

Comparative study of the subjective and objective grading of ptosis surgery outcomes

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CLINICAL STUDY

Abstract

Aims To assess the results of blepharoptosis surgery in our hospital by subjective and objective grading of the outcome and comparing them to determine their degree of correlation.

Methods Retrospective interventional case series report supplemented by postal questionnaires and telephonic patient surveys. The study included 107 eyelids of 78 patients. Using a simple grading system, surgical outcome was objectively graded as good, suboptimal, or poor. Outcome was also defined according to the patients' perspective as good, suboptimal, or poor. Level of agreement between the subjective and objective grading of the outcome was measured using a weighted kappa analysis.

Results The objective results were classed as good—68/107 (63.5%), suboptimal—18 eyelids (16.8%), and poor—21 eyelids (19.6%). The subjective results were obtainable in 91 eyelids and were good—54/91 (59.3%), suboptimal—8/91 (8.7%), and poor—29/91 (32%). A mismatch between objective and subjective outcomes was seen in 16 eyelids. We saw a statistically significant correlation between the objective grading and the patients' perspective ($P < 0.001$).

Conclusion Our overall ptosis surgery results are comparable with rates previously reported. The subjective and objective outcomes of ptosis surgery may sometimes vary, but nevertheless exhibit substantive agreement when measured by this simple grading system.

Eye (2007) 21, 639–642. doi:10.1038/sj.eye.6702296; published online 24 February 2006

Keywords: ptosis; blepharoptosis; ptosis surgery outcome

Introduction

Blepharoptosis is a common type of eyelid malposition¹ found in all age groups and has multiple causes.² It can cause amblyopia³ and affect visual function, but is most often a cosmetic problem. Most, but not all, types of blepharoptosis are treated surgically.^{4,5}

The aim of this study was to assess the results of blepharoptosis surgery as a whole in our hospital by subjective and objective grading of the outcome and compare them to determine their degree of correlation.

Materials and methods

This study is a retrospective interventional case series report supplemented by postal questionnaires and telephonic patient surveys. The medical records of 78 consecutive patients (107 eyes) who had undergone blepharoptosis surgery at our hospital between March 1995 and February 2004 were reviewed.

The following variables were extracted from the patients' records: age, gender, date of presentation, length of history, family history of ptosis, degree of ptosis, laterality, amount of ptosis (mm), previous ptosis surgery, type of ptosis, levator function, date of surgery, surgeons' grade, type of anaesthesia, type of surgical approach (anterior/posterior),⁵ type of surgical procedure, postoperative problems if any, need for repeat surgery, and follow-up duration. In unilateral cases, the amount of ptosis was calculated as the difference (mm) between heights of the palpebral apertures. Mild ptosis was defined as 2 mm or less,

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Received: 2 August 2005
Accepted in revised form: 15 January 2006
Published online: 24 February 2006

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moderate ptosis was defined as 2–4 mm, and severe ptosis was defined as 4 mm or more lower than the desired upper eyelid level.¹ In bilateral cases, the ptosis was classified as severe if the height of the palpaebal fissures was less than or equal to 4 mm, as moderate if the palpaebal apertures were between 4 and 6 mm, and mild if the palpaebal apertures were 6 mm or more.¹ Levator function was measured as the maximum lid excursion from maximal downgaze to upgaze, with frontalis function abolished by pressing on the eyebrow. This was recorded as poor if less than 4 mm, moderate if between 4 and 8 mm, and good if more than 8 mm.¹ Outcome was objectively defined as good if the lids were within 1 mm height with an acceptable skin crease and contour with no corneal exposure and as poor if re-operation was required.¹ Another group was identified as suboptimal outcome—where there was more than 1 mm difference in lid height, and/or an asymmetric skin crease and/or contour but who did not undergo further operations. Outcome was also defined according to the patients' perspective as good, suboptimal or poor. The patients' perspective was obtained by a combination of recordings from case notes, postal questionnaires, and telephone surveys.

Description of the statistical analysis

The level of agreement between the subjective and objective grading of the outcome was measured using a weighted kappa analysis^{6,7} ignoring cases where the subjective measure was missing (17 cases when all eyes were analysed; 12 cases when a random eye was selected from bilateral cases). Both subjective and objective measures were on a three-point scale (1 = poor; 2 = moderate; 3 = good). Complete agreement was given a weighting factor of 1, disagreement by one point was weighted 0.5, and disagreement by two points was weighted zero.

As there was a reasonable likelihood that the correlation between the subjective and objective measures would be stronger for within patient measurements, that is for the bilateral cases, initially one eye was selected at random for analysis from the bilateral cases. Although this reduced the sample size available for analysis, it also reduced the potential for bias. The kappa statistic was recalculated for all eyelids, to enable a subjective comparison with the kappa calculated using a single eyelid per case and to improve the precision of the estimate.

Results

The study included 107 eyes of 78 patients. The age of the patients ranged between 2 and 95 years (median 43

years). There were 38 male and 40 female patients with a male: female ratio of 0.95:1. Only nine cases had a positive family history of ptosis. The degree of ptosis was mild in 32 (30%), moderate in 45 (42%) and severe in 30 (28%) eyes. The length of history ranged between 2 and 1032 months (mean 120.67). The amount of ptosis ranged between 2 and 8 mm, but had not been recorded in nine eyelids. A total of 12 (11%) eyelids had had previous ptosis surgery.

