

Retrospective Analysis of Reconstruction Techniques After Periocular Basalioma Excision

Biljana Kuzmanović Elabjer¹, Jelena Petrinović-Dorešić¹, Mladen Bušić¹, Esmat Elabjer² and Snježana Kaštelan¹

¹ University Department of Ophthalmology, Sveti Duh General Hospital, Zagreb, Croatia

² Traumatology University Hospital, Zagreb, Croatia

ABSTRACT

The paper presents our approach to reconstruction after periocular basalioma (pBCC) excision, especially of large lower lid (LL) and medial canthal (MC) pBCC. Retrospective analysis of data of 123 patients with pBCC, confirmed on histologic examination (HE), operated in period from 1998 to 2006, was performed. Oncologic safety margins of 3 mm were marked after local anesthesia was administered. Reconstruction was done in time of surgery. In pBCC away from a lid margin, adjacent myocutaneous flaps were used. For lid margin involving (LM) pBCC, size of 10 mm and less in horizontal diameter (HD), full-thickness lid excision was performed, combined with lateral canthotomy and/or Tenzel or McGregor flap. When size of LM pBCC was more than 10 mm in HD and it was on a LL, ipsilateral upper lid (UL) tarsoconjunctival (TC) graft combined with single pedicle transposition myocutaneous flap were used. The same size of LM pBCC on a UL required ipsilateral full-thickness LL "switch" flap and/or contralateral LL Hübner graft. In MC pBCC combined approach was used. The follow-up was up to 5 years. The 19 patients (15.4%) had positive tumor margin on HE. Five of them refused further surgery, but only two had recurrence. The rest of 121 patients had no recurrence during follow-up. In 5/14 patients, who underwent additional surgery, no tumor cells were found on HE. The 10/123 patients (8.1%) had complications. The imperative of our approach to reconstruction after pBCC was good functional and cosmetic result, avoiding prolonged lid closure. Accordingly, in large LL LM pBCC we used ipsilateral UL TC graft combined with single pedicle transposition myocutaneous flap. In MC pBCC combined approach was mandatory.

Key words: periocular basalioma, lids BCC, reconstruction after BCC, tarsoconjunctival graft

Introduction

Periocular basal cell carcinoma (pBCC) is the most common eyelid malignancy. The most important risk factor for it is sun exposure. The treatment of choice is complete excision. In reconstruction after pBCC excision a minimum of two structures need to be addressed: skin and mucosa. Small defects away from lid margin usually need local skin or myocutaneous flap. Defects of the lid margin up to one-quarter of the lid length or up to one-third in elderly patients can be closed directly^{1,2}. Although there have been attempts to reconstruct missing two lamellae with single flap in defects larger than one-third of the lid³, most reconstructive procedures still replace one of the lamella with flap to provide vascularization and another one either with flap or graft².

Lower lid and medial canthus are the most common locations of pBCC⁴⁻⁷. The aim of this paper was to present our approach to reconstruction techniques after pBCC excision based on retrospective analysis of patients with histopathologically confirmed pBCC. The special interest was put on reconstruction of large pBCC of these two locations.

Modern approach to reconstruction of a large defects of the lower lid after pBCC starts in 1989⁸. Hughes tarsoconjunctival flap⁹ combined with skin graft or flap is the most commonly used nowadays. However, the two-step procedure keeps the eye closed for 3–4 weeks. Our preferable reconstruction technique in lower lid tumors

sized more than 10 mm in horizontal diameter, was ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap, to avoid prolonged eye closure.

Medial canthus is an anatomically complex region with no skin to spare. That makes the reconstruction after pBCC specially challenging. In these cases we always used combined approach.

