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MANAGEMENT OF CONGENITAL DACRYOCYSTITIS---A REVIEW ARTICLE

Medical Science

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KEYWORDS

The right terminology for congenital dacryocystitis is congenital nasolacrimal duct obstruction (CNDLO). CNDLO is the most common cause of epiphora in children. Obstruction of the lacrimal drainage system can occur at any age and is a particularly common paediatric problem in 20-30% of cases, although only 1-6% of cases are symptomatic and affects 11% of preterm birth.[1]

Nasolacrimal duct obstruction is the most common congenital abnormality, seen in 50% of infants at birth.The level of obstruction may vary in congenital nasolacrimal duct obstruction.

1) The most common obstruction is the failure of canalization of nasolacrimal duct (NLD) at the level of mucosal entrance (valve of Hasner) into the inferior meatus of the nose.
2) Absence of duct due to failure to the osseous nasolacrimal duct to form, commonly seen with cleft palate anomalies.
3) Other causes of blockage of duct are due to abnormalities like deviation of nasal septum, overriding of the inferior turbinate at the opening of NLD. Trauma, including iatrogenic causes also play a significant role in paediatric nasolacrimal duct obstruction.

EVALUATION

Evaluation begins with a detailed history and a careful examination of the patient.

History

A thorough history including age at birth, age of onset of symptoms, the duration of symptoms and any history of trauma or infection from child's parents is very essential. Symptoms of photophobia, watering, corneal haze or nystagmus should be enquired to rule out congenital glaucoma.

Examination

On inspection there is increased tear meniscus, frank epiphora or crusting of lashes. Position of punctum, lids and eye lashes should be looked for to rule out any other cause of epiphora.

Medial canthal area- An ophthalmologist should look for any swelling over the medial canthal area like mucocele or congenital dacryocele.
On palpation , pressure over the medial canthal area may cause regurgitation of discharge from the punctum if blockage is distal to the sac ie in the NLD. Dye disappearenc test is quick and easy test to confirm NLD block.

Dye disappearence test- one drop of 2% fluorescein dye is instilled into the conjunctival sac, and tear meniscus is observed for 5 minutes. The stained meniscus will either increase or dilute in patient where there is NLD obstruction.

Other congenital problems may be present such as, abnormalities of punctum and canaliculi. External fistuli, mococeles or amniotoceles and acute neonatal dacryocystitis can occur.

MANAGEMENT

Of the 50% of new born infants who have obstruction at the inferior end of nasolacrimal duct, only 2-6% clinically presents with epiphora at 3-4 wks of age.[2] There are many reports describing a spontaneous resolution of the epiphora, in up to 96% of CNLDO patients during the first year.[3]

CONSERVATIVE MANAGEMENT:

The lacrimal sac massage is the most widely used technique and was originally described by Crigler.[4] Classical approach is massage of lacrimal sac and instillation of antibiotic drop in the eye and nasal decongestant. Crigler massage- Lacrimal sac massage consists in placing a finger preferably the little finger on the internal edge of infant's eye to obstruct the common canaliculi preventing reflux when pressing the sac area, the finger is moved downwards, thus producing an increase in the hydrostatc pressure which is transmitted to the inferior portion of the nasolacrimal duct, causing rupture of the obstruction. surgeon should demonstrate the proper technique of massage to the mother. The response to massage has been demonstrated by some authors ranges between 85% and 95%.[5] The success rate of this massage seems to diminish when the patient is over 9 months of age.

SURGICAL TREATMENT

Syringing + Probing + syringing under general anaesthesia–
probing as next step when the CNLDO failed to respond to conservative treatment has been advocated by many authors.[6] However, the best time for doing probing is not determined. When most of the surgeons prefer to wait till one year, some surgeons advocate early probing. As this is a blind procedure, surgeons must have a good knowledge of the anatomy of lacrimal system. The technique of probing in infant must be gentle as punctum is very delicate. Surgeon should be familiar with actual sizes of the probes.
When the general anesthesia is given safely, before starting the procedure, the lacrimal sac needs to be examined either by performing massage over the sac area or syringing with saline to confirm NLD block.

Upper punctum is preferred for probing to prevent any damage to the lower punctum during the manipulation. After dilating the punctum with dilator vertically and horizontally, Bowman's probe (size0 or 00), after applying eye ointment is introduced into the punctum perpendicular to the eyelid margi. If any resistance is encountered because of thick probe then probe is changed to further smaller size. Probe is pushed gently vertically at the entry and then horizontally towards the medial canthus while maintaining a lateral traction of eyelid. The lateral traction of skin stretches the canaliculus and avoids any chance of damage to the canalicular mucosa and decreases the probability of creation of false passage. Feel for soft stop(means common canalicular block) or hard stop(hitting the lacrimal bone).

