



RECONSTRUCTION OF NASAL SKIN DEFECTS FOLLOWING EXCISION OF BASAL CELL CARCINOMA REKONSTRUKCJA UBYTKÓW SKÓRY NOSA PO WYCIĘCIU RAKA PODSTAWNOKOMÓRKOWEGO

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N Dermatol Online. 2011; 2(3): 125-129

Date of submission: 05.03.2011 / acceptance: 19.03.2011

Conflicts of interest: None

Abstract

Objective: To present our experience in reconstruction of nasal defects following excision of nasal basal cell carcinoma.

Patients and Methods: Retrospective analysis of 36 patients who underwent surgical excision with reconstruction of nasal BCC over the period from March 2009 to December 2010 was performed. After full history and physical examination the diagnosis of nasal BCC was done clinically and confirmed by the final histopathology report, pre and post-operative photographs were taken. The surgery was done in both inpatient and outpatient settings under local or general anesthesia depending on each individual case circumstance: age, co morbidity, size of the lesion and reconstructive option used. After planning of reconstruction surgical excision was done, with immediate reconstruction done in 30 patients and late reconstruction in 6 patients. Our reconstructive options included: primary closure in 3 patients, full thickness skin grafts harvested from pre-auricular area in 13 patients, local and loco regional flaps in 20 patients. Local and loco regional flaps included: forehead flap in 3 patients, nasolabial flap in 6 patients, glabellar flap in 4 patients, V-Y advancement flap in 2 patients, bilobed flap in 3 patients and dorsal nasal flap in 2 patients.

Results: Nasal BCC in our study was more common in males 58.3 % (21 patients) compared to females 41.7 % (15 patients). The most common presentation was asymptomatic lesion 55.5% (20 patients), other presentations includes itching, local ulceration and bleeding. The most common nasal subunit affected by BCC was the ala 36.1%, followed by tip 25%, sidewalls 22.3%, and dorsum 16.6%. The most common histopathological type of nasal BCC was the nodular BCC 55.5% followed by the sclerosing 22.2%, superficial 8.4%, basosquamous 8.4% and pigmented 5.5%.

Complications included: hematoma in two cases, incomplete excision in two cases, and partial skin necrosis in one case.

Conclusions: Surgical excision with immediate well planned reconstruction performed in selected patients is the best option for management of nasal BCC, with local and loco regional flaps are superior to skin grafts in providing aesthetic subunit restoration of nose.

Streszczenie

Cel: Prezentacja doświadczeń w rekonstrukcji nosa po wycięciu raka podstawukomórkowego (BCC).

Materiał i Metody: Została wykonana retrospektywna analiza 36 chorych poddanych chirurgicznej rekonstrukcji nosa z BCC w okresie od marca 2009 do grudnia 2010 roku. Po pełnej historii i badaniu fizykalnym diagnoza BCC nosa została potwierdzona klinicznie i poprzez raport końcowy histopatologii, przed i po zabiegu zrobiono zdjęcia. Zabiegi przeprowadzono zarówno w warunkach szpitalnych i ambulatoryjnych w znieczuleniu miejscowym lub ogólnym w zależności od okoliczności każdego indywidualnego przypadku: wiek, zachorowalność, współpraca, wielkość zmiany i opcji rekonstrukcyjnej. Po planowaniu rekonstrukcji przeprowadzono wycięcie chirurgiczne, z natychmiastową rekonstrukcją wykonaną u 30 pacjentów i późniejszą rekonstrukcją u 6 chorych. Nasze rekonstrukcyjne opcje to: pierwotne zamknięcie u 3 pacjentów, przeszczepy skóry pełnej grubości zebranych z obszaru zauszny u 13 pacjentów, miejscowych i regionalnych obszarów u 20 pacjentów. Lokalne i regionalne płaty to: płaty czoła u 3 pacjentów, nosowo-wargowe płaty u 6 chorych, płat gładziny u 4 chorych, przesunięcie wzdłużne, plastyka V-Y 2 chorych, płat wielokątny u 3 chorych i płat grzbietu nosa u 2 pacjentów.

Wyniki: BCC nosa w naszym badaniu były częstsze u mężczyzn 58,3% (21 chorych) w porównaniu do kobiet 41,7% (15 chorych). Najczęstsze były zmiany bezobjawowe 55,5% (20 chorych), inne dolegliwości obejmowały swędzenie, owrzodzenia i krwawienia. Najczęściej zmiany BCC były zlokalizowane na skrzydle nosa w 36,1%, a następnie na czubku nosa w 25%, boku 22,3% i 16,6% na grzbiecie.

