



Dynamics of morphological characteristics of the course of the wound process after uranoplasty in children with congenital cleft of the upper lip and palate

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Annotation

Cicatricial wound healing after surgery causes palatopharyngeal insufficiency and other disorders. The study included 24 children aged 2-7 years with congenital cleft lip and palate, which made uranoplasty operation. Investigation of the morphology of the mucosa of the hard palate shell after surgery showed that healing of the surgical wound is one side of the adaptive-compensatory reactions of the organism. All this makes it necessary to be included in the complex of therapeutic measures antihypoxants.

Keywords: uranoplasty, postoperative care, regeneration, antihypoxants, palatopharyngeal, wound, morphology.

INTRODUCTION

Congenital clefts of the upper lip and palate (CCLP) are one of the most common malformations and make up 1.6-3.6% of all congenital malformations [2,4].

Of the many aspects of the problem of CCLP, the clinic of the defect has been studied in more detail, and in this connection numerous highly effective methods of surgical repair of the defect have been proposed. At the same time, the frequency of unsatisfactory outcomes of the operation, accompanied by divergence of sutures, remains quite high [4,5]. According to the literature, the difference in seams after the performed uranoplasty is observed in 16-52%. The formation of postoperative defects by many authors is associated with errors in the surgical technique and the costs of surgical treatment [3,5].

The leading cause of complications is suppuration of the wound, leading to partial or complete divergence of the sutures. Cicatricial wound healing after surgery becomes the cause of palatopharyngeal insufficiency and other disorders. The ultimate goal of uranoplasty surgery is not only the elimination of anatomical abnormalities, but also the creation of a functional palate [1,2,3].

In our clinic, the operation of uranoplasty for many years has been successfully performed with the narrowing of the palatopharyngeal ring according to Frolova and Frolova - Makhkamov, and has been successfully carried out for many years.

The effectiveness of uranoplasty also largely depends on the functional and metabolic activity of the tissues of the oral cavity. However, the morphological features of the soft tissues of the hard palate after uranoplasty and in the dynamics of wound healing are not fully understood. All this served as the basis for this clinical trial.

Aim of the study is to explore course of wound healing after uranoplasty in children with congenital cleft upper lip and palate.

MATERIAL AND METHODS

We examined 24 children aged 2-7 years with congenital cleft of the upper lip and / or palate, who underwent an operation of uranoplasty. These children underwent cheiloplasty at the age of 6 months. up to 1.5 years.

After the completion of uranoplasty, iodoform-gauze swab was applied to all children after the completion of uranoplasty. On the 5th day, the protective plate was removed, the iodoform swab was removed from the

surface of the mucosal-periosteal flap. The oral cavity and wound were irrigated daily with antiseptic solutions.

A piece biopsy was taken from the lateral edge of the mucoperiosteal flap on the 6th and 9th day after the operation. The pieces were fixed in a 2.5% buffered glutaraldehyde solution and a 1% OsO₄ buffered solution, and subsequently dehydrated. Slices were made on an ultra-microtome LKB-4800. Light-optical sections were examined under an MBI-15 microscope.

RESULTS AND ITS DISCUSSION

In children, on the sixth day after surgery, the basal and spiky layers are mainly infiltrated by lymphocytes, less often by other connective tissue cells (macrophages, eosinophils, etc.).

The basement membrane is thickened, interrupted in some places by migrating cells. Own plate in a state of edema, there are few capillaries, some of them contain blood clots (Fig. 1). Among the cellular elements, macrophages, neutrophils, lymphocytes, fibroblasts predominate. Between them randomly located collagen and collagen fibers. Tissue basophils almost never occur. Fibroblasts of irregular shape, process, randomly distributed in the visible fields of the biopsy. Their cytoplasm contains numerous profiles of granular endoplasmic reticulum. Mitochondria are few in number, with a moderate number of cristae. The capillaries are lined with flattened endothelium. Their basement membrane

is continuous, thickened, and does not contain pericytes (Figure 1).

9 days after the operation, against the background of traditional treatment, microscopically in the mucous membrane of the hard palate, the edema both in the epithelium and in its own plate slightly decreased (Fig. 3). In the epithelial layer, while maintaining infiltration, there was no increase in mitotically dividing cells in both the basal and prickly layers. The epithelium is thinned in places. The basement membrane is still slightly thickened, sometimes interrupted by migrating lymphocytes or other connective tissue cells. In its own plate, the proportion of macrophages has increased significantly, some of which acquire the structure of cells of giant foreign bodies. With a decrease in the proportion of connective tissue cells, capillaries in the intercellular space, the number of collagen fibers located randomly increases, which indirectly indicates sclerosis of the lamina propria and thinning of the epithelium in this area of the mucous membrane.

