhinoplasty but also postnasal bone fracture reduction and in reconstructive cases.[4,5] Thermoplastic splints,[6] aluminum splints,[5] orthoplast,[7] Plaster of Paris, and polyvinyl silaxone are the main different types of external nasal splints.[5] These splints differ in their advantages and disadvantages, which make them suitable in certain cases and less useful in others.

Some authors consider external nasal splints to be important in rhinoplasty, emphasizing on their significant role in the postoperative esthetic result and in nasal remodeling.[8] However, these splints have a lot of disadvantages as well. In fact, superficial and full-thickness skin necrosis can occur due to the over pressure applied on the skin by the rigid splint. Contact dermatitis, epidermolysis, nose depression, sagging, and instability can also result. Moreover, the application of rigid external nasal splinting is cumbersome, time-consuming, and expensive.[5,9,10]

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Received for publication May 2, 2019; accepted June 14, 2019.

DOI: 10.1097/GOX.0000000000002374

Disclosure: *The authors have no financial interest to declare in relation to the content of this article.*

Fig. 1. An image showing the external nasal dressing after surgery with a layer of Steri-Strips arranged in longitudinal and transverse fashion. Then, a layer of surgical tape arranged in transverse and oblique fashion is applied.

Due to these complications, lots of controversies have emerged in the usage of external nasal splints, even in the cases after nasal bone fracture reduction. As a result, some authors stopped using external nasal splints in noncomminuted nasal bone fractures and criticized the tradition of its nondocumented use.[10] Similarly, a dilemma arose in rhinoplasty patients.

Should rigid external nasal splints be applied in all patients routinely postrhinoplasty? Is the application of a regular tape postrhinoplasty safe? Does taping avoid the complications exerted by splints without affecting the esthetic outcome? In the presence of this controversy and to answer these questions, we conducted a retrospective study to review our experience in the application of external nasal splints postrhinoplasty.

PATIENTS AND METHODS

A retrospective multicenter study was performed. After obtaining ethical consent, medical records of 211 patients operated on for rhinoplasty by the same surgeon from 2015 to 2017 were reviewed. These surgeries were conducted at multiple university hospitals in Beirut, Lebanon. All patients were operated using the open technique. Medial and lateral osteotomies were done routinely to all patients to obtain a complete nasal bone fracture. Osteotomies were done to either decrease the nasal bone width or close an open roof posthump resection. Lateral osteotomy was done using the external percutaneous approach. After reviewing the operative record of the included patients, no spreader grafts affecting the nasal bone width were used. After surgery, a Steri-Strip dressing with an overlying layer of surgical tape was applied to the nose without the use of an external nasal splint (Fig. 1). Internal packing was placed and was then removed 48 hours postsurgery. The external dressing was also changed after 48 hours, when necessary, and was kept for 1 week.

Then, weekly dressing changes were done for 2 weeks with Steri-Strips.

All of the patients were followed up for 18 months. The files of the patients who did not present for follow-up at 18 months were discarded. Complication rates including skin necrosis, skin infection, dermatitis, deviated nose, and saddle nose were recorded.

Moreover, the nasal bone width ratio was measured preoperatively and postoperatively at 12 months (Fig. 2). Measurements were done based on standard frontal photographs taken by the same physician before surgery and 12 months postoperative. The nasal bone width ratio with respect to the alar base was measured twice, and a mean value was used. Pre- and postoperative ratios were compared. Furthermore, to ensure diagnostic reproducibility of the intraobserver reliability of the investigator, a total of 43 randomly chosen patients (20%) were selected to

Fig. 2. An image showing the nasal bone width (measured between the red lines) with respect to the alar base.

assess measurement error and all measurements were repeated by the examiner 2 weeks after the first readings. Intraexaminer reproducibility was found to be 100%.

Finally, the revision rates were recorded and the type of intervention done in the second procedure was noted.

RESULTS

From the review of medical records, a total of 211 files were reviewed. Of the 211 patients, 135 patients were females and 76 patients were males. Ten patients were lost in the follow-up (4.73%). The remaining 201 patients were analyzed, and the resulting complication rates and revision rates are summarized in Table 1.

With respect to the patients who underwent secondary revision, only 2 patients complained of wide nasal dorsum, whereas the other patients were reoperated on for tip issues. Patients with a skin infection were treated with oral antibiotics, whereas those with skin necrosis were treated conservatively with daily wound care. It is worth noting that the skin necrosis occurred on the tip of the nose.

Table 1. Complication Rates and Revision Rates Postrhinoplasty Within 18 mo Follow-up

Complication	No. Patients*	Percentage
Skin infection	2	0.99
Skin necrosis	2	0.99
Secondary revision	7	3.48

*The total number of patients is 201.

