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Original Research Article

Frequency and surgical management of ptosis in children in the African Institute of Tropical Ophthalmology

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Abstract: Ptosis (or blepharoptosis) is the drooping of the upper eyelid below its normal position. It may infringe the vision of patients presenting this condition and; ptosis obscuring the visual axis is very amblogenic. It also involves big cosmetic, social, psychological issues; because those who bear this eye problem may be subject to scoffs.
Keywords: Ptosis (or blepharoptosis), amblogenic,

INTRODUCTION

Blepharoptosis is characterized by improper positioning of the upper eyelid below its normal position, 0.5-2mm below the superior limbus in the primary position of gaze [1]. Ptosis can be congenital or acquired, and impairs the quality of life of many people. It is considered to be congenital when present at birth or when diagnosed within the first year of life. Acquired ptosis is further divided into anatomical, neurogenic, mechanical, traumatic, and myogenic [2]. Ptosis arises from many causes, such as eyelid tumours, injury to the oculomotor nerve, or maldevelopment of the levator palpebrae superioris muscle (LPS) that is responsible for lifting the upper eyelid. The most common type of ptosis in adults is involutional ptosis secondary to acquired dehiscence or detachment of the levator aponeurosis from the tarsus. Ptosis in children is most often myogenic in origin and due to levator muscle maldevelopment[3].The difference between the position of the upper eyelid margin with ptosis and the position of a normal eyelid (covering the corneal limbus by 2 mm at the 12 o'clock position) was one of the first parameters taken into consideration in the semiology of ptosis by Beard who classified the condition into mild (1.5-2 mm), moderate (3 mm), and severe (≥4 mm) [1].Because this measurement can be inaccurate as the examiner needs to manually lift the eyelid, Sarver and Putter man suggested using the marginal reflex distance (MRD-1), which is the distance between the upper eyelid margin and the centre of the pupil. A normal MRD-1 is between 2.6-4.4 mm; with lower values characterizing ptosis [4].The normal position of the lower margin is approximately 1 mm below the lower limbus. The vertical size of the ocular rim is generally 7-10 mm in men and 8-12 mm in women. The scope of unilateral ptosis can be evaluated (measured) according to a comparison with the finding on the other side [5]. About 20–70% of patients with simple congenital ptosis will develop amblyopia, and it is more common in those with unilateral congenital ptosis. One of the causes of amblyopia is astigmatism above 1.5 diopters, which can be induced by pressure from the upper eyelid on the cornea. Other causes of amblyopia include visual axis deprivation, anisometropia, or convergence strabismus [6]. Excluding medical conditions like myasthenia, third nerve palsy, muscular dystrophy, a significant number of patients require correction [7]. Amongst the various methods for treatment of ptosis, "brow-suspension" surgery is usually performed where there is poor or absent LPS function: during the surgery, the upper eyelid is internally attached to the frontalis muscle using brow-suspension materials to aid the poorly-functioning LPS [8]. In children less than 3–4 years of age in which levator function is poor, the frontalis sling procedure is recommended. In children with less than 3 mm of levator function, options include the frontalis sling, Whitnall sling [9].The greatest difficulties occur when indicating surgery for cases with LPS function between 5 and 7 mm, since resection of the LPS aponeurosis may not be sufficient. Alternatives include frontalis suspension, maximal LPS resection, and Whitnall's ligament suspension alone or combined with superior tarsectomy [10]. The frontalis sling is commonly used to treat a ptotic child or adult with poor levator and good frontalis function [11].

MATERIAL AND METHODS

From July 2014 to June 2015, we carried out a nonrandomized cross-sectional study in the Institute of African Tropical Ophthalmology, a teaching hospital located in Bamako (the Capital City of Mali). The objective was to determine the frequency, the outcome and the type of surgical procedure applied. Of 1236 screened patients, 40 had ptosis.

Operational definitions:

According to the clinical finding we evaluate the degree of ptosis: mild (drop of 2 mm, function of levator above 8 mm), medium (drop of 3 mm, function of levator better than 5 mm) and severe (drop of 4 mm and function of levator 0-5 mm).

The inclusion criteria were patients from 0-18 years old presented with congenital or infantile ptosis with the informed consent of their parents. Two surgical procedures were performed, either frontalis suspension using a monofilament polypropylene suture (Prolene 4/0), or levator resection Outcome was grades according to the post-operative MRD1 in comparison with the normal measures (4-4.5 mm). Thus it was graded well (within 1 mm of normal), fair (within 2 mm of normal), under corrected (less than 2 mm from normal) and over corrected (more than 2 mm from normal). Data analysis was done using EPI INFO software.

RESULTS

From July 2014 to June 2015 1236 patients were examined among them 40 had ptosis (3.24%). 24 were males (60%) and 16 were females (40%) with a sex ratio=1.5.

Of the 40 patients who were operated; 36 had unilateral ptosis (90%) ptosis and 4 had bilateral ptosis (10%). The patients ranged from 1 to 18 years with a mean age of 5.5 years. The age group 0-5 years accounted for 65% followed by the age group of 6-10% with 15%.

90% (n=36) were bilateral, and 10% were unilateral. According to the degree of ptosis, 62.5% (n=25) were severe. The LPS function was poor in 55% (n=22), fair in 37.5% (n=15) and goo in 7.5% (n=3). Of the 48 eyes, 43 (n=89.6%) underwent frontalis suspension and 5 (10.4%) underwent LPS resection.

About the surgical outcome, 84.2% (n=32) were good, 7.9% (n=3) were fair, 2.6% (n=1) = under corected and 5.3% (n=2) were overcorrected. We noted complications in 8 patients (22.7%); lagophthalmos, 3 (8.5%), lid lag 2 (5.7%), slippage of suture, 2 (5.7%) and infection of the eyelid, 1 (2.8%).

