# Ankyloblepharon Filiform Adnatum: Beyond the eye

## Ankyloblépharon filiforme adnatum : Au-delà de l'œil

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**RÉSUMÉ**

L'ankyloblépharon est une rare malformation congénitale définie par la non-disjonction partielle des lignes grises des paupières supérieure et inférieure. Nous rapportons deux cas de nouveau nés présentant cette malformation en insistant sur le potentiel amblyogène de cette pathologie et sur la nécessité de rechercher d'autres malformations systémiques associées.

**Mots-clés**

Anomalie palpebrale, Ankyloblepharon-Ectodermal, dysplasia-Clefting (AEC) syndrome, Curly Hair-Ankyloblepharon-Nail, Disease (CHAND) syndrome.

**SUMMARY**

The ankyloblepharon filiform adnatum (AFA) is a rare congenital palpebral abnormality characterized by a partial non disjunction of the gray lines of upper and lower eyelids. We report two cases of newborns presenting with ankyloblepharon and highlight its potentially amblyogenic impact and the possible ocular and systemic associations.

**Key-words**

Ankyloblepharon, dysplasia-Clefting (AEC) syndrome, Curly Hair-Ankyloblepharon-Nail, Disease (CHAND) syndrome.

## INTRODUCTION

The ankyloblepharon filiform adnatum (AFA) is a rare congenital palpebral abnormality characterized by a partial non disjunction of the gray lines of upper and lower eyelids (1).

We report two cases of newborns presenting with ankyloblepharon and highlight its potentially amblyogenic impact and the possible ocular and systemic associations.

## CLINICAL CASES

**Patient 1:**

A female newborn was referred to our clinic for palpebral occlusion. She was already hospitalized in the pediatric department for assessment of a polymalformative syndrome. Her parents were healthy and nonconsanguineous. The pregnancy was poorly followed and the delivery occurred at home. The mother denied smoking or having taken any drugs during the pregnancy.

Clinical examination revealed a bilateral ankyloblepharon associated to a cleft lip without cleft palate, the eyelids margins were bilaterally connected by multiple broad tissue bands. Ultrasound B-scan showed an apparently normal eye ball.

Subsequently, the band of tissue was excised with soft-edged scissors under an operating microscope, with light sedation and topical anaesthesia, restoring a normal palpebral fissure. There was no bleeding. Ocular motility, anterior segment, and fundi were normal (Fig1).

Further systemic evaluation revealed the absence of other anomalies, indeed the baby was eutrophic, the neurological and cardiac examination as well as laboratory tests were normal.

The neonate was thereafter referred to the maxillofacial surgery department for facial defect reconstruction (Fig 2).

**Patient 2:**

A male newborn was referred on the first day of life for eyelids assessment. The medical history revealed a parental consanguinity, an uneventful pregnancy course and delivery and no maternal exposures to drugs or to X-rays.

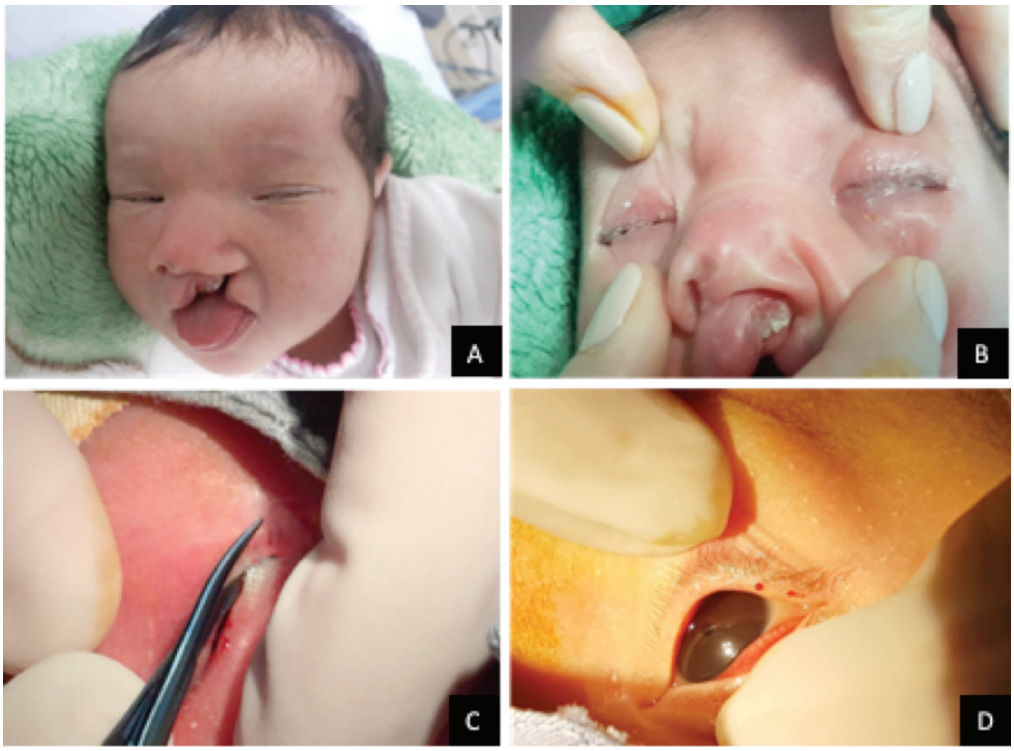


Figure 1. A: Clinical photograph showing bilateral ankyloblepharon associated to a cleft lip without cleft palate. B: Eyelids margins bilaterally connected by multiple broad tissue bands. C: Intraoperative clinical photograph. D: Raw lid margins after separation.

