PROGRESSIVE CONFORMERS AND DERMIS FAT GRAFT COMBINED WITH A SKIN GRAFT AT VERY EARLY AGE TO TREAT CONGENITAL ANOPHTHALMIA

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Progressive conformers and dermis fat graft combined with a skin graft at very early age to treat congenital anophthalmia

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Introduction and Purpose

The classical treatment of congenital anophthalmia combines progressively increased conformers. However, especially in true congenital anophthalmia, the palpebral fissure dimensions can be so small that it is difficult to adapt even a conformer. At the same time, it is important to expand the orbital volume, with several suggestions for that, such as dermis-fat graft (DFG), solid spherical implants, hydrophilic or hydrogel expanders, inflatable expanders, grafts mucosal, bone and muscle grafts (1,2). DFG, generally recommended for children around 3 years of age, is a well-established technique for increasing orbital volume and stimulating orbital development (3). However, by 3 years of age, approximately 80% of the adult orbital volume has already been formed. DFG at an early age is not a conclusive concept, and there is no consensus on the most appropriate age for surgery in congenital anophthalmia. Because of this, we present three infants with true congenital anophthalmia treated with skin graft in the upper eyelid and DFG in the socket combined to progressive conformers at an early age with good results.

CASES REPORT

Three children with unilateral true congenital anophthalmia, two with less than 1 month of age and the other one with 7 months at presentation were included. The three infants had intense socket contraction, without the possibility to introduce a very small conformer. The decision was to go immediately for DFG and skin graft in the eyelid. Progressive conformers were used after that.

Quantitative assessment: The children's faces were standardized photo-documented using an iPhone 10 (Apple, USA). The images were transferred to a personal computer and quantitatively measured by the same doctor (ES), using the Image-J Program obtained from the internet (NHI, USA).

Measurements were taken at two significant moments: pre-operatively and six months after the surgical procedure.

Statistical analysis: The anophthalmic cavity was compared to the normal side, measuring the palpebral dimensions. Descriptive and measurement variations between the affected and unaffected sides were expressed in percentages (%) and statistically analyzed.

Table 1: Percentages of the previous surgical procedure measurements compared to the ones performed 6 months after surgery (%).

	Patient 1		Patient 2		Patient 3	
	Anophthalmic Socket	Normal Eye	Anophthalmic Socket	Normal Eye	Anophthalmic Socket	Normal Eye
Nasal Distance	51.75	41.85	68.28	25.69	-1.35	-1.13
Central Distance	42.13	29.11	38.42	1.85	2.52	-2.73
Temporal Distance	55.45	32.90	30.38	16.12	7.53	-0.46
Horizontal Fissure	103.69	0.31	34.14	31.67	25.14	-7.57
Fissure Area	31.48	-	159.38	-	16.73	-

Patient 1: female, 1 month of age; patient 2: male, 1 month of age; patient 3: male, 7 months of age.

Figure 1: Images of Patient 3 – 1A One month old with very small eye fissure; 1B Horizontal opening to enlarge eyelid fissure; 1C Removal of the skin on the dermis fat graft; 1D Immediately after dermis fat graft and skin graft in the upper lid; 1E – 1F Postoperative period

Figure 2: Patient 2 before (2A) and after (2B) the surgical procedure and using an external prosthesis; Patient 1 before (2C) and after (2D) the surgical procedure.

DISCUSSION

We are reporting three unilateral anophthalmic children who underwent skin grafting and DFG associated with progressive conformers at an early age in a true congenital anophthalmic cavity. This condition frequently results in significant facial deformity (4) and our technique can stimulating growth in the periorbital region. Classically anophthalmic children should receive a conformer as soon as possible (1). However, our children do not have the space to receive even a very small conformer, but with the placement of progressive conformers, it is not possible to achieve satisfactory orbital-palpebral development (4).

We combine our DFG surgical procedure with skin graft placement on the upper eyelid. This procedure was not previously reported, and the idea is to use the graft from the superficial skin of the DFG. This is important because all true anophthalmic sockets have a poorly developed upper eyelid with reduced dimensions.

Based on the normal development of the orbit and our results, we strongly suggest that it is very important to treat the lack of volume in the anophthalmic orbit as soon as possible to ensure better results. The disadvantage of our study was having only three children under observation and the short follow-up period. However, as strengths, our study is the first to add a DFG to the anophthalmic orbit and the derived skin graft placed on the eyelids, quantitatively comparing the development of the congenital anophthalmic periocular region, highlighting that it is urgent to combine skin graft and DFG with progressive conformers earlier for

Conclusion: skin grafting in the upper eyelid, and DFG in the socket associated with progressive conformers at a very young age are recommended for the treatment of true congenital anophthalmia, enlarging the dimensions of the eyelids and the palpebral fissure area, facilitating the adaptation of an external prosthesis with improvement of child's appearance.

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