ORIGINAL ARTICLE

"A Study Of Comparison Of Hydrostatic Regurgitation Test With Sac Syringing In Preoperative Cataract Patients"

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ABSTRACT

BACKGROUND: Comparison of hydrostatic regurgitation test with sac syringing in preopertative cataract patients **SETTINGS:** department of ophthalmology ,G.G. Hospital, Jamnagar, **DESIGN:** Prospective analytical comparative study. **MATERIAL AND METHOD:** Total 100 patients posted for cataract surgery. These patients were properly examined in torch light and a history of complaints related to lacrimal system were obtained from each patient. then these patients were subjected to hydrostatic regurgitation test and lacrimal sac syringing as a screening test bfore cataract surgery. **RESULT:** among 100 patients ROPLAS had a sensitivity of 87% and specificity of 98%. The prevalence of chronic dacryocystitis in this cataract population was 8%. Using this value for prevalence, the negative predictive value of ROPLAS was 98% and positive predictive value was 87%.**CONCLUSION:** Our study indicates that routine preoperative syringing of cataract patients is probably unnecessary. In this setting a positive ROPLAS (specificity of over 98%) confirms chronic dacryocystitis rendering syringing superfluous for its detection. Also the negative predictive value of a negative ROPLAS almost excludes chronic dacryocystitis.

Keywords: sac syringing, cataract, dacryocystitis

INTRODUCTION

Patients for cataract surgery in India routinely undergo preoperative syringing to rule out chronic dacryocystitis. In this study we will compare the sensitivity and specificity of the clinical test of regurgitation on pressure over the lacrimal sac (ROPLAS) as a screening test for chronic dacryocystitis to syringing. We have taken 100 consecutive patients who needed syringing before undergoing for cataract surgery. First they were examined for regurgitation on pressure over the lacrimal sac. They then were exposed to lacrimal sac syringing. The sensitivity and specificity of ROPLAS were 87% and 98%, respectively.Using an 8% prevalence of chronic dacryocystitis (the prevalence in our cataract population), the negative predictive value of the test was 98.

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In the presence of regurgitation of pressure over the sac, the high specificity of ROPLAS confirms chronic dacryocystitis. In view of the opportunity costs, when ROPLAS is negative, preoperative syringing in cataract is perhaps unnecessary, unless the findings are equivocal or the index of suspicion for chronic dacryocystitis is very high. Chronic dacryocystitis is an important cause of ocular morbidity in India. The disease presents as epiphora with or without mucopurulent discharge. The condition may be asymptomatic and diagnosed on routine syringing carried out prior to cataract surgery. This is a common oculoplastic problem. No cataract surgery can be planned without ruling out chronic dacryocystitis. Chronic dacryocystitis is an ancient disease and several studies have been done to know its microbiological profile. These may be the potential pathogens in post-operative infections, both in intraocular and lacrimal drainage surgeries. India has a large cataract blind population as well as a steadily increasing backlog of cases. The annual incidence of cataract in India has been estimated to be

3.8 million[2] and 1.8 million sight-restoring operations are performed every year.[3] Assuming an average life expectancy of 7.5 years after the onset of cataract blindness, there should be a backlog of approximately 15 million Indians blind from cataract; if the life expectancy is 10 years, the backlog should be approximately 20 million.[3] Each year, 1.6 to 1.9 million cataract operations are performed throughout the country, in "camps" or rural peripheral centers[1]. In most centers, preoperative syringing of the nasolacrimal system is routinely performed prior to cataract surgery; the aim is to exclude chronic dacryocystitis, a major risk factor for postoperativeendophthalmitis. Syringing is usually performed by an ophthalmic assistant as it is aninvasiveprocedure; a small percentage of syringings will be equivocal and require repetition or confirmation of findings by the ophthalmologist. We determined the sensitivity and specificity of the clinical test of regurgitation on pressure over the lacrimal sac (ROPLAS) as a screening examination for chronic dacryocystitis and compared it to syringing.