The probe is then slightly withdrawn and rotated superiorly against the brow and should come to rest over the superior oirbital rim. Then the probe is passed downwards, posteriorly and slightly laterally down the nasolacrimal duct. A resistance is felt due to membranous obstruction. Gentle firm pressure passes the probe into the nasal cavity.A " pop up" sensation is felt while passing into the NLD, instead of smooth gliding which indicate the false passage. If there is any doubt of creating false passage then procedure should be stopped and reschedule the repeat syringing and probing after several weeks, so that the inflammation subsides.
Successful probing is verified by syringing. Some surgeons confirm

the patency by metal to metal contact with a second probe, but direct visualisation of the probe can be the best with endoscope if available.
Following routine probing, irrigation with ringer solution mixed with 0.5ml of antibiotic and steroid solution is injected from the upper punctum with ready suction machine. Post-operatively, antibiotic drops four times a day in the eye for 3 weeks along with nasal decongestant for 7 days are prescribed and the patient is advised for follow up at 1 week and subsequently at 1,3 and 6 months.

The success rate of probing is approximately 85% in infant under 1 year. But according to the age of the patient there is controversy in percentage of success.[7]

FAILURE:
Probing may fail due to postoperative closure of small opening formed through the membrane or due to the presence of hypertrophied inferior turbinate or presence of nasal mucosal flap covering the ostium in the inferior meatus acting as a valve. When first probing fails , the most frequent alternative is to repeat it because of high success rate which is approximately 85% [8] particularly in infants under 24 months. Repeat probing is attempted at least 6 weeks after initial one.

NASAL ENDOSCOPY AND INFERIOR TURBINATE INFRACTURE:
Nasal endoscopy is an useful procedure when repeated probing fails or any other pathology is suspected to visualize the inferior meatus anatomy. Fracture of the inferior turbinate is done under general anaesthesia. The inferior meatus is fractured to displace it from the ostium of the NLD to avoid mechanical obstruction of the lacrimal drainage, by pushing the turbinate medially and superiorly with spatula or freer elevator. [9] Patency is checked by syringing and nasal cavity is packed for 24 hours. Post operatively steroid antibiotic drops and nasal decongestants are prescribed.

SILICON INTUBATION:
Silicon intubation is indicated in cases of recurrent failed probing with or without inferior turbinate infracture or in cases of older children. According to different studies, the success rate varies from 77% to 100%.[10] This procedure preserves the anatomy of the lacrimal pathway. The bincanalicular intubation procedure was improved to a great extent by Crawford [11] in 1989 with the main complication being the appearance of scar in the inferior meatus, the perforation or laceration of the canaliculus and the extrusion of the silicon tube. It is performed under general anaesthesia. Silicon tubings with metal bodkins attached at each end are passed through each canaliculus into the nasolacrimal duct after dilating the punctum. The silicon tubings are tied together in the nose near inferior meatus after removing after removing the metal bodkins. Another procedure is monocanalicular intubation through upper punctum which has similar success rate(90% over 24 months) and it could be easily extruded.[12] Mauffray[13] described a procedure in which bicanalicular intubation is done prior to DCR, with success rate of 80%. Tube is removed after 6-8 weeks.

BALLON DACRYOPLASTY:
Becker in 1996 described this procedure with asuccess rate of 75-96%.[14] This is indicated for failed probing particularly over 30 months of age. Dacryoplasty catheter is passed from upper canaliculi and ballon is dilated with saline at NLD. This procedure is safe but not so popular because it is disposable and costly.

DACRYOCYSTORHINOSTOMY(DCR):
DCR is indicated in cases in which all above measures have failed and CNLDO is located in the inferior part of the lacrimal pathway. Paediatric DCR is usually not performed before 3 years of age. For better success it is preferred at or after 5 years of age. The procedure is performed under general anaesthesia. Hypotensive anaesthesia is preferred to minimize blood loss during surgery. The surgical technique for DCR is same as in adults. The stress should be given to make a large osteotomy and good sac and mucosal flaps anastomosis.
The success rate of DCR in young patients varies between 79% and 96% .[15] But the success rate of DCR is not predictive in paediatric age because of the developmental changes and tendency for scar formation, so silicon tube intubation is preferred in almost every paediatric case. [16,17]

ENDOSCOPIC DACRYOCYSTORHINOSTOMY:
Endoscopic DCR is difficult in paediatric patients but offers a numbers of advantages over the external approach. It avoids the needs for a skin incision and consequent scarring, enables creation of a large ostium and there is less intra-operative bleeding. The success rate of endoscopic DCR is 76-88% [15]

Another option is transcanalicular Laser DCR but it does not seem to be effective and also to date the series remain small. [1]

SUMMARY:
Congenital nasolacrimal duct obstruction resolves spontaneously in 90-95% of cases in first year of life. Management includes massage of lacrimal sac. Cases who do not respond to this conservative procedure, syringing and probing alone or in combination with inferior turbinate infracture is preferred after one year of age. Silastic tube intubation is performed for repeatedfailed probing and finally DCR is done after 3 years of age.

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