On the sixth to ninth day after the operation, a study of the morphology of the mucous membrane of the sky revealed a change in the physicochemical properties of the main substance of the lamina propria, the basement membrane of the capillaries, the development of edema of the connective tissue and epithelium.

One of the causes of edema, in our opinion, is the formation of a large amount of endotoxins due to the destruction of tissue cells, activation of LPO processes, which leads to the migration of neutrophils, macrophages and mast cells. The activation of phagocytosis and lysosomal enzymes also plays an important role in this process (Figure 2).

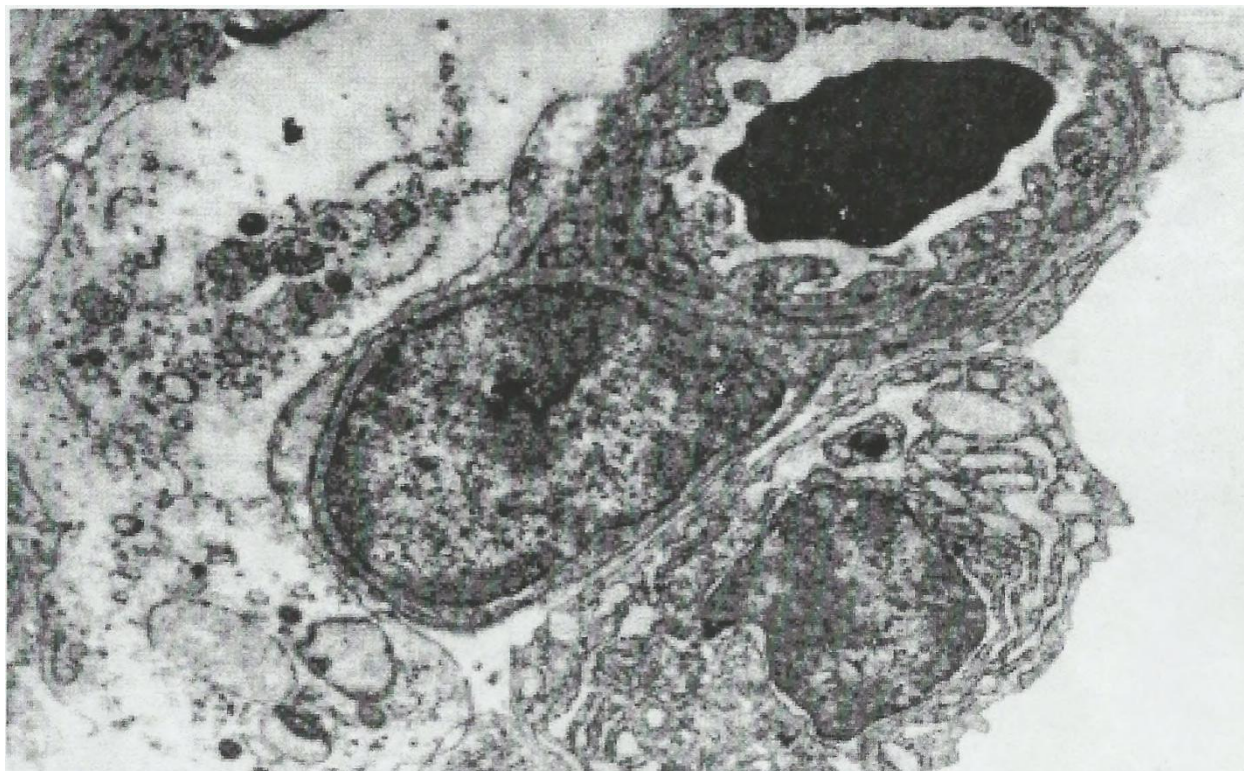


Figure 1: 6 days after surgery. The traditional treatment. Interstitial edema. A capillary lined with flattened endothelial cells, red blood cells in a stasis state. Magnification 9500.

