Does the Number of Pre-Operative Measurements for Consecutive Exotropia Patients affect the Surgical Outcomes?

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Background

Surgical strabismus patients traditionally attend for several face-to-face (FTF) measurements before being listed for surgery. During the COVID-19 pandemic, a streamlined care-pathway was adapted to reduce FTF contact time to protect staff and manage floor-flow.

Patients were listed for surgery over the telephone after consultation with a surgeon and after just one face-to-face orthoptic assessment, followed by a FTF pre-assessment with the surgeon. A study was performed to determine whether a reduction in the number of FTF contacts led to a significant difference in the surgical outcome.

Methods

- A case-cohort study was undertaken to look at the surgical outcomes of all consecutive exotropia patients who underwent re-do horizontal muscle surgery over the last 14 years, from a surgeon's prospective database.
- 91 patients were identified and were divided into 2 groups based on if they had the surgery before (Group A) or after (Group B) the pandemic. (Table 1)
- The primary difference between Group A and Group B was the number of preoperative visits each group had. (Figure 1 and 2 outline the new pathway)
- Surgical success was measured in terms of motor alignment within 10-15 prism diopters (PD) of orthotropia.
- Post-operative measurements were taken 2 weeks post-surgery and a statistical analysis was undertaken via an independent t-test.

Table 1:
Patient demographics

	Group A (n = 63)	Group B (n = 28)
Sex (%)		
Male	34 (53.9%)	14 (50%)
Female	29 (46.1%)	14 (50%)
Mean age at consecutive XT surgery (years)	35.5	39.1
Binocular status n (%)		
Suppression	54 (85.7%)	26 (93%)
BSV potential	3 (4.8%)	2 (7%)
Intractable diplopia	6 (9.5%)	0

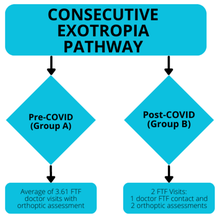


Figure 2

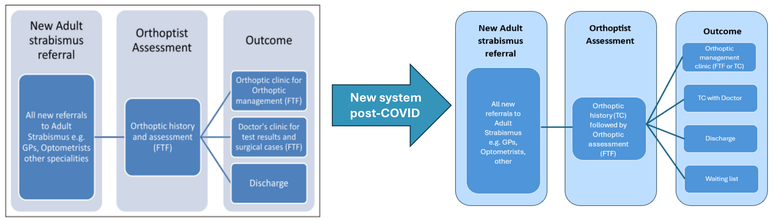


Figure 1[1]: FTF = Face-to-Face, TC = Telephone Consultation

Results

- Post-operative alignment within 15 PD was achieved, after a combination of fixed and adjustable sutures, for 84.1% (near and distance) of patients in Group A, and 89.3% (near) and 85.7% (distance) for Group B. (Table 2)
- Alignment within 10 PD was achieved for 57% and 65% of patients at near and distance in Group A respectively. Alignment within 10 PD was achieved for 85.7% (near and distance) of patients in Group B. (Table 2)
- The mean improvement in the angle of deviation in Group A was 39.6 PD at near and 36.3 PD at distance. This is in comparison to a mean improvement of 39.9 PD at near and 38.1 PD at distance in Group B. Thus, a mean improvement exceeding 30 PD for each group was achieved (Near, 95% CI -8.050 to 8.543, p = 0.95. Distance: 95% CI -5.804 to 9.367, p = 0.64). (Figure 3)
- There was no statistically significant difference between Group A and Group B prior to surgery, in the angle of near deviation (t=0.323, p = 0.748), nor distance deviation (t=0.238, p = 0.812).

Table 2:
Results table illustrating post-operative measurements

	Group A (3.61 FTF visits)	Group B (2 FTF visits)
Post-operative alignment within 15 PD (near) (%)	84.1	89.3
Post-operative alignment within 15 PD (distance) (%)	84.1	85.7
Post-operative alignment within 10 PD (near) (%)	57	85.7
Post-operative alignment within 10 PD (distance) (%)	65	85.7
Mean improvement in angle of deviation (near) (PD)	39.6	39.9
Mean improvement in angle of deviation (distance) (PD)	36.3	38.1

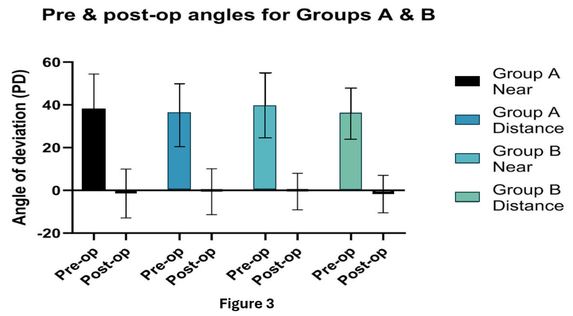


Figure 3

Discussion

- Traditionally, strabismus correction has been preceded by 3 orthoptic measurements prior to surgery. Reducing the number of pre-operative measurements and face-to-face visits led to an observed reduction of 69% in consultant clinic time, and a 44% reduction in the demand on the adult strabismus service.
- During COVID, 24.6% of patients were listed for procedures after first visit. Face-to-face medical follow up for non-surgical cases reduced from 47.7% to 16.3%[1]
- A reduction in face-to-face contact can be seen to increase cost-efficiency, especially in the context of the block-contract reimbursement found in the NHS.
- This study reveals that although there was a reduction in the number of pre-operative assessments between the two groups, from 3.61 to 2, there were comparable surgical outcomes between the two groups, allowing us to conclude that a reduction in the number of preoperative visits does not affect the surgical outcome.
- There is a higher proportion of patients in Group B (85.7%) who had alignment within 10 PD, in comparison to 57% at near and 65% at distance in Group A. Possible reasons for this difference include the reduced sample size of Group B, plus the majority of patients in Group B having had adjustable sutures used during their correction, reflecting the evolution of surgical technique with time.
- Patient satisfaction has been gauged via an Adult Strabismus 20 (AS-20) questionnaire. An increase in the consistency of this questionnaire being implemented post-operatively should be a future goal. Analysis of previous AS-20 questionnaires is underway.

Conclusion

- Reducing the number of pre-operative face-to-face assessments does not affect the surgical outcome of consecutive exotropia.
- A larger scale analysis in other subgroups of strabismus patients in this new streamlined pathway would be beneficial in giving insight and to shape guidance in surgical strabismus management.

References

- 1: Francis, JE, Rhodes, M, Simmons, J and Choi, J. 2022. Utilising Virtual Clinics and Orthoptists to Aid COVID-19 Service Recovery in Adult Strabismus. British and Irish Orthoptic Journal, 18(1), pp. 144–151. DOI: https://doi. org/10.22599/bioj.273
- 2: Choi, J and Rossiter, L. 2016. Medically led virtual adult strabismus clinic. Journal of AAPOS. ID: 78246820. DOI: https://doi.org/10.1016/j.jaapos.2016.07.109