

LATERAL CANTHOTOMY-CONJUNCTIVAL APPROACH TO THE LATERAL AND INFERIOR ORBIT

Hyoun-Chull Kim, Sook Byun, Ok-Byung Yoon, Tae-Young Lee
*Seiji Esaki, *Tadamitsu Kameyama.

*Department of Oral and Maxillofacial Surgery, Division of Dentistry,
Dae Rim Saint Mary's Hospital, Seoul, Korea.*

**Department of Oral Surgery, Kurume University School of Medicine, Kurume, Japan.*

Various extraoral and intraoral approaches to reduction and fixation of zygomatic complex fractures were used. The method for exposure of inferior orbital area include the subciliary, inferior eyelid, infraorbital rim and conjunctival incisions. For exposure of frontozygomatic suture, lateral brow, coronal and blepharoplasty incisions were used.

It is necessary that the usual approaches to the inferior and lateral orbit have two incisions. However, lateral canthotomy-conjunctival approach presented on this paper provide optimal exposure to lateral and inferior orbit.

I . INTRODUCTION

The ideal surgical approach to treat maxillofacial fractures should provide maximum exposure of the fractured segments, ensure less potential for injury to facial structures, and allow for good cosmetic results. Exposure of the floor of the orbit and frontozygomatic suture has been approached historically by surgeons with techniques that are more associate with their particular specialties^{1,2,3)}. There has been accomplished the coronal incision, blepharoplasty incision, lateral brow incision, or the common popular orbital rim approaches.

Also, conjunctival incision is one of the recognized approaches for access to the orbital floor and the infraorbital rim^{1,2,5)}. When used in combination with lateral canthotomy, this incision and dissection also provide excellent superior approach to the frontozygomatic, infraorbital and orbital floor areas. It yield a superior cosmetic result at the incision sites.

This paper reports on the use of the smaller cutaneous incision with conjunctival incision, improved exposure to the inferior and lateral orbital area.

II . MATERIAL AND TECHNIQUE

This paper is based on 22 patients with zygomatic complex fractures, treated via lateral canthotomy conjunctival approach at the department of Oral and Maxillofacial Surgery, Dae Rim Saint Mary's Hospital in Korea and Kurume University Hospital in Japan in the period from 1988 to 1992. Age ranged between 23 and 67 years, with an average 32 years.

III . SURGICAL TECHNIQUE

A lateral canthotomy incision is performed and extends 5mm from the lateral canthus through the skin crease line. (Fig. 1) After splitting of lateral canthal tendon, the lower limb of the lateral canthal



Fig.1 : Lateral canthal incision is performed, extending 5mm into the lateral canthal crease line.



Fig. 2 : Inferior orbital rim exposure and transosseous fixation of fracture.

tendon is completely severed from the orbital rim inferiorly allowing the lower lid to evert and stretch outward. The lower lid is everted, and an incision is made through the conjunctiva below the most superior portion of the rim. If careful dissection is performed, it permits the surgeon to avoid perforating the septum orbitale with a consequent extrusion of the orbital fat. Extrusion of fat through septal incisions makes dissection more difficult.

An incision elevation made in the periosteum of the inferior and lateral orbital rim and sharp periosteal elevator is used then to elevate the periosteum from the orbital rim.

Subperiosteal elevation can be continued along the anterior surface of the maxilla and lateral orbital rim, as much as is needed for optimum exposure of the fracture line. A malleable retractor is used to retract the orbital contents, giving exposure to the floor and lateral wall of the orbit. (Fig 2, 3) Additional relaxing incision can be made in the superior ramus of the lateral canthal tendon as necessary, however, it has not been necessary in our experience.

After completion of reduction and fixation, the conjunctival incision is then closed with a running 5-0 nylon suture or absorbable suture and the lower rim of the lateral canthal tendon is then reattached to its cut stump just inside the lateral orbital rim with 5-0 nylon suture. The lateral canthal



Fig 3. Exposure of lateral orbital rim and fixation.

incision is closed with interrupted 6-0 nylon suture.

IV. RESULTS

This method been successfully performed on twenty-two patients with fracture of zygomatic complex. Lateral canthotomy-conjunctival approach allowed optimal exposure for accurate anatomical reduction of the fractures and direct application of internal fixation. This incision avoids an external scar except in the skin crease lateral to the lateral canthus. It was therefore inconspicuous.(Fig



Fig 4. Postoperative photograph ; three weeks after surgery, the cutaneous incision is healed and inconspicuously hidden in the skin crease line.

4) Some lagophthalmos noted in the lower lid in upward gauze. These were usually temporary conditions that resolve after resolution of any mild cicatricial contraction. Concern over preservation of the frontal branch of the facial nerve with this approach, although frequently stated, is rarely of complication as the incision generally does not extend laterally.

