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USE OF SYNTHETIC GLUE GLUBRAN IN PEDIATRIC CARDIAC SURGERY

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INTRODUCTION

In the correction of the congenital cardiac anomalies the reconstruction of the cardiac and vascular structures require the execution of wide sutures and the use of biologic and synthetic materials. Furthermore the realization of advanced surgical procedures require one or more surgical re-operations in the same patient.
It's easy to guess how high the risk attached to the post-surgical bleeding and to its complications may be in this delicate population if there were not biologic and synthetic hemostatic materials on the market.
The GLUBRAN (ethyl (2) cyanoacrylate, butylