Comparison of a new, minimally invasive strabismus surgery technique with the usual limbal approach for rectus muscle recession and plication

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AIM: To present a novel, minimally invasive strabismus surgery (MISS) technique for rectus muscle operations. METHODS: In this prospective study with a non-concurrent, retrospective comparison group, the first 20 consecutive patients treated with MISS were matched by age, diagnosis and muscles operated on, with 20 patients with a limbal opening operated on by the same surgeon at Kantonsspital, St Gallen, Switzerland. A total of 39 muscles were operated on. MISS is performed by applying two small radial cuts along the superior and inferior muscle margin. After muscle separation from surrounding tissue, a recession or plication is performed through the resulting tunnel. Alignment, binocular single vision, variations in vision, refraction, and number and types of complications during the first 6 postoperative months were registered. RESULTS: Visual acuity decreased at postoperative day 1 in both groups. The decrease was less pronounced in the group operated on with MISS (difference of decrease 0.14 logMAR, p<0.001). An abnormal lid swelling at day 1 was more frequent in the control group (21%, 95% confidence interval (CI) 9% to 41%, 5/24 v 0%, 95% CI 0 to 13%, 0/25, p<0.05). No significant difference was found for final alignment, binocular single vision, other visual acuities, refractive changes or complications (allergic reactions, dellen formation, abnormal conjunctival findings). A conversion to a limbal opening was necessary in 5% (95% CI 2% to 17%, 2/39) of muscles. CONCLUSIONS: This study shows that this new, small-incision, minimal dissection technique is feasible. The MISS technique seems to be superior in the direct postoperative period as better visual acuities and less lid swelling were observed. Long-term results did not differ in the two groups.