The right side was the only operated eyelid in 25 (23.3%) of cases, and the left side in 18 (16.7%) and 32 patients (60% of the eyelids) had bilateral surgery. Jaw winking was documented to be absent in 92 (85.5%) of eyelids and not recorded in 15 (14.5%). Levator function was good in 54 (50.5%) eyelids, moderate in 30 (28%), poor in 13 (12.2%), and was not recorded for 10 (9.3%) eyes. The operating surgeon was of consultant grade in 94 (88%) and the rest were operated by trainees.

Out of the 91 eyelids for which the subjective outcome was obtainable, the information was obtained from the case notes for 60 (65.9%) eyelids, by means of postal questionnaires for 12 (13.2%) eyelids, and by telephone surveys for the remaining 19 (20.9%) eyelids (Table 1).

General anaesthesia was used in 50 (47%) cases and 57 (53%) had local anaesthesia. An anterior surgical approach was used in 103 (96.5%) eyelids and a posterior approach in four cases (3.5%) (Table 2).

Postoperative problems were noted in 38 (35%) eyelids, which were overcorrection in nine eyelids (8.5%), undercorrection in 24 (22.4%), significant lagophthalmos in one (0.9%), irregular contour in one (0.9%), and low skin crease in one eyelid (0.9 %).

Table 1 Type of Ptosis

Type of Ptosis	Number of eyes (107)
Congenital	42 (39.3%)
Aponeurotic	41 (38.2%)
Neurogenic	4 (3.7%)
Myogenic	10 (9.3%)
Post-traumatic	5 (4.7%)
Mechanical	1 (1%)
Not recorded	3 (2.8%)

Table 2 Type of surgical procedure

Type of surgical procedure	Number of eyes (107)
Levator resection	36/107 (33.6%)
Aponeurotic repair	40/107 (37.3%)
Brow suspension with fascia lata	12/107 (11.2%)
Brow suspension with silicone sling	14/107 (13%)
Fasanella servat procedure	4/107 (3.5 %)
Tarsal plate suspension suture	1/107 (0.9 %)

Table 3 Classification of the outcome of surgery according to objective criteria

Objective outcome	Good	Sub-optimal	Poor
No. of eyes (107)	68/107 (63.5%)	18/107 (16.8%)	21/107 (19.6%)

Table 4 Classification of the outcome of surgery according to subjective criteria

Subjective outcome	Good	Sub-optimal	Poor
No. of eyes (91)	54/91 (59.3%)	8/91 (8.7%)	29/91 (32%)

Table 5 Cross-tabulations of the objective and subjective scores (Single eye per patient)

Subjective measure	Objective measure		
	1 (poor)	2 (moderate)	3 (good)
1 (poor)	15	3	2
2 (moderate)	0	3	3
3 (good)	0	3	37
missing	0	4	8

The duration of postoperative follow-up ranged between 1 and 96 months (mean 20.1) (Table 3).

Subjective data for 91/107 (85%) eyelids were obtainable and hence the rest of the eyelids were excluded from the assessment of the correlation between the objective and subjective outcome (Table 4).

Correlation between the objective and subjective outcome

Out of the 91 (82.4%) eyelids for which both objective and subjective outcomes were known, a mismatch between the objective and subjective outcomes was seen in 16 eyelids. Of these, for four eyelids they reported a better subjective outcome than the objective grade, and for 12 eyelids they reported a lower subjective outcome than the objective grade (Tables 5–7).

There is very little difference in the observed agreement and kappa values when comparing the analysis of all eyelids with that using a single eyelid per case. Both analyses produced a statistically significant kappa value ($P < 0.001$ in both cases) that represented substantial agreement between the subjective and

Table 6 Cross-tabulations of the objective and subjective scores (All eyes)

Subjective measure	Objective measure		
	1 (poor)	2 (moderate)	3 (good)
1 (poor)	21	5	3
2 (moderate)	0	4	4
3 (good)	0	4	50
missing	0	5	12

Table 7 Weighted Kappa statistics for single eye per patient and for all eyelids

	Agreement	Expected agreement	Kappa	Std. err.	P-value
Single eye per patient	90.15	56.82	0.7719	0.1087	<0.001
All eyes	89.56	56.06	0.7624	0.0923	<0.001

objective outcomes, as per the subjective interpretation suggested by Landis and Koch.⁶

Discussion

The commonest objective definition of success in ptosis surgery is lid levels within 1 mm of each other postoperatively.⁸ Although this definition is simple to define and measure, it does not consider the patients' perspective of the outcome, which in our opinion is the ultimate measure of success (at least in adults). To our knowledge, this is the first study to compare the subjective and objective grading of ptosis surgery outcomes and statistically measure their degree of correlation.

Although the predictability of the outcome of ptosis surgery is enhanced by using local anaesthesia,⁹ we had to operate nearly half of our patients under General anaesthesia because of the relative proportion of our paediatric patients as well as patient choice. Yet our objective surgical outcome compared favourably with the other reported success rates.^{1,9,10}

The higher proportion of surgical outcomes graded subjectively as poor when compared with the objective grading may be attributable to the fact that whereas the objective assessment took place within 3 months of surgery (typically 6 weeks),¹¹ some of the subjective data were collected by means of postal questionnaires or telephone interviews long after the date of surgery and hence would include ptosis recurrences.

The overall results of ptosis surgery in our setting appear satisfactory. The subjective and objective

outcomes of ptosis surgery may sometimes vary; nevertheless, our results suggest a substantive and statistically significant correlation between objective criteria used here to assess the outcome and the patients' perspective. However, larger, prospective, and preferably multicentric studies would be desirable to prove this more conclusively.

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