

risk factors amongst which, 60 % were previous radiotherapy and 40 % cases smoking. Out of the five partial flap necrosis cases, direct suturing was done for one donor wound closure and for the other four cases, skin grafts were used. For both graft protrusion cases, per secondarem was used for donor wound closure.

Conclusion

Complications arising after nasal reconstruction surgeries are at a rate of 13.2 %, and more than 70 % of the cases with complications are associated with known risk factors including smoking and previous radiotherapy. Hence, risk factors can be considered to be a major reason for complications arising after nasal reconstruction. Since 71.44 % of the patients are males, we can conclude males are more prone to complications following nasal reconstruction surgery than females. There does not seem to be any direct effect of the defect size, depth or site on the complications arising after nasal reconstruction.

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COMPARATIVE ANALYSIS OF NASAL ALAR RECONSTRUCTION OUTCOMES FOLLOWING USE OF MELOLABIAL FLAP AND JIGSAW PUZZLE FLAP

Introduction

Non-melanoma skin cancer is mainly located on the face, accounting for 75 % of cases; of these, 30–35 % is located in the nose. These tumors are homogeneously distributed in the nose, being more frequent in nasal alar [1, 2]. The treatment is mostly surgical, aiming at complete removal of the lesion with minimal functional and aesthetic damage. Surgical defects located in the nasal alar are challenging to reconstruct since the integrity of this region is very important for maintaining the aesthetics and function of the nose [2, 4]. The melolabial flap is a versatile technique for functional and esthetic rehabilitation of defects. Because of the relative proximity of this donor site to these areas, not only is the color match of the skin excellent but hiding the donor site incision in a natural crease line (that frequently deepens with age) affords excellent camouflage [3, 4]. The melolabial flap has arguably less donor site morbidity and normally does not need to be delayed. But the melolabial flap blood supply is not quite as robust as the forehead sites and must be elevated as atraumatically as possible. For larger defects involving the alar rim or a full-thickness loss, the melolabial flap will generally provide surface area, adequate bulk, and a vascular supply, which will support a cartilage graft [2, 4]. One of the disadvantages is detectable prominence at the base of the flap, which interrupts the relief of

the middle zone of the face. Corrective interventions are needed to perform in 3–4 weeks after the first step [4]. The jigsaw puzzle advancement flap, allows the nasal alar reconstruction while maintaining the contour and structural integrity, with great cosmetic result [2, 3]. The advantages of the jigsaw puzzle advancement flap include: excellent aesthetic result due to the similarity of texture and color of the flap skin; incision lines located at the boundary between the nasal, perioral and malar anatomical units, leading to a good scar camouflage; suture anchorage to the periosteum, essential for recreating the alar sulcus and the boundary between the nasal and maxillary anatomical units, also removing the tension of the surgical defect, avoiding the secondary movement of the nasal alar; and performance in a single operation [3, 4]. One of the limitations of this technique is that in order to perform it, the malar region must present sagging skin. It also has the disadvantage of removing healthy skin from both compensation triangles and does not provide structural support [1, 4].

Goal

To compare cosmetic results following reconstruction of nasal alar defects using melolabial flaps and jigsaw puzzle flaps.

Material and methods of research

The results of 72 reconstructions of the nasal alar in patients with full-thickness defects were analyzed. Interventions were completed within 2016–2022 years at Gomel Regional Clinical Oncology Center. The studied group consisted of 43 women and 29 men at the age of 36 to 88. Removal of skin carcinoma was the cause of the defect in all cases. Melolabial flap technique was used for reconstruction in 31 cases; jigsaw puzzle flap technique was used in 41 cases. Risk factors of ischemic complications were presented in 20 patients. Patient-reports were used to evaluate postoperative results. Database comprises 12 items to assess satisfaction with cosmetic outcomes: (1)gender, (2)age, (3)number of missed subunits, (4)number of missed layers, (5)presence of risk factors, (6)flap, (7)graft, (8) complications, (9)unacceptable cosmetic outcomes, (10)unacceptable function, (11)delayed correction, (12)unacceptable donor site. Number of missed subunits and missed layers were categorized as 1, 2 or 3. Presence of risk factors, unacceptable cosmetic outcome, unacceptable function, delayed correction and unacceptable donor site were categorized as 0 or 1. Flap was categorized as melolabial or jigsaw puzzle and graft as yes or no. Complications were categorized as without any, bleeding or flap necrosis. Each indicator was evaluated separately and group comparison was done in between group 1(melolabial) and group 2 (jigsaw puzzle) as presented in table 1. P (significance of difference) were calculated for sex distribution, presence of risk factors (number),defect size over 1 subunit(number),full thickness defects number and use of cartilage graft(number) by using Fisher criterion. P (significance of difference) of mean age and standard error was calculated using Student criterion. Statistical processing was performed by the Social Science Statistics Easy Fisher Exact Test Calculator. The critical significance level of the null statistical hypothesis (p) was taken as 0.05. Patients` groups were stratified by actual preoperative parameters (Table 1).