Materials and Methods

The paper presents retrospective analysis of data of 123 patients with histopathologically confirmed pBCC, who were operated by one surgeon (BKE) in period from December 1998 to January 2006. There were 63 men and 60 women, average age 71 ± 9.2 years (yrs), median 69 (53–92 yrs), 72 ± 8.3 yrs for the male and 62.55 ± 7.8 yrs for the female. Periocular basalioma on the right side was found in 54 patients (43.9%), and on the left in 69 (56.1%). In 82 patients (66.7%) it was located at medial canthal area, including medial third of upper and lower lid (Figure 1). Central part of lower lid was involved in 19 patients (15.4%), lateral third of lower lid in 14 patients (11.4%) and lateral and central upper lid was involved in 10 patients (8.1%). Average horizontal length of what clinically imposed as pBCC was 10.2 ± 7.58 mm, median 8 mm (4–25 mm) and the vertical length 9.53 ± 6.42 mm, median 8 mm (3–35 mm). The operated pBCC was primary tumor in 119 patients (96.7%) and recurrence in 4 patients (3.3%). Based on a disease history, average duration of primary pBCC prior to our surgery was 7.09 ± 6.45 yrs, median 3.5 yrs (0.8–20 yrs). In four patients with recurrent pBCC, period from primary tumor resection was

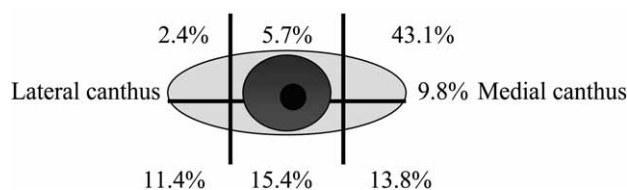


Fig. 1. Location of periocular basalioma, percentage of patients

24, 36, 45 and 58 months respectively. The clinically observed tarsal conjunctiva involvement was found in only 7 patients (5.7%). Lymph nodes of head and neck were not palpable in any of the patients. The surgery was performed in local anesthesia. Oncologic safety margins of 3 mm were marked with marker pen after local anesthesia was administered. Mohs' micrographic surgery or intra-operative frozen sections were not available to us. Sutures were used to mark the orientation of the pBCC in the excised material: one for the medial and two for the lateral side of the tumor.

Reconstruction was done in time of surgery, aiming at best possible functional and cosmetic result. Horizontal diameter of clinically observed tumor, oncologic safety margins added after administration of the local anaesthetic, was crucial in the selection of the reconstruction technique. In tumors not involving the lid margin, muscle-cutaneous adjacent flaps were used wherever possible, avoiding grafts. The commonest was modified rhomboid flap¹⁰. For a medial canthal tumors there was always combined approach, depending on the pBCC size. Upper and lower lid advancement and rotation flap, bilobed flap, V-to-Y flap, nasojugal flap, modified rhomboid flap,

TABLE 1
LIST OF RECONSTRUCTION PROCEDURES

Procedure	No/% of patients
Horizontal pentagonal full thickness lid excision with direct closure	11/8,9
Horizontal pentagonal full thickness lid excision with lateral cantholysis	23/18,7
Horizontal pentagonal full thickness lid excision with lateral cantholysis and Tenzel or McGregor flap	7/5,7
Contralateral lower lid partial thickness composite graft (Hübner)	6/4,9
Full-thickness lower lid »switch« flap	3/2,4
Ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap	9/7,3
Island orbicularis oculi myocutaneous flap from upper lid	5/4,1
Upper and lower lid advancement or rotation flap	11/8,9
Bilobed flap	5/4,1
V-to-Y flap	4/3,3
Nasojugal flap	3/2,4
Modified rhomboid flap	18/14,6
Full-thickness skin graft of ipsilateral upper lid	7/5,7
Cheek rotation flap (Mustardé)	2/1,6
Glabellar flap	9/7,3

TABLE 2
COMPLICATIONS AFTER pBCC EXCISION

Complication	No/% of patients
Localized ectropion	3/2,4
Impaired lid closure	2/1,6
Metaplastic lashes	1/0,8
Partial necrosis of the tarsoconjunctival graft resulting in large scleral show	1/0,8
Sagging of lateral canthus following Mustardé cheek rotation flap	1/0,8
Unsatisfactory cosmetic outcome without functional defect	2/1,6
TOTAL	10/8,1

full-thickness skin graft of ipsilateral upper lid and or retroauricular area and glabellar flap were combined. In basalioma 10 mm and less in horizontal diameter, involving lid margin, horizontal pentagonal full thickness lid excision was performed, combined with lateral canthotomy and/or microvascular semicircular Tenzel or Mc-Gregor flap. For tumor involving lower lid margin, sized more than 10 mm in horizontal diameter, the reconstruction technique was ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap. For upper lid tumors sized of more than 10 mm in horizontal diameter, involving lid margin, contralateral lower lid partial thickness composite graft (Hübner) and full-thickness lower lid »switch« flap were used.