Najczęstszym typem histopatologicznym BCC nosa był sferoidalny BCC 55,5%, a następnie stwardniający 22,2%, powierzchowny 8,4%, 8,4% i basosquamous barwnikowy 5,5%. Powikłania: krwiak w dwóch przypadkach, niekompletne wycięcie w dwóch przypadkach, częściowa martwica skóry w jednym przypadku.

Wnioski: Wycięcie chirurgiczne z natychmiastową dobrze zaplanowaną odbudową wykonywaną u wybranych chorych jest najlepszym rozwiązaniem w odniesieniu do BCC okolicy nosa, lokalne i regionalne płaty skóry są lepsze od przeszczepów skóry w dostarczaniu estetycznej odbudowy nosa.

Key words: basal cell carcinoma; nasal reconstruction; full thickness skin grafts; local flaps

Słowa kluczowe: rak podstawukomórkowy; rekonstrukcja nosa; przeszczepy skóry pełnej grubości; lokalne płaty

Introduction

The nose is the most prominent part of the face resembling corner aesthetic unit in the whole body. Furthermore the nose is divided into topographic sub units; each sub unit has its own characteristics.

The etiology of nasal defects include: trauma, resection of skin cancer and infection, resection of skin cancer especially BCC is the most common cause.

Reconstruction of nasal defects with best skin color, contour, texture and match is one of the most challenging issues to plastic surgeon.

In this retrospective study we analyze our center experience in nasal skin reconstruction and emphasizing the rule of local and regional flaps as the most versatile method for nasal skin reconstruction.

Materials and methods

Retrospective analysis of 36 patients who underwent surgical excision with reconstruction of nasal BCC over the period from March 2009 to December 2010 was performed. The age of patients ranged between (35-70) years.

After full history and physical examination the diagnosis of nasal BCC was done clinically depending on the slow growing nature and gross macroscopic features of the lesions and confirmed by the final histopathology report, pre and post-operative photographs were taken.

The surgery was done in both inpatient and outpatient settings under local or general anesthesia depending on each individual case circumstance: age, co morbidity, size of the lesion and reconstructive option used.

After planning of reconstruction surgical excision was performed under Loup magnification (2.5 xs, 3.5 xs), with immediate reconstruction done in 30 patients and late reconstruction in 6 patients.

Our reconstructive options included: primary closure in 3 patients, full thickness skin grafts harvested from preauricular area in 13 patients, local and loco regional flaps in 20 patients.

Local and loco regional flaps included: forehead flap in 3 patients, nasolabial flap in 6 patients, glabellar flap in 4 patients, V-Y advancement flap in 2 patients, bilobed flap in 3 patients and dorsal nasal flap in 2 patients.

Paraffin gauze with tie over dressing was used for cases of skin grafts with graft exposure done after 7 days of surgery, exposed dressing done for flap cases.

Discussion

Nasal defects following resection of skin tumors present great challenge to plastic surgeons.

Basal cell carcinoma is the most common skin cancer and more than 90% of lesions are found in head and neck, BCC is an indolent slowly growing tumor with rare distant metastasis, risk factors include: sun exposure, advancing age, fair complexion, immunosuppression and long term exposure to psoralens and UVA therapy (i.e. PUVA therapy for psoriasis).

Basal keratinocytes are the cell of origin, residing in the basal layer of epidermis at the dermo-epidermal junction. Histopathological types of BCC include: nodular BCC (the most common type), superficial BCC, sclerosing BCC, pigmented BCC and adenaxial BCC [1].

The skin of the nose is divided into two zones:

Zone of the thin skin (dorsum, sidewalls and columella), is loose and mobile, with few sebaceous glands.

Zone of the thick skin (nasal tip and ala), is fixed to underlying cartilage and is oily with many sebaceous glands.

The nose can be divided into nine topographic subunits composed of the dorsum, tip, columella, paired sidewalls, ala and soft triangles. Each subunit has a characteristic skin quality, unit outline and three dimensional contours. The normal nose is reestablished only if each of these characteristics is restored [2].

Following excision immediate reconstruction is undertaken unless: the tumor margins are questionable, aggressive tumor histology, if there is deep bony or perineural invasion and if radiation therapy is planned [1].

The goals for nasal reconstruction are to maintain patent airway and to achieve an optimal aesthetic appearance, analysis of nasal defect characteristics (position, size, depth, aesthetic units and nasal layers involved) is very important in creation of reconstructive planning.

Incisions should be designed if possible along the borders of adjacent subunits for camouflage and as general rule if the defect occupies more than 50% of subunit enlarge the defect to incorporate the entire subunit, because the reconstruction of an entire subunit is generally aesthetically more pleasing. And if available use undamaged contra lateral subunit as model or template to pattern the missing subunit. It's advisable to divide large defects into multiple subunits and to address each subunit with a separate graft or flap, it's important to replace nasal skin with similar color, thickness and texture.

Reconstruction options for nasal skin include: skin grafts, local and regional flaps [2- 4].

