

Role of Trypan Blue in Management of Paedriatic Traumatic Cataract

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ABSTRACT

Aim: To evaluate the role of Trypan blue for safer anterior capsulotomy and irrigation/ aspiration in paedriatic cataract surgery.

Method: This prospective interventional study comprised 20 eyes of 20 patients with unilateral traumatic cataract done at institute of ophthalmology/Mayo hospital Lahore from 1st January 2010 to 30th June 2010. In all these cases 0.2ml of 0.1% Trypan blue dye was used to stain the anterior capsule

Result: 20 eyes of 20 children aged 5-15 years, 11 male and 9 female with traumatic cataract underwent Trypan blue assisted anterior capsulotomy and irrigation aspiration with intraocular lens implantation. The blue dye improved the visibility of torn anterior capsule and white cataract to identify the peripheral extension of anterior capsule and redirection of anterior capsulectomy for successful completion and facilitation during irrigation and aspiration.

Conclusion: Trypan blue dye staining for anterior capsule in paedriatic traumatic cataract appears to be a very useful and safe technique that simplifies the procedure of anterior capsulotomy improving irrigation and aspiration.

Key words: paedriatic, traumatic cataract, anterior capsule, trypan blue dye.

INTRODUCTION

Paedriatic ocular trauma is one of the causes of monocular blindness due to cataract, retinal detachment, corneal opacity and amblyopia.¹ In vision 2020 the right to sight management of childhood blindness is on top priority¹. Traumatic cataract develops after blunt or penetrating injury. In the absence of red fundus reflex produced by coaxial light of microscope it is essential to visualize the capsule while performing the capsulorhexis. When this retroillumination is absent in traumatic cataract, it is difficult to identify the edge of traumatic anterior capsule edge from the underlying lens matter. In cases of traumatic cataract inadequate visualization of the capsule carries a high risk of peripheral extension's edge advancing towards or beyond the lens equator with its complications². This can be avoided by if the anterior capsule can be stained temporarily with contrasting dye. We used 0.1% Trypan blue to stain the anterior capsule so as to easily visualize the anterior capsule, its torn edge and distinguish it from loose lens matters³ thus helping in irrigation/aspiration. We studied the efficacy and safety of use of this vital dye in cases of paedriatic traumatic cataract.

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MATERIAL AND METHODS

This prospective interventional study comprised 20 eyes of 20 patients with unilateral traumatic cataract with poor fundal glow, done at institute of ophthalmology/Mayo hospital Lahore from 1st January 2010 to 30th June 2010. Pre-operative assessment included a complete history, visual acuity and slitlamp examination. ultrasonography was also performed to rule out any posterior segment pathology. All surgeries were performed under general anesthesia. A side port was made through clear cornea on the temporal site. Sterile air was injected in to the anterior chamber through side port incision. A volume of 0.2 ml of 0.1% trypan blue was injected under air bubble over the anterior capsule with a 27 gauge canula. Viscoelastic substance filled in the anterior chamber to remove vision blue. 2nd incision made on opposite site followed by a cystotome to create a nick in anterior capsule or to extend the anterior capsule tear. Removed the anterior capsule by utarata forceps. The cortical lens matter was removed by irrigation aspiration and intraocular lens implanted in the bag if possible. Viscoelastic was aspirated. Subconjunctival Gentacin 20 mg and Dexamethasone 1 cc were given. Patients were followed up on day 1, week 1, month 1, and month 3. Evaluation of the safety of dye was performed on the basis of complications (intraoperated and postoperated). Post operated assessment included corneal clarity and complications.

RESULTS

The mean age of the patients was 8.8 years (range 5-15 years). There were 11 males and 9 females. All patients with traumatic cataract were stained with Trypan blue dye. The main port, side port and anterior capsule were stained in all eyes, and torn margin of anterior capsule was clearly visible so that the anterior capsulotomy or capsulorhexis was successfully completed. The intraoperative complication did not occur with dye. The dye could be washed intraoperatively with balanced salt solution. The dye stained the side port, main port and anterior capsule and did not affect the surgical view through microscope. 4(20%) cases we redirected the torn anterior capsule to complete anterior capsulotomy successfully. In 10(50%) cases we identified the peripheral extension of anterior capsule. 8(40%) cases intraocular lens was placed in the bag, and in 12(60%) cases we placed the intraocular lens on the stained anterior capsule due to irregular anterior capsulotomy. In all cases Trypan blue stained anterior capsule facilitate irrigation and aspiration of the lens matter. On 1st postop day visual acuity ranged from 6/18 to 6/60. Slit lamp examination did not show residual staining of anterior capsule and port site. 6(30%) eyes had corneal edema at the site of incision which resolved within 3 days. Intraocular pressure was not raised. All patients were followed up for 3 months. No intra or post operative effect from the use of trypan blue was observed.

DISCUSSION

Paediatric traumatic cataract is the most important cause of unilateral blindness. During surgical management, intraoperative complications may lead to permanent blindness. In all 20 cases anterior capsule was stained with trypan blue. Trypan blue is a vital dye which only stains basement membranes. In literature use of 0.5% was described and the clinical safety was proven in 1977³. Capsular staining has been used previously in various studies in which trypan blue was used for white cataract and learning of initial steps of phacoemulsification⁴. We observed that a uniform large single air bubble is essential for homogeneous staining of anterior capsule as noted by others⁵. Multiple small air bubbles cause irregular staining of anterior capsule, the air in the anterior chamber prevents the direct endothelial contact and also prevents the dilution of the dye by the aqueous, so that the lowest effective concentration of dye could be used⁶. We observed in our study that 6 (30%) cases, tear in the anterior capsule tear extended towards the equator and was easily recognized by the stained anterior capsular edge and was managed easily as noticed by other studies⁷ and

is comparable to our study. It is also a good practice to deepen the anterior chamber with viscoelastic substance that neutralized the radial centrifugal force with the tractional force, and thus prevented the progression of the tear towards equator⁷. In cases of traumatic anterior capsule which were ruptured the dye did not stain the loose lens matter and lens matter was removed easily with the process of irrigation aspiration⁸. Anterior capsular rim remained clearly visible during surgical procedure and helped to avoid damage to anterior capsule during surgery and also aids in-the-bag IOL⁹. In all intraoperative cases, the dye was easily washed out with BSS. It only stained the anterior capsule and did not hamper the surgical view while performing irrigation and aspiration as noticed by others¹⁰.

CONCLUSION

In conclusion the Trypan blue aids in the initial assessment of anterior capsule, improves the surgeon's ability to complete the capsulorhexis and aids in aspiration of lens matter by distinguishing between remaining capsule and lens matter.

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