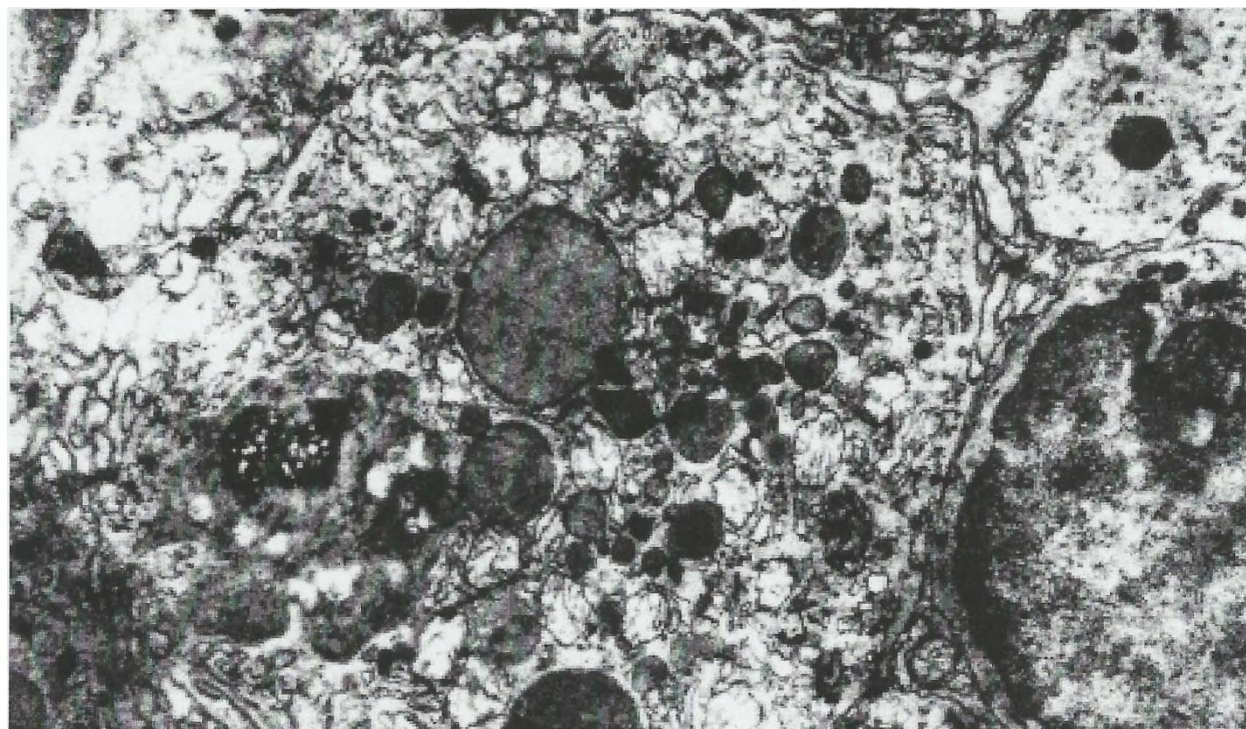


Figure 2: 6th day after surgery. The traditional treatment. Polymorphic primary and secondary lysosomes in the cytoplasm of the macrophage of the own plate of the mucous membrane of the sky. Magnification 9500.