V. DISSCUSSION

The treatment of the zygomatic complex fractures is of interest to practitioners of several disciplines. In formulating a treatment plane, selection of the surgical approach is important because it could influence the ease of reduction and fixation of the fractured segments, the length of operating time and the length of hospital stay. Whenever possible all fractured bones should be directly exposed. This allows for better assessment of the fracture and the degree of displacement, and it provides adequate access to accomplish anatomic reduction and fixation. Whether single or multiple incisions are used to exposed the fractured segments, these incisions should provide maximum exposed the fractured segments, these incisions should provide maximum exposure, a minimal scar, and a minimal

chance of injury the facial nerves or other vital structures.

Common surgical incisions used to approach zygomatic complex are coronal incision, subciliary incision, orbital rim incision, intraoral incision, lateral brow incision, lower and upper eyelid incision, lateral brow incision, and conjunctival incision^{1,2,3,4,5}. Although surgical reduction and internal fixation on the lateral and inferior orbital rim can be achieved utilizing these incisions, two separate facial incision are required. Also, the transcutaneous approach to this area has been used for a number of years successfully although it does have shortcomings of producing a cutaneous scar and on repeated surgery may indeed cause shrinkage and formation of a rather severe ectropion. In order to avoid these problems lateral canthotomy-conjunctival incision is a useful approach for reduction and fixation of the zygomatic complex fractures. In 1979, Mc Cord and Moses reported a lower fornix incision and lateral canthotomy for exposure of orbital floor fractures⁶. In 1985, also, Nunery reported expanded lateral canthal orbitotomy technique as a method of approaching zygomaticoorbital fractures⁷.

The advantage of this technique is excellent exposure that it avoids lengthy skin incision and dissection of a skin flap. In addition to this advantage, the closure of this wound is simplified and the lower lid maintains its integrity since it has been bypassed.

VI. SUMMARY

A technique has been reported that provides superior access and visualization to inferior and lateral orbit. We believe this should be initial method of choice in surgical treatment of zygomatic complex fractures. For late reconstruction of zygomatic complex deformities, we prefer wide access through a coronal incision and when necessary, use of autogenous cranial bone graft.

VII. REFERENCE

1. Kim, H. C. and Lee, S. C. ; Clinical comparison of surgical approach for orbital fracture, *J Korean A Maxillofac Plast Reconstr Surg* 11 : 261–266, 1989.
2. Eppley, B. L., Custer, P. L. and Sadove, A. ; Cutaneous approaches to the orbital skeleton and periorbital structures, *J Oral Maxillofac Surg* 48 : 842–854, 1990.
3. Abubaker, A. O., Sotereanos, G. and Patterson, G. T. ; Use of the coronal surgical incision for reconstruction of severe craniomaxillofacial injuries, *J surgical incision for reconstruction of severe craniomasillofacial injures*, *J Oral Maxillofac Surg* 48 : 579–586, 1990.
4. Chuong, R. and Kaban, L. B. ; Fractures of the zygomatic complex. *J Oral Maxillofac Surg* 44 : 283–288, 1986.
5. Ilankovan V ; Transconjunctival approach to the infraorbital region ; a cadaveric and clinical study, *Br J Oral Maxillofac Surg* 29 : 169–173, 1991.
6. McCord, C. D. and Moses, J. L. ; Exposure of the inferior orbit with fornix incision and lateral canthotomy, *Ophth Surg* 10 : 53–63, 1979.
7. Nunery, W. R. ; Lateral canthal approach to repair of trimalar fractures of the zygoma, *Ophth Plast Reconstr Surg* 1 : 175–183, 1985.

안와하연 및 측벽(frontozygomatic suture)에 대한 lateral canthotomy-conjunctival approach를 이용한 협골체 골절의 치료

대림성모병원 구강악안면외과

*日本 久留米大學醫學部口腔外科學講座

김현철 · 변 숙 · 윤옥병 · 이태영

*江崎誠治 · *龜山忠光

협골체 골절시 접근방법은 안와하연에 대해 섬모하절개, 하안검절개, 안와하연절개 및 결막절개등이 사용되고 안와측벽, frontozygomatic suture에 대해서는 lateral brow incision, 상안검절개등이 사용되며 관상절개술은 frontozygomatic suture와 협골궁에 접근할 수 있다.

관상절개술을 제외한 접근방법은 한가지 절개술로 단지 한부위의 정복과 고정술이 가능하므로 결국 협골체 골절시 2점이상 고정을 할 경우 2가지 이상의 절개가 필요하게 된다.

이에 저자들은 관상절개술의 적응증이 아닌 협골체 골절에 lateral canthotomy-conjunctival incision을 사용하여 안와하연 및 측벽의 골절부에 대한 정복술과 고정술을 시행하여 양호한 결과를 관찰하여 이에 보고하는 바이다.