MATERIALS AND METHODS

In this study we have 100 patients posted for cataract surgery. These patients were properly examined with slit lamp and history of complaints related to lacrimal system were obtained from each patient. then these patients were subjected to hydrostatic regurgitation test and lacrimal sac syringing as a screening test bfore cataract surgery. In addition to the usual clinical examination, the following maneuvers were performed.

Hydrostatic regurgitation test: The anterior lacrimal crest was identified by tracing the inferior orbital margin medially and superiorly. The index finger was then directed behind the crest and used to apply pressure on the sac area in an upward and medial direction so as to express the contents of the lacrimal sac into the conjunctiva. Any reflux of fluid or purulent material from the puncta was noted. The remainder of the ophthalmic examination was completed and after one hour the patient was sent for syringing.

Syringing

1.first the whole procdure is explained to the patients. Proper consent was taken from patients.

2.The patient wasplaced in a supine position and a topical anesthetic (4%lignocaine) placed in the eye.

3.The lower punctum was dilated (if necessary) with a punctum dilator with following method.

- The patient was instructed to look upwards and outwards (away from the nose) and to maintain this gaze until the procedure was over.
- With cotton wool or a gauze swab, gently the lower eyelid was pulled down to expose the lower punctum.
- With the other hand, the Nettleship dilator was inserted into the lower punctum, following the direction of the lower canaliculus. Gently the dilator was rotated between the fingers clockwise/anticlockwise as it was inserted. (this further facilitated the insertion of the cannula).

4.now syringing was performed by following methods

- Take the syringe with attached blunt cannulaand the tip of the cannula was inserted in the lower punctum(containing normal saline).
- Again, slight lateral traction was applied to the lower lid as the cannula was inserted along the canaliculus.
- The cannula was inserted until a "stop" was reached - and determined whether the stop was soft (spongy) or hard (bony)
- A soft stop indicated canalicular obstruction. A hard stop indicated that the canaliculus was patent.
- The canaliculus was then irrigated (regardless of the type of stop) and any reflux of fluid or discharge from the upper or the lower canaliculus was noted. The patient was asked whether the fluid had reached the pharynx having the sensation of a salty taste at the back of the mouth and to notify when this occurs

- If the patient was not aware of a salty fluid sensation in the throat, it indicated a blockage somewhere in the lacrimal apparatus. The fluid might be seen coming through the upper punctum
- If syringing could not be performed through the inferior canaliculus, the superior canaliculus was utilized. These findings were noted and communicated to the study coordinator.
- A suspected partial block was confirmed by "pressure" syringing: syringing done while the opposite canaliculus was occluded with a punctum dilator. Inferences were made as shown in table no1.
- If the patient is not aware of a salty fluid sensation in the throat, it indicates a blockage somewhere in the lacrimal apparatus. The fluid may be seen coming through the upper punctum

The results were analyzed in table no 3 dividing the patients into syringing "free" (including partially free) or "blocked"; and regurgitation on pressure present or absent. Each eye was considered separately and syringing was considered the gold standard.

Table 1: Inferences Of Syringing

Fluid In Pharynx	**Reflux**	**Type Of Reflux**	**Diagnosis**
Yes	No	No Reflux	Patent
Yes	Opposite Canaliculus	Clear Fluid	Partial Nld Block
No	Opposite Canaliculus	Mucoid / Pus	Nld Block
No	Opposite Canaliculus Soft Touch	Clear Fluid	Common Canalicular Block

Table 2: How To Calculate Sensitivity, Specificity And Predictive Value

Screening Test	Diagnosis		Total
	Diseased	Not Diseased	
Positive	True Positive (A)	False Positive(B)	A+B
Negative	False Negative(C)	True Negative(D)	C+D
Total	A+C	B+D	A+B+C+D

Sensitivity=A / (A+C) X100
Specificity=D /(B+D) X100
Positive Predictive Value=A/ (A+B) X100
Negative Predictive Value=D/(C+D) X100

Table-3: Analysis Of Our Study

Hydrostatic Regurgitation Test	Lacrimal Sac Syringing		Total
	Blocked	Patent	
Regurgitattion Present	7	1	8
Regurgitation Absent	1	91	92
Total	8	92	100

Sensitivity-87%
Specificity-98%
Ppv-87%
Npv-98%

RESULTS

The 100 cataract patients undergoing routine syringing were assessedin table no 3.ROPLAS had a sensitivity of 87% and specificity of 98%. The prevalence of chronic dacryocystitis in this cataract population was 8%. Using this value for prevalence, the negative predictive value of ROPLAS was 98% and positive predictive value was 87%.