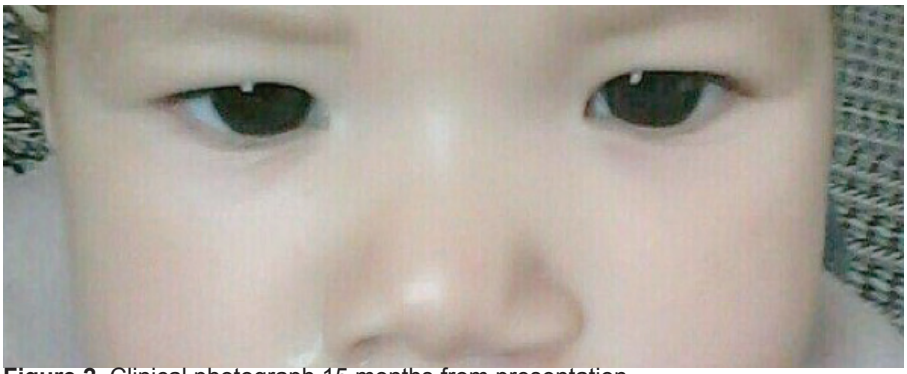

**Figure 2.** Clinical photograph 15 months from presentation

Ocular inspection revealed a central extensile thin fibrous adhesion between the eyelid margins at the grey line of each eye. Ultrasound B-scan was unremarkable.

The surgical management was the same as in the first case based on a simple surgical release.

Postoperatively, the anterior segment and the fundus were examined without abnormalities.

Further detailed pediatric assessment revealed craniofacial abnormalities: sparse and wiry hair, eyelashes and eyebrows, mild epicanthus, depressed flat nasal bridge, hypoplastic alae nasi and thin vermillion border as well as dystrophic finger and toe nails (Fig3).

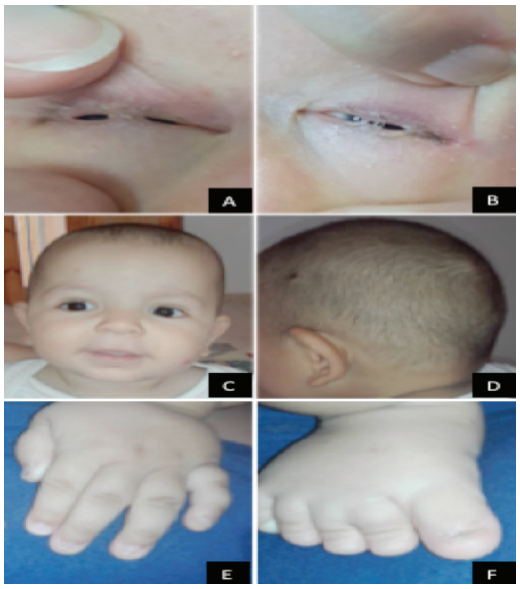


Figure 3. A-B: Clinical photographs showing the presence of bilateral ankyloblepharon. C: Patient face photograph at 3 months age showing craniofacial abnormalities: Sparse eyelashes and eyebrows, mild epicanthus, depressed flat nasal bridge, hypoplastic alae nasi and thin vermillion border. D: Sparse and wiry hair, E-F: Hand and foot photographs showing nail dystrophy.

## DISCUSSION

AFA was described for the first time by Von Hasner in 1881 as one or more thin strips of connective tissue with little vascularity joining the upper and lower eyelids either unilaterally or bilaterally. Its incidence is estimated to be 4.4 per 100 000 births (2).

The fusion of the palpebral edges is a normal stage of intrauterine development. Its highlighting at birth is exceptional. Indeed, in the normal state, the eyelids separate from the 5th gestational month (3). Orbicularis muscle tractions, Meibomian glands secretions and keratinization seem to be involved in the eyelids disjunction (4)

AFA may present as a sporadic malformation, elsewhere it can be a part of well-defined syndromes with variable expressivity.

It is interesting to note that in the current cases, the first patient presented with an Ankyloblepharon-Ectodermal dysplasia-Clefting (AEC) syndrome, also known as Hay–Wells syndrome which is an autosomal dominant disorder of varying degrees of penetrance comprising of ankyloblepharon, ectodermal dysplasia and cleft palate or cleft lip. The main feature of this syndrome is ankyloblepharon, cleft lip or cleft palate might be absent (5).

