

Incidence of Ectropion in Subciliary Versus Subtarsal Incisions

Ectropion in Subciliary Versus Subtarsal Incisions

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ABSTRACT

Objective: To evaluate the frequency of ectropion associated with subciliary and subtarsal incisions for exposure of inferior orbital rim and orbital floor due to debatable results depicted by literature.

Study Design: Randomized controlled trial study

Place and Duration of Study: This study was conducted at the Tertiary Care Hospital from July 2011 to January 2015.

Materials and Methods: Sample size of study was 80 participants, divided in two groups (40 each). Group 1 participants were treated by subciliary incision and subtarsal incision was performed in group 2 participants. Procedures were by single surgeon and ectropion was evaluated at 1st and 6th week follow up appointment. Mean and standard deviation was calculated for age. Frequency and percentage was calculated for qualitative variables like gender and ectropion. Chi-square test was used for ectropion. P-value ≤ 0.05 was considered as significant.

Results: Incidence of ectropion with subciliary incision was 5% (n=2) and subtarsal was 0% (n=0) which was statistically insignificant (p-value > 0.05).

Conclusion: Subtarsal incision provides better esthetics as compared to subciliary incision in respect of ectropion.

Key Words: Ectropion, Subciliary incision, Subtarsal incision, Orbital fractures

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INTRODUCTION

Orbital fractures are the most common among the mid-face fractures, however orbit rarely fractures in isolation.¹ Orbital injury is mostly associated with all Le Fort II and III fractures and those involving the naso-orbito-ethmoidal and zygomaticomaxillary complexes.¹ Orbit is bound by orbital roof and floor as well as medial and lateral walls.

The orbital floor, which forms the roof of the maxillary sinus, slopes upward towards the apex of this pyramid, approximately 44 to 55mm behind the orbital rim.

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Orbital floor and medial wall of the orbit, forms lateral wall of ethmoid sinus, are most frequently fractured bones because bone in these areas is relatively thin.² "Buckling" theory and "hydraulic" theory have been proposed for orbital "blow out" fractures of floor, in which orbital contents are displaced down in the maxillary sinus.³ Literature is still open to discussion about management of orbital floor fractures, some indicating surgical repair when size of floor defect is >2 cm² or >50% of the surface measured on the computed tomography (CT) scan. Others suggest that diplopia existing beyond 7-10 days; entrapment of orbital tissue with limitation of globe motility; > 2mm of enophthalmos are also indications for surgery.⁴⁻⁷ Most widely used approaches to gain access to the infraorbital rim and orbital floor are the transconjunctival and transcutaneous. Transcutaneous include subciliary, subtarsal and infraorbital.⁸ Complications associated with all these approaches include varying frequencies of entropion, ectropion, lower eyelid avulsion, lower eyelid laceration, hematoma, chronic edema and unaesthetic scar, having greater frequency in some than others.⁹ There is ongoing debate about the ideal surgical approach to access orbital floor and inferior orbital rim. The technique sensitive transconjunctival approach provides excellent esthetic results but limits the ingress to infraorbital rim and orbital floor.¹⁰

Among transcutaneous approaches, infraorbital incision is least technique sensitive and preferable in patients

presenting with gross periorbital edema but it is not encouraged in terms of esthetics, also it provides limited access.¹¹ Both subciliary and subtarsal incisions fulfil the visualization needs of trauma surgery but differ in terms simplicity of technique, surgical time needed and esthetic results.¹² The ultimate choice of incision is finalized based on surgeon’s preference and extent of required exposure.¹³ Regardless of the type of opted incision for accessing the inferior orbital rim and orbital floor, lower eyelid malposition leading to ectropion and entropion is the most common complication ranging from 0-42%.^{14,15} Ectropion, an outward turning of lower eyelid margin has been reported among transcutaneous approaches by various studies in contradictory frequencies. Ridgway et al stated ectropion percentage as 12.5% by subciliary and 2.7% by subtarsal incision.¹⁶ Crosara et al reported incidence of ectropion with subciliary incision as 0% and subtarsal incision as 18%.¹⁷ Whereas, Haghghat et al found ectropion in 17.6% of participants treated by subciliary incision and 0% treated by subtarsal¹⁸ and Al-Moraissi et al witnessed no difference in incidence of ectropion between subtarsal and subciliary incision.⁸ Thus, the rationale of this study is to find out the difference in frequency of ectropion between subtarsal and subciliary incision for the exposure of inferior orbital rim and orbital floor, due to the heterogeneity in literature about prevalence of ectropion. There is no local study done previously assessing frequency of ectropion. The results of this study will help to suggest better surgical approach for exposure of inferior orbital rim and orbital floor that provides excellent esthetics with lower frequency of ectropion.

MATERIALS AND METHODS

This study is a randomized controlled trial conducted at tertiary care hospital between July 2011 till January 2015 after permission from institutional review boards of the research and ethics committee. Sample size of the study was 80, estimated using 95% confidence level 80% power of test with an expected frequency of subciliary type of incision 0% and subtarsal type of incision 18%. These 80 patients were allocated to two groups based on lottery method (40 in each group).