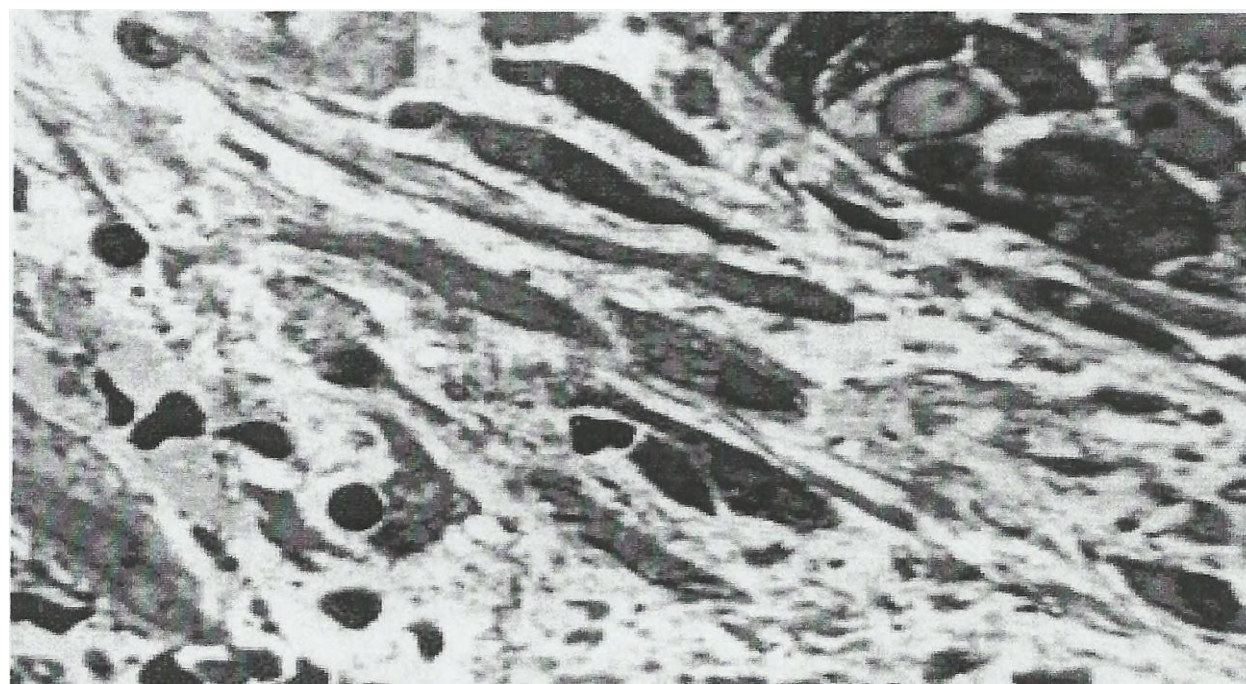


Figure 3: 9-day after surgery. The traditional treatment. Edema of the epithelium and its own plate is preserved, single lymphocytes between the epithelial cells. Fibroblasts and fibrocytes are located between bundles of collagen fibers. Semi-thin section. Coloring: main fuchsin-methylene blue. Magnification 10, vol. 16.

The leading place in the development of postoperative complications is given to hypoxia, since during hypoxia, the destruction of intracellular structures begins to prevail over compensatory-adaptive processes, as a result of which the cells die, and their death has a morphofunctional expression.

In this case, the destruction of membranes is also caused by a decrease in the formation of lipids and proteins under conditions of energy deficiency, and by an increase in the free radical oxidation of lipids in cell membranes.

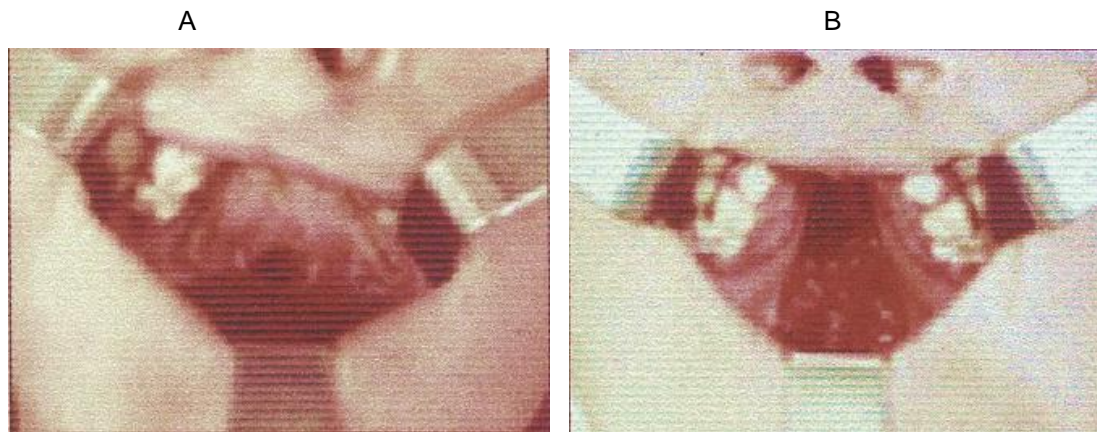


Figure 4. Patient S.N.; 7 years. Patient card #1582/1143. Diagnosis: Bilateral congenital cleft of the upper lip and palate. Condition after two-sided cheiloplasty. A - before uranoplasty; B - after uranoplasty.

With traditional treatment, in 12 (50%) of 24 children, the wound was infected and on the fourth or fifth day the sutures were in unsatisfactory condition (Figure 4). In 5 children, by the eighth to ninth days of treatment, a partial discrepancy of sutures was observed. In 7 children, the postoperative wound healed by secondary healing, which led to palatal pharyngeal insufficiency.

FINDINGS

Thus, a study of the morphology of the mucous membrane of the hard palate after surgery showed that the healing of a postoperative wound is one of the sides of the adaptive-compensatory reactions of the body. Preoperative starvation, anesthesia, surgery, as well as the initial status of children with CCLP become stress factors leading to the development of hypoxia. All this makes it necessary to include antihypoxants in the complex of therapeutic measures.

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