DISCUSSION

India's cataract blind population necessitates a large number of cataract operations. In order to identify those with chronic dacryocystitis (and therefore at risk for postoperative endophthalmitis), syringing prior to cataract surgery has been the routine in most centers in our country. In the West, routine pre-cataract evaluation does not include irrigation of the lacrimal drainage system unless specific complaints are present. Syringing is a simple confirmatory test for documenting chronic dacryocystitis, the extent (partial or complete) of obstruction and its location (canalicular, nasolacrimal duct). However, syringing the lacrimal passages does have potential complications such as pain, discomfort, ecchymosis, lid edema, and creation of a false passage. There is also the time commitment to consider. If we take approximately 3 minutes to syringe one patient, 2 million cataracts (the approximate number of cataract operations performed annually) would require 6 million minutes (100,000 man hours; 4,167 man days) or 11.42 person years annually. Even if only 5% of the patients undergoing syringing need to be rechecked by the ophthalmologist, this entails 208 (ophthalmologist) days. Assuming an 8 hour working day, this involves 624 (ophthalmologist) working days every year. If an ophthalmologist can perform two cataract operations every hour, the opportunity cost of syringing is approximately 10,000 cataracts each year. Clearly, there is a need for a simple,

reliable test to rule out chronic dacryocystitis. ROPLAS is a clinical test to determine the reflux of fluid through the puncta, indicating a block in the nasolacrimal duct and dacryocystitis. This is a rapid, noninvasive clinical test easily performed by the ophthalmologist during the course of the ophthalmic examination. We found that this test had a specificity of 99.0%. The high specificity indicates that if ROPLAS is positive, chronic dacryocystitis is almost certainly present. A high specificity rules in the diseases[4]. While the sensitivity of the test per se is not good enough to rule out chronic dacryocystitis (if test is negative), the negative predictive value in routine cataract patients was 98%. If we screen 100 cataract patients using ROPLAS, we would miss only two chronic dacryocystitis. Chronic dacryocystitis is certainly a major risk factor for postoperative endophthalmitis, a devastating complication; it could be argued that the time spent in the detection of this risk factor is therefore worthwhile. However, the actual risk of postoperative endophthalmitis in chronic dacryocystitis (especially in cases mild enough to be missed on pressure over the sac) is unknown. Endophthalmitis is not an inevitable outcome if cataract surgery is inadvertently performed in the presence of chronic dacryocystitis. The prevalence of chronic dacryocystitis in our cataract population (8%) seems fairly high and is probably related to the socioeconomic status of our population. If the prevalence is lower, the negative predictive value would be higher. For example, if the prevalence was only 1%, the negative predictive value would be 99.9%. In this situation only one chronic dacryocystitis would be missed in 909 cases. The negative predictive value would decrease with a higher prevalence. Our study indicates that routine preoperative syringing of cataract patients is probably unnecessary. In this setting a positive ROPLAS (with a specificity of over 98%) confirms chronic dacryocystitis rendering syringing superfluous for its detection. Also the negative predictive value of a negative ROPLAS almost excludes chronic dacryocystitis. The study results would not be applicable if ROPLAS is not performed as described. If confirmatory repetition of ROPLAS by another observer (or indeed syringing) is deemed necessary, enough time should be given for the discharge to reaccumulate. Also, in the unlikely event that the prevalence of chronic dacryocystitis is higher than in our study, the ophthalmologist should calculate the negative predictive value for his own population before making a decision about the role of syringing; we have provided the basis for such calculations and decisions. However, for routine cataract surgery it would seem that preoperative syringing can be restricted to cases with a high index of suspicion for chronic dacryocystitis, patients with equivocal ROPLAS, and perhaps one eyed patients.

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