Table 1: Complaint at admission

Complaint	N	%
Drooping of eyelid	24	60
Blurring of vision	06	15
Tearing	04	10
Headache	03	7.5
Painful eye	03	7.5

Table 2: Laterality of the ptosis

Laterality of the ptosis	N	%
Unilateral	36	90
Bilateral	04	10
Total	40	100

Table 3: Degree of the ptosis in the 48 eyes

Degree of the ptosis	N	%
Minor	5	12.5
Moderate	10	25.0
Severe	25	62.5
Total	40	100.0

Table 4: Levator muscle function in the 48 eyes

LPS function	N	%
Good (>8 mm)	3	07.5
Fair (5-7 mm)	15	37.5
Poor (0-4 mm)	22	55.0
Total	40	100.0

Table 5: Distribution of the eyes according to the type of surgery

Type of surgery performed	N	%
Frontalis suspension	43	89.6
LPS resection	05	10.4
Total	48	100.0

Table 6: Surgical outcome grading

Outcome grading	N	%
Good	32	84.2
Fair	3	07.9
Under correction	1	02.6
Overcorrection	2	05.3
Total	38	100

Table 7: Types of Complications

Type of complications	N	%
Slippage of sutures	02	05.7
Infection	01	02.8
Lid lag	02	05.7
Lagophthalmos	03	08.5
Total	08	22.7

DISCUSSION

From July 2014 to June 2015 1236 patients were examined among them 40 had ptosis (3.24%). 24 were males (60%) and 16 were females (40%) with a sex ratio=1.5. Of the 40 patients who were operated; 36 had unilateral ptosis (90%) ptosis and 4 had bilateral ptosis (10%). Our results corroborate those of Muhammad in Pakistan who found that unilateral cases (68%) were more common than bilateral cases (32%) [12] And Allard found that ptosis was unilateral in 70% of cases [2]. Drooping of the upper eyelids is one of the most common complaints in oculoplastic practice. Other related complaints include difficulty seeing due to the attendant visual field obstruction and prefrontal headaches due to chronic use of the frontalis muscle in an attempt to lift the eyelids [13]. In our study, drooping of eyelid was the main complaint at admission; it accounted for 60% (n=24). Ptosis causes a simultaneous cosmetic deformity that is apparent both to the patient and to others [14]. The surgical approach to congenital ptosis is generally based on the amount of levator function. Patients with congenital ptosis can be grossly divided into three groups based on the levator function: those with poor levator function of 4 mm or less, those with fair levator function of 5-7 mm, and those with good levator function greater than 8 mm16. Levator function in our study was poor in 55% (n=22), fair in 37.5% (n=15) and goo in 7.5% (n=3). In the study of Muhammad, the average levator function was poor in 55% of all cases of ptosis [12]. The levator function is very important in the surgery of ptosis, since it may determine the surgical technique to be applied. When the levator function is poor most of the time frontalis suspension (or fronto-tarsal sling) is applied. Frontalis suspension has many advantages and is widely used to repair ptosis with poor LPS function and good frontalis muscle function. It is used primarily for congenital ptosis, but also for blepharophimosis syndrome and neurogenic ptosis (third cranial nerve palsy and Marcus Gunn syndrome) [15]. About the advantages of frontalis suspension we have the simplicity of the procedure, possibility of practically immediate performance of function, good availability and price of used material, possibility of use also for ptoses on which previous surgeries have not been successful, possibility of use even on very small children (where autologous fascia cannot be taken) [5]. In our study, frontalis suspension was the most applied method; it was performed in 89.6% (n=43) using supramid suture. Frontalis suspension can be performed using nonabsorbable sutures as we did or facialata. In the study conducted by Nagaraju G [7] the most common surgery performed was frontalis sling suspension surgery. Out of 20 patients 5 patients had bilateral congenital ptosis and underwent bilateral frontalis sling suspension surgery. Fascia lata was first used by Payr in 1908 as a frontalis sling to correct ptosis Many alternative materials have been tried but autogenous fascia lata is still considered to give the best cosmetic results with the lowest incidence of complications and recurrent ptosis [16]. In 5 patients (10.4%) we performed levator resection which is a good method but technically more difficult. When the levator function is poor, this method is not suitable. Like every surgical procedure, surgery of ptosis is subject to some compliacations among others: crease deformities, lagophthalmos, keratopathy, implant extrusion, granuloma, lid lag, exposure keratitis, corneal ulceration, and visual loss [1, 13]. About the surgical outcome, 84.2% (n=32) were graded good, 2.6% (n=1) were under corected and 5.3% (n=2) were overcorrected. Our results corroborate those of the literature which stipulate that the rate of occurrence of over corrections or under corrections varies from 5% to 35% depending on the series [17]. We noted complications in 8 patients (22.7%); lagophthalmos, 3 (8.5%), lid lag 2 (5.7%), slippage of suture, 2 (5.7%)

and infection of the eyelid, 1 (2.8%). Our results can be compared to those of Rakesh et al. who observed as post chirurgical complications, eyelid lag and lagophthalmos (5 eyes), suture granuloma (3 eyes), sling exposure at forehead incision (3 eyes), bilateral chronic eyelid edema (1 patient), and late recurrence of ptosis (1 eye) [18].

CONCLUSION

Ptosis is a common eye condition in children. It distorts the cosmesis in affected patients and requires oftentimes surgery. Among the numerous surgical procedures, frontalis suspension is one of the most applied worldwide.

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