Inclusion Criteria: Patients of both genders aged between 18-45 years (older patients have increased

laxity of skin and pose higher incidence of scar formation and ectropion)

1. Patients with facial fractures requiring exposure of inferior orbital rim and orbital floor.

Exclusion Criteria:

1. Patients with soft tissue laceration on zygomatic bone or infraorbital region
2. Gross edema of periorbital region on clinical examination
3. Comminuted fractures of orbital rim and floor on radiographic examination
4. Previous history of surgery in infraorbital region
5. Patients not giving consent

Written informed consent was taken from each patient according to Helsinki Declaration and demographic detail was recorded. Patients in group 1 were treated by subciliary incision and in group 2 patients, subtarsal incision was performed. Procedure was performed by the same surgeon. Subciliary incision was given 2mm and subtarsal incision was given 5-7mm below and parallel to the subciliary margin with the end tapering laterally in one of the skin creases along the lateral orbital rim. After fracture management closure was done in layers. Inner layers were closed by 4/0 vicryl. Subcuticle technique was used for closure of skin layer by 5/0 prolene. Ectropion was evaluated for its presence or absence on 1st and 6th week follow up visit. Data was entered and analyzed through Microsoft excel for Mac version 16.56 (2021 Microsoft). Mean and standard deviation was calculated for age. Frequency and percentage was calculated for qualitative variables like gender and ectropion. Chi- square test was used for ectropion, p-value ≤ 0.05 was considered as significant.

RESULTS

In this study total 80 patients were included. These 80 patients were divided into two equal number of patients group. This study comprised of 73.7% male (n= 59) and 26.3% female (n= 21) with mean age of 35.5 ± 5.34. Table No. 1 and 2 show frequency of ectropion in both groups at 1st and 6th week respectively. Chi Square test for ectropion between two groups was statistically insignificant (p-value > 0.05).

Table No. 1: Frequency and Percentage of Ectropion in Subciliary and Subtarsal at First Post-Operative Week

		Ectropion		Total	p-value
		Present	Absent		
1 st Week	Subciliary Incision	2 (5%)	38(95%)	40	0.240
	Subtarsal Incision	0(0%)	40(100%)	40	
Total		2(2.5%)	78(97.5%)	80	
6 th Week	Subciliary Incision	2 (5%)	38(95%)	40	0.240
	Subtarsal Incision	0(0%)	40(100%)	40	
Total		2(2.5%)	78(97.5%)	80	

DISCUSSION

The main aim of this study was to find out the frequency of ectropion associated with subciliary and subtarsal incisions, because literature depicted diverse outcomes of comparison of these two incisions. This study will help to designate the right incision with minimal post-operative complications with better esthetic results and patient satisfaction. This study recruited 80 participants, divided in two groups of 40 participants each and comprised of 73.7% male (n= 59) and 26.3% female (n= 21) with mean age of 35.5 ± 11.34. Ectropion was evaluated at 1st and 6th weeks post-operatively after treatment by subciliary and subtarsal incision. It was found to be 5 % (n=2) with subciliary incision and 0% (n=0) with subtarsal incision, being statistically insignificant (p-value > 0.05). Contradictory to this study, Ridgway et al reported ectropion with subciliary and subtarsal incisions in 12.5% and 2.7 % of participants respectively.¹⁶ Meta-analysis of 17 studies depicted ectropion in 14% of patients with subciliary incision and 3.8% with subtarsal incision.¹⁶ Same meta-analysis reported cumulative ectropion incidence, regardless of type of incision, as 4.7%, whereas, in our study it was 2.5%.¹⁶ Defying these finding, Crosara et al reported incidence of ectropion with subciliary incision as 0% and subtarsal incision as 18%.¹⁷ Whereas, Haghighat et al found ectropion in 17.6% of participants treated by subciliary incision and 0% treated by subtarsal¹⁸ and Al-Moraissi et al witnessed no difference in incidence of ectropion between subtarsal and subciliary incision.⁸ The reason for low ectropion in our study could be multi-factorial. Firstly, in our study, stepped dissection was performed in all the patients. It involved skin only flap in the beginning of dissection and later, the flap included both skin and muscle below tarsus. This technique preserves the pre-tarsus orbicularis oculi fibers and thereby prevents vertical eyelid shortening, scleral show and ectropion.¹⁹ Secondly, in the current study, suspensory frost suture was used intra-operatively in all the patients. Frost suture was passed just at the level of lower lid margin and pulled upwards without excessive tension. Concurring with Ramyadevi et al and Canga et al^{20,21} we believed that frost suture reinforced superior traction of lower lid margin during dissection and lower eyelid adaptation to proper anatomic position after closure. However, contraindicating above opinion, Bartsich et al insisted on questionable efficacy of frost suture to prevent ectropion.²² Other important measures observed in this study were gentle handling and retraction of adjacent tissues, while avoiding wide dissection of periosteum. Adequate approximation of periosteum and closure with the resorbable suture. This is of outmost importance in adequate healing of bone and overlying soft tissues. Moreover, deep lateral dissection of

orbicularis oculi muscle may result in distortion of pretarsal fibers as the tonus of this muscle important in the esthetically normal adaptation of eyelid after surgery. Any distortion will lead lead to ectropion and scleral show.

CONCLUSION

Subtarsal incision can be favored over subciliary incision as a the first choice for the exposure of inferior orbital rim and orbital floor, as it provided higher post-operative esthetics with lesser frequency of ectropion.

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