AEC belongs to a large heterogeneous group of ectodermal displasias (ED) including over 100 inherited disorders that affect the embryonic development of ectodermal tissues. In almost 70% of cases this disease is caused by a de novo mutation and in approximately 30% of cases patients have an affected parent (6,7). It is caused by mutations in the TP63 gene, which encodes an important regulatory protein involved in epidermal proliferation and differentiation called p63 protein (5).

Furthermore, our second patient had clinical features consisting with the diagnosis of "curly hair-ankyloblepharon-nail disease (CHAND) syndrome" which is believed to be a clinical variant of AEC syndrome but with an autosomal recessive pattern of inheritance (8). The main difference between both syndromes is hair type which is brittle, wiry, and coarse in AEC syndrome and blonde, thin, and curly in CHAND syndrome (5).

In addition to these well recognized syndromes, other systemic associations to AFA have been reported including a wide range of abnormalities such as hydrocephalus, meningomyelocoele, cardiac malformations, syndactyly and anal imperforation (9). Hence, a comprehensive systemic examination must be performed to rule out such conditions.

However, ankyloblepharon was associated to underlying ophthalmological abnormalities in only one reported case; in addition to AFA, the child had iridogoniodysgenesis and infantile glaucoma (10).

The association of AFA with developmental anomalies involving tissues growing in apposition suggests a common pathophysiological mechanism. Indeed, it is assumed that a defect in the mechanism that regulates tissue fusion at several sites during organogenesis might underlies these anomalies (11). Otherwise mechanical and inflammatory theories were also suggested (12). Wintersteiner proposed that foetus fingernails trauma on the eyelids could provoke a mesodermal proliferation (13).

Surgical management of the ankyloblepharon is a simple procedure that does not always require any deep sedation or local anaesthesia. It consists in a simple release of the bands using soft-edged scissors. Surgery must be urgent so that it avoids the risk of deprivation amblyopia and allows a full ophthalmological examination (1-12).

## CONCLUSION

Thus, the innocuous appearance of AFA must not prevent clinicians to look beyond the eye. Actually, awareness should be there to investigate possible systemic associations, some of them potentially life-threatening. Finally, we underline the importance of a multidisciplinary team approach of this condition including pediatricians, ophthalmologists, oral and maxillofacial surgeons, dermatologists, geneticists and psychologists.

**Conflict of interest**

The authors declare no conflict of interest.

**Acknowledgments**

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## REFERENCES

1. Loannides A, Georgakarakos ND. Management of ankyloblepharon filiforme adnatum. Eye 2011;25:823.
2. Jain S, Atkinson AJ, Hopkisson B Ankyloblepharon filiforme adnatum. British Journal of Ophthalmology 1997;81:705.
3. Alami B, Maadane A, Sekhsoukh R. Ankyloblepharon filiforme adnatum : a case report. Pan Afr Med J 2013;15:15.
4. Hamilton WJ. Hamilton, Boyd and Mossman's Human embryology prenatal development of form and function. 4th ed. Cambridge: Heffer; 1972.
5. Chopra A, Mitra D, Kandpal R, Agarwal R. Rare Variant of Ankyloblepharon-ectodermal Defect-cleft Lip/Cleft Palate Syndrome: Curly Hair-ankyloblepharon-nail Disease Syndrome. Int J Trichology 2018;101.:17-20.
6. Niculescu L, Wagner M, Westphal DS, Fischer M, Mihatsch W, Prothmann A, Ruzicka T and al. A Case of Ankyloblepharon-ectodermal Defects-cleft Lip/palate-syndrome with Choanal Atresia and Skin Erosions: Phenotypic Variability of TP63-related Disorders. Acta Derm Venereol 2018;6:19.
7. Gonzalez F, Loidi L, Abalo-Lojo JM. Novel variant in the TP63 gene associated to ankyloblepharon-ectodermal dysplasia-cleft lip/palate AEC. syndrome. Ophthalmic Genet 2017;38:277-280.
8. Chopra A, Mitra D, Kandpal R, Agarwal R. Rare Variant of Ankyloblepharon-ectodermal Defect-cleft Lip/Cleft Palate Syndrome: Curly Hair-ankyloblepharon-nail Disease Syndrome. Int J Trichology 2018;10:17-20.
9. Gaur N, Meel R, Shashni A, Shaikh N. Eyes that cannot be seen: a rare case of ankyloblepharon filiforme adnatum AFA. in a neonate. BMJ Case Rep 2018;5:2018.
10. Scott MH, Richard JM, Farris BK. Ankyloblepharon filiforme adnatum associated with infantile glaucoma and iridogoniodysgenesis. J Pediatr Ophthalmol Strabismus 1994;31:93-95.
11. Supriya Sharma, Shalini Gupta, Surya Kant, Kanchan Srivastava and Priyanka Gaur. Genetic review of ectodermal dysplasia. International Journal of Current Research 2018;10:70627-70631.
12. Stolowy N, Ramtohul P, Caselles K, Denis D. Ankyloblepharon filiforme adnatum. J Fr Ophtalmol. 2019;423.:e125-e126.
13. Wintersteiner H. Ein neuer Fall von Ankyloblepharon filiforme. In: Arch Augenheilkd;1908.