Brow Revision Following Animal Bite: A Case Report and Review of Literature

Anju Kochar, Shaheen Farooq
Department of Ophthalmology, SP Medical College, PBM and associated group of Hospital, Bikaner, Rajasthan, India.

Abstract
Traumatic laceration caused by animal bite on face carries disfigurement effect and psychological trauma to patient. Dog and cat bites being more common in children may involve periocular structure. Eyebrows being one of the five aesthetic subunits of forehead and playing a key role in facial expression, needs due focus while correcting such injuries. This article is aimed at presenting considerations regarding eyebrow reconstruction, exemplified by a case report.

Keywords: Animal Bite, Eyebrow Reconstruction

Introduction
Animal attacks are common occurrences due to increased interaction between human and animals or due to encroachment of natural habitat of animals by humans. Dog and cat bite injuries are particularly more common in children and are more likely to be on the face. Although lips, nose and cheek comprises the central target area, periocular structures are also involved frequently in canine bites (27%). These injuries can result in severe deformity with inevitable physical, functional and psychological consequences. The philosophy regarding management of these injuries has changed from healing by secondary intention to primary closure for getting optimized aesthetic results but till date we still get several patients who incurred animal bite in childhood and strive for cosmetic correction of the disfigurement thereafter.

Case Report
We report one such case of a 40-year old female, presenting to tertiary centre. Although her chief complaint was diminution of near vision, her emphasis was more on her disfigured left eyebrow which was the result of a cat bite at the age of 6 months. The wound was not attended by any medical personnel: instead first aid was given at home. It was allowed to heal by secondary intention leaving behind not only an unsightly scar but also a slit in the left eyebrow along with vertical misalignment of the two slit parts Figure 1.

The vertical distance between cut ends of the eyebrow was 1.5cm. Surgical correction involved making a rhombus shaped incision in between the cut ends of the eyebrow. The skin and subcutaneous tissue were removed at the incision site Figure 2.

The misaligned margins of eyebrow were approximated taking into account the normal contour of eyebrow with the aim of achieving continuous brow line. Interrupted sutures were applied with 6-0 vicryl in two layers and defect was corrected Figure 3.

This otherwise simple technique, gave excellent cosmesis with gratifying results.

Discussion
Eyebrows have linguistic and aesthetic function. It is one of the aesthetic subunits of forehead: central forehead, lateral forehead and the left and right eyebrow. Eyebrows are shaped, tattooed; brow lift procedures are done to enhance facial features. In such an era where aesthetic sense prevails, misaligned eyebrow may lead to loss of self-esteem. Both position and continuity of eyebrow hairline play an important role in the overall harmony of the face. Reconstruction of this region is considered challenging but necessary. Despite
their aesthetic and functional importance, there is limited consensus as to which reconstructive technique is the best.4

We reviewed literature on eyebrow reconstruction using the PubMed database and medical texts. The following search terms were used: eyebrow reconstruction, eyebrow defects, eyebrow transplantation.

Aim of eyebrow reconstruction is to achieve: appropriate shape, hair direction, and thickness; no complications (recipient/donor alopecia, dis-figuration, notching/elevation/ptosis); symmetry, dynamicity; minimal stages; closure within the same cosmetic unit; horizontal and hidden incisions and maximize conservation of hair follicles.5

Matsuo et al identified three main options for eyebrow reconstruction: free hair transfer, free skin graft with hair transfer and flap transfer.5

Choice of reconstruction technique needs to be individualized according to extent and location of the defect, relationship to other structures, extensibility of residual skin, gender and age, state of donor and recipient sites. Various algorithms have been designed for this purpose. Ridgway et al presented a surgical algorithm for reconstruction of full and partial eyebrow defects based on the etiology of defect. Their idea was to reconstruct burn or radiation defects with local flaps while in “no burn” patients, single follicle and hair plug transplants were preferred.7

Algorithm presented by Accord et al focused on eyebrow defect size and position. Eyebrow defects were divided into 5 categories. Defects less than 1/5th size can be closed by direct closure. Direct closure represented the simplest and most effective corrective remedy for small defects.

The incision lines were extended beyond the limits of the eyebrow in order to create a vertically oriented ellipse ensuring that upper and lower margins of the eyebrow were joined together. In cases of larger defects, different flaps were used sourced from the rich vascularization of the eyebrow area.8

Edwin et al in their review article stated that for smaller defects, options include primary closure, advancement flaps, and subcutaneous pedicle flaps. For large defects, an option was to use a flap or graft if necessary, and recreate brow hair using follicular unit transplantation (FUT)/tattooing/makeup. Alternatively, hair-bearing skin via regional flaps or grafts can be recruited.

From direct closure of small defect to complicated grafting for large defects, desired end result is always good aesthetic outcome. In our case, the defect had already healed by secondary intention there by leaving a scar with vertical misalignment. Simple excision of scar tissue was done by making a rhombic incision. It was closed by direct closure by approximating both edges of slit eyebrow.

Conclusion

Eyebrow defects even small can be very distressing and due focus should be given on its reconstruction to as normal as possible. Direct closure of small defect is simple and gratifying.

Declaration

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Address for correspondence

Anju Kochar,
M5,Senior Professor
Department of Ophthalmology,
SP Medical College, PBM and associated group of Hospital,
Bikaner, Rajasthan, India.
Email: dranjukochar@yahoo.co.in