The performed reconstructive procedures are listed in Table 1.

The average postoperative follow-up at the time of paper preparation was 25.1 ± 11.08 months, median 22 months (13–60 months). Patients were checked monthly for first 3 months, than in period of 3, 9 and 12 months respectively. The follow-up continued 5 years postoperatively.

Results

Histopathology of pBCC revealed nodular type in 109/123 patients (88.6%), nodulocystic in 10/123 patients (8.1%) and mixed with sclerosing foci in 4/123 patients (3.3%), with no neural invasion. The 19 patients (15.4%), all with primary pBCC, had positive tumor margin. In 10/19 patients pBCC was located in medial canthus. The 5/19 patients refused further surgery and kept coming on regular check-ups. In 2/5 patients, both with medial canthus pBCC, clinically detectable recurrence was noticed 15 and 22 months postoperatively, respectively. They still refused reoperation. The 14/19 patients underwent additional excision and reconstruction. In 5/14 no tumor cells were found in histopathologic specimen.

There was no recurrence of pBCC in patients with completely removed tumor during the follow-up.

10/123 patients (8.1%) had complications that are listed in Table 2. The 5/10 patients underwent corrective surgery: one patient with localised lid ectropion, two pa-

tients with impaired lid closure, one with metaplastic lashes and one with sagging of lateral canthus following Mustardé cheek rotation flap

Discussion

There are variety of techniques to reconstruct periocular defects after pBCC removal^{1–3,8–14}. Our paper stresses reconstruction modalities for a large pBCC on two most common location, lower lid and medial canthus. A special challenge is large pBCC on a lower lid in patient who needs early visual rehabilitation. The main complaint for the Hughes flap is the need to close an eye for weeks. Retraction of the upper lid may follow the division of the pedicle if the upper lid tissues have not been freed sufficiently². Reconstruction technique that uses combination of a graft for the posterior lamella and a flap for anterior lamella has been described¹⁵. We have found ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap offering satisfactory results in treating lower lid defects of more than 10 mm in horizontal diameter in our patients (Figure 2). The key point in successful tarsoconjunctival grafting is to leave at least 4 mm of the tarsus at the upper lid margin to prevent notch and entropion. Leave also 2 mm of conjunctiva attached that will be used for lower lid margin reconstruction. Suturing the graft with three 6–0 Vicryl sutures to the lower lid retractor stamp ensures its function in stability of the tarsal area. We use single pedicle transposition orbicularis oculi myocutaneous flap starting at the skin crease. Thus, we get the supply for the graft from the muscle and subdermal plexus. Also, innervations of the orbicularis muscle is not severed¹⁶. Since the average age of our patients was 63 yrs, dermatochalasis was present in each of them, enabling us to take enough skin and muscle not to interfere with the eyelid closure. Additionally, it offers good tissue match. The procedure is performed in local anesthesia and postoperative eyelid closure is not required. The disadvantages of the procedure are lack of lashes on the lower lid and relatively larger area of scleral show bellow the limbus compared with the other side. Tarsoconjunctival graft has been meticulously studied especially regarding its complications¹⁷. We expe-



Fig. 2. a) 88-year-old male with recurrent right lower lid basalioma, 20 mm in horizontal diameter; b) ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap, 2 years postoperative; c) note the lower lid retractor function in downgaze

rienced only one, although major complication. It was an early partial graft necrosis in 77-year-old male with 10x10 mm lateral third lower lid tumor that left large area of lateral scleral show (Figure 3). However the patient refused the correction since he has experienced no anterior segment exposure symptoms. We think that the reason for the necrosis lay in very thinned and stretched skin and the muscle, probably with poor blood supply as well as in too narrow pedicle insufficient to feed the graft. Minimal ptosis and epiphora, noticed in all patients, were only transitory resolving within the first

postoperative week. 88-year-old male with recurrent 20 x 7 mm BCC required lower lid punctum excision with canalicular marsupialization into the conjunctival sac. With upper lacrimal drainage system patent he has experienced no prolonged epiphora.