Table 1 – Group comparison by preoperative parameters

Parameter	Group 1 (melolabial) n = 31	Group 2 (puzzle) n = 41	P (significance of difference)
Sex distribution(m:f)	16:15	13:28	0.0975
Mean age and standard error (M ± SE)	5.17 ± 2.896	6.83 ± 2.896	0.5777
Presence of risk factors (1)	31:13	41:7	0.128
Involved subunits, number (1:2:3)	15:14:2	20:20:1	0.7317
Involved layers, number (1:2:3)	2:18:11	8:17:16	3.2279
Use of cartilage graft (No graft: yes)	19:12	19:22	0.2401

Patient groups don't show significant difference of both demographic criteria and clinical parameters of defects. Both groups can be correctly compared according to the surgical outcomes.

The results of the research and their discussion

The nasal alar is a common site of cutaneous malignancy, and it is often resected during oncologic extirpation [1]. Some aspects of nasal reconstruction are replacement skin should be similar to the original skin thickness, size, color and texture and restoration of its intricate tridimensional structure. Ideally restores the aesthetic appearance, so nasal imperfections are not noticed at a normal conversational distance [1, 2]. Choosing a flap for facial reconstruction is invariably determined after weighing the options and figuring out what will give the best possible result at the recipient site with minimal donor site morbidity [2, 3]. Several flap options are available for the reconstruction of the alar region, and here analysis of cosmetic results following melolabial flaps and jigsaw puzzle flaps techniques was done. Out of total 72 patients who underwent nasal alar reconstruction surgery, for 31 patients melolabial flap technique was used and for 41 patients jigsaw puzzle flap technique was used. In melolabial group 1 patient had bleeding as a complication and 3 patients had flap necrosis. While in jigsaw puzzle group no such patients with complications were seen. When rate of complications was compared using Fisher criterion P value was 1 and was statistically not significant. When considering about unacceptable cosmetic outcomes 7 patients were observed in melolabial group while only 1 patient was observed in jigsaw puzzle group. P value was 0.0176 and the result was significant when calculated with Fisher criterion. Melolabial group and jigsaw puzzle group both had 2 patients each with unacceptable functional outcomes. P significance value was 1 and it was statistically not significant. When comparing rate of delayed improvement procedures in melolabial and jigsaw puzzle groups, 4 patients were present in melolabial group while 1 patient was present in jigsaw puzzle group. P value was 0.1579 and the result was not significant. Unacceptable appearance of donor site scar was also noted in the research. 6 patients for melolabial group were seen while no such situation was noted in jigsaw puzzle group. Fisher criterion P value was 0.0047 and result was statistically significant.

Conclusion

Surgical defects located in the nasal alar region are frequent since the incidence of basal and squamous cell carcinomas in this region is high. Due to the anatomical characteristics of the alar region, defects located in this area are challenging to reconstruct, involving high aesthetic and functional relevance. Even though both melolabial flap technique and jigsaw puzzle flap technique can be used to reconstruct nasal alar, when considered complications, unacceptable cosmetic outcomes, unacceptable functional outcomes and delayed rate improvement procedures and unacceptable appearance of donor site scar jigsaw puzzle flap technique is more effective than the melolabial flap technique.

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