Table 2. Change in the Nasal Bone Width with Respect to the Alar Base Width at 12 mo Follow-up by Comparing Postoperative Pictures to Preoperative Pictures of the Patients

	Patients with No Change in %	Patients with Increased %	Patients with Decreased %
n (201)	30	11	160
Percentage	14.92	5.47	79.60

Finally, the percentage of nasal bone width with respect to the nasal base was measured preoperatively and postoperatively. Table 2 shows different percentages of nasal bone width changes. In fact, 79.60% of the patients showed a nasal bone width decrease, 14.92% had the same bone nasal width pre- and postoperatively, and finally, 5.47% of the patients showed an increase in the nasal bone width postoperatively.

DISCUSSION

Although the biochemical importance of external nasal splints has not been documented in the literature, external nasal splinting is widely used after nasal fracture reduction and postosteotomy in rhinoplasty to achieve the desired cosmetic result.[10,11] External nasal splints are widely used postrhinoplasty, despite the absence of any evidence in the literature supporting the use of rigid splints over nonrigid dressings.[12]

External nasal splinting postnasal fractures is controversial nowadays.[13] In fact, some authors argue that it is necessary regardless of the type of fracture, whereas others state that simple fractures can be managed with adhesive bands only.[10,14] As a result, this controversy led us to conduct this study to assess if external nasal splinting is necessary in rhinoplasty.

Rhinoplasty complication rates vary in the literature. Infection, which is considered to be the most common complication, occurs in 0–15% of the patients.[15] Moreover, revision rates vary between 5% and 15%.[16] In our study, we obtained an infection rate of 0.99% and a revision rate of 3.48%. Both rates are within the acceptable percentage rates found in the literature. There was no increase in either percentage in the absence of external splints. In fact, our revision rate is also comparable to the study done by Vidal and Berner,[12] where the revision rate was 3.54% with no external nasal splinting use.

On the other hand, although the definitive cause of skin necrosis cannot be provided, over compression on the dorsum can be an underlying cause.[9] In our study, the rate was low and comparable to the study reported by Eskitascioglu and Kemaloglu,[9] where the rate was 0.9%. All of the reported cases in the study occurred on the dorsum, whereas in our study necrosis occurred only on the tip of the nose, and no dorsal skin necrosis was seen. The absence of the rigid external splint decreased pressure on the dorsum and may be the cause behind the absence of dorsal necrosis.

Moreover, in order for external nasal splinting to be effective, it should remain in place till the bone heals. Most

Fig. 3. A and B, Frontal and lateral views of patient 1 preoperative. C and D, Frontal and lateral views of patient 1 at 12 months postoperative.

of the physicians use the splint for a maximum of 2 weeks, but bone healing and stability take much longer.[17–19] Therefore, splints are removed before stability is gained. In addition, a misplaced, bulky external splint can alter the cosmetic result, which can become unpredictable.[20]

We also realized that most of the patients had a decrease in their nasal bone width percentage with respect to the base. Those with no change in their percentages had a nasal bone width less than 80%. Among those with increased percentages, 6 patients (54.54%) had a concomitant nasal base reduction surgery. This may support the fact that the absence of external nasal splinting did not affect the medialization of the osteotomy lines postrhinolpasty and did not cause nasal bone widening postosteotomy (Figs. 3 and 4).

Finally, according to some authors, avoiding external nasal splints and using surgical tape prevent nasal compression and prevent the disadvantages of these splints without affecting the esthetic outcome.[12]

Based on our experience, the use of Steri-Strips followed by a layer of surgical tape is a good alternative to external nasal splinting, because it can stabilize the nose and reduce edema while avoiding the cost, discomfort, and complications associated with rigid splinting. It also

Fig. 4. A and B, Frontal and lateral views of patient 2 preoperative. C and D, Frontal and lateral views of patient 2 12 months postoperative.

allows physicians to have a good control on the dressing, with the ability to reapply and adapt it 48 hours after the operation without affecting the esthetic outcome. This cannot be achieved with rigid splinting. After 1 week, this dressing was changed and consecutive layers of Steri-Strips were used for 2 more weeks until the resolution of swelling. The swelling was present for 2 to 3 weeks post-surgery.

CONCLUSIONS

Based on our experience, satisfactory esthetic results were obtained without the usage of external nasal

splinting. Adequate cosmetic results can be achieved with surgical tapes and Steri-Strips only, while avoiding the disadvantages associated with external nasal splints. This may lead us to say that the use of external splinting originated from simple tradition. However, a causal relationship cannot be assessed due to the absence of a control group. So randomized controlled studies comparing the outcome with and without splinting postrhinoplasty are required to prove whether external nasal splints are really a must.

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