Skin grafts

For superficial defects with vascularised bed, full thickness grafts can be used to resurface defects of the upper two thirds of the nose in the zone of smooth skin, but usually are inappropriate choice for defects within the thicker sebaceous skin of tip or ala.

Donor sites include: preauricular skin, post auricular skin and supraclavicular area, of these the preauricular skin provides the best ideal match of color and texture.

Split thickness skin grafts are used only as temporary wound dressing and are infrequently used in nasal reconstruction because they are prone to contracture, distortion and color mismatch [5-8].



Figure 1



Figure 2



Figure 3

LOCAL FLAPS

For small nasal defects local flaps are an excellent option, local; flap can be used if the defect is less than 1.5 cm in diameter and if cartilage grafts are not needed.

Banner flap:

Essentially a transposition flap designed as a narrow triangle tangential to the defect. Its use limited to defects less than 1.2 cm in diameter of dorsum or sidewall.

Bilobed (zitelli) flap:

Is a double transposition flap, the second flap designed at 90-100 degrees from the first, limiting the rotation of each lobe to less than 50 degrees, performing a primary excision of the dog ear and wide undermining of the submuscular plane just above the perichondrium and periosteum aid in its success.

This flap is an excellent option for nasal tip and alar defects.



Figure 4



Figure 5



Figure 6

Glabellar flap:

This flap utilized the loose glabellar skin to the nasal radix to repair defects in this area .The incision can be well hidden in glabellar furrows



Figure 7



Figure 8

Dorsal nasal flap (rieger flap):

It is a rotation-advancement sickle-shaped flap, based on branches of the angular artery as it descends along the base of the nasal wall approaching the medial canthus, the flap should be designed to fall within the proper aesthetic units, the main disadvantage of this flap is that it does not reach as far caudally as one might expect and will not reach adequately around the nasal tip or columella .if placed under tension, it will distort the alar rims.

Used mainly for nasal tip and mid nasal defects.

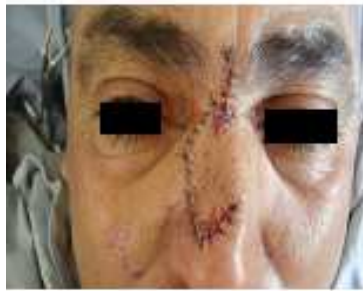


Figure 9-12

Nasalis v-y flap:

The nasalis myocutaneous flap is a V-Y advancement flap taken from the alar crease and advanced to repair small defects of the lateral tip.



Figure 13

Cheek flap:

Best for replacement of the nasal sidewalls.

Rhombic flap:

Used to close a rhombic- shape defect, with angles of 60 degrees and 120 degrees. Rarely used in nasal reconstruction [4-8].

REGIONAL FLAPS

If there is not enough nasal skin to redistribute over the nose to cover larger defects, and the tension created by wound closure will collapse a delicate cartilage framework regional rather than local flap is required for defects greater than 1.5 cm or those requiring reconstruction of a cartilage framework.

Forehead flap:

Forehead flap is the workhorse flap for large tip defects and for subtotal and total nasal reconstruction. Paramedian or midline forehead flaps can be elevated on either the supraorbital or supratrochlear vessels from one or both sides.

The blood supply of the central forehead enters vertically from below the supraorbital rim and ascends vertically just above the periosteum. It is safe to elevate the distal 1-2 cm of a paramedian forehead flap with skin and a thin layer of subcutaneous tissue, more inferiorly the flap should be elevated deep to the frontalis muscle, just above the periosteum, to protect the blood supply [8,9].



Figure 14



Figure 15



Figure 16



Figure 17

Nasolabial flap:

Primarily used to reconstruct portions of the lobule and the nasal sidewall. the flap design is positioned just lateral to the nasolabial fold, the distal tip of the flap, situated at or just distal to the oral commissure, on closure, the scar lies exactly within the nasolabial crease. The flap can be pedicled superiorly or inferiorly, tunneled, made into an island, or turned over to create nasal lining, however, the blood supply is put under risk by folding, primary cartilage grafts are difficult to position, and the result usually appears bulky and thick. Two stages are generally required for division and alar base inset. Excessive skin from the nasolabial fold also may be transferred in one stage as an extension of a random cheek flap; however, a second revision is usually required to recreate the normal alar crease [6-8].



Figure 18



Figure 19

Conclusions

Nasal BCC in our study was more common in males 58.3% (21 patients) compared to females 41.7% (15 patients). The most common presentation was asymptomatic lesion 55.5% (20 patients), other presentations includes itching, local ulceration and bleeding.

The most common nasal subunit affected by BCC was the ala 36.1%, followed by tip 25%, sidewalls 22.3%, and dorsum 16.6%.

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Figure 20

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