Medial canthal tumors may cause extensive local invasion and have a higher recurrence rate⁵. Most authors recommend surgical excision. Anatomy of medial canthus makes complete excision, especially without intraoperative frozen section or Mohs' technique, very difficult. In our paper 8.1/15.4% of patients with positive

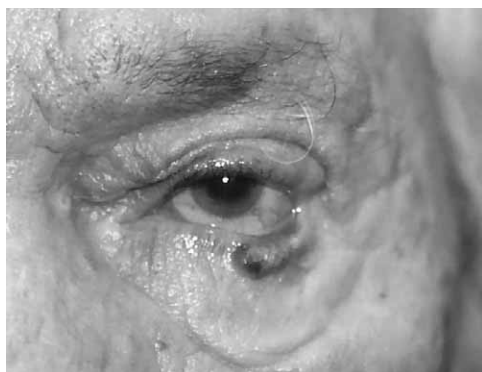


Fig. 3. a) 77-year-old male with left lateral lower lid basalioma, 13 mm in horizontal diameter b) early partial graft necrosis after ipsilateral upper lid tarsoconjunctival graft combined with single pedicle transposition orbicularis oculi myocutaneous flap that left large area of lateral scleral show, 13 months postoperatively

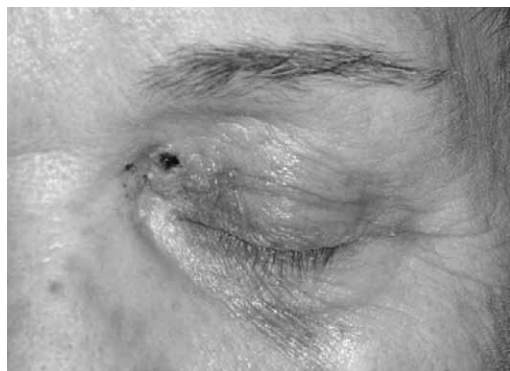


Fig. 4. a) 84-year-old female with basalioma of medial canthus on the left side b) combined approach was planned for the reconstruction, c) satisfactory functional and cosmetic result six months postoperatively

tumor margin had pBCC in a medial canthus. Also, two of those patients, who refused further surgery, got recurrent tumor. These were the only recurrent pBCC we experienced in our described population. We started using combined approach to reconstruction in this area in 1998 after Harris et al described their multiple esthetic units

for medial canthal reconstruction¹³. It gave good functional as well as cosmetic outcome in our population (Figure 4). Local flaps are used whenever possible because it provides satisfactory vascularization as well as matching of the skin.

REFERENCES

1. COLLIN JRO: A manual of systemic eyelid surgery (Churchill Livingstone, Edinburgh, 1989). — 2. TYERS AG, COLLIN JRO: Colour Atlas of Ophthalmic Plastic Surgery. (Butterworth-Heinemann, Oxford, 1995). — 3. PORFIRIS E, CHRISTOPOULOS A, SANDRIS P, GEORGIOU P, IOANNIDIS A, POPA CV, KALOKERINOS D, Plast Reconstr Surg 103 (1999) 186. — 4. KHANDWALA MA, LALCHAN SA, CHANG BY, HABIB M, CHAKRABARTY A, CASSELLS-BROWN A, Orbit, 24 (2005), 243. — 5. GONZALES, F, GARCIA A, Arch Soc Esp Oftalmol, 80 (2005) 275. — 6. MALHOTRA, R, HUILGOL SC, HUYNH NT, SELVA D, Ophthalmology, 111 (2004) 631. — 7. SPRAUL CW, AHR WM, LANG GK, Klin Monatsbl Augenhlk, 217 (2000) 207. — 8. MONKS GH, Boston Med Sci 139 (1989) 385. — 9. HUGHES WL, Arch Ophthalmol, 17 (1937)

1008. — 10. TESKE SA, KERSTEN RC, DEVOTO MH, KULWIN DR, Ophthal Plast Reconstr Surg, 14 (1998) 360. — 11. PORFIRIS E, GEORGIOU P, POPA CV, CHRISTOPOULOS A, SANDRIS P, SGOURAS N, Eur J Plast Surg, 21 (1998) 246. — 12. MUSTARDÉ JC: Repair and reconstruction in the orbital region (Churchill Livingstone, Edinburgh, 1966). — 13. HARRIS GJ, LOGANI SC, Ophthal Plast Reconstr Surg, 14 (1998) 352. — 14. MALOOF AJ, LEATHERBARROW B, Eye, 14 (2000) 597. — 15. BOBORIDIS KG, DIMITRAKOS SA, GEORGIADIS NS, STANGOS NT, Scand J Plast Reconstr Surg Hand Surg, 39 (2005) 100. — 16. BORODIC GE, COZZOLINO D, WEIGNER A, FERRANTE R, YOUNG R, Ophthal Plast Reconstr Surg, 7 (1991) 54. — 17. HAWES MJ, LAMELL GA, Ophthal Plast Reconstr Surg, 12 (1996) 45.

B. Kuzmanović Elabjer

University Department of Ophthalmology, Sveti Duh General Hospital, Zagreb, Croatia
e-mail: belabjer@obsd.hr

RETROSPEKTIVNA ANALIZA REKONSTRUKCIJE NAKON EKSCIZIJE PERIOKULARNOG BASEOCELULARNOG KARCINOMA

SAŽETAK

Rad prikazuje naš pristup rekonstrukciji periokularne regije nakon ekscizije periokularnog baseocelularnog karcinoma (pBSK). Provedena je retrospektivna analiza podataka 123 pacijenata s patohistološki dokazanim pBSK, operiranih u periodu od 1998–2006. godine. Onkološki sigurna granica od 3 mm je obilježena tek nakon administracije lokalne anestezije. Rekonstrukcija je učinjena u vrijeme ekscizije tumora. Kod pBSK koji ne zahvaćaju rub vjeđe, korišteni su lokalni miokutani režnjevi. Ukoliko je zahvaćen rub, a pBSK je bio manji ili jednak 10 mm u horizontalnom promjeru (HP), pentagonalno je izrezana puna debljina vjeđe, te po potrebi kombinirana s lateralnom kantotomijom i/ili Tenzel ili McGregor režnjem. Za pBSK veće od 10 mm u HP, na donjoj vjeđi, uporabljen je ipsilateralni tarzokonjunktivalni transplantat s gornje vjeđe u kombinaciji s transpozicijskim miokutanim režnjem. Kod takvog pBSK na gornjoj vjeđi, učinjen je ipsilateralni »switch« režanj s donje vjeđe i/ili kontralateralni Hübner graft. Za pBSK medijalnog kantusa je uvijek uporabljen kombinirani pristup rekonstrukciji. Vrijeme praćenje je bilo pet godina. Kod 19 pacijenata (15,4%) tumor je nađen u rubovima patohistološkog preparata. Petero ih je odbilo ponovnu operaciju, no samo u dvoje je nastao recidiv. Prestalih 121 pacijenata nije imalo recidiv u vremenu postoperativnog praćenja. Kod 5/14 pacijenata koji su podvrgnuti dodatnoj eksciziji ostatnog tumora nisu nađene tumorske stanice u patohistološkom preparatu 10/123 pacijenata (8,1%) je imalo postoperativne komplikacije. Cilj rekonstrukcije nakon ekscizije pBSK je bio dobar funkcionalni i kozmetički rezultat, bez duljeg zatvaranja oka. Sukladno tome, kod velikih pBSK na donjoj vjeđi, uporabljen je ipsilateralni tarzokonjunktivalni transplantat s gornje vjeđe u kombinaciji s transpozicijskim miokutanim režnjem. Kod bazalioma medijalnog kantusa uvijek je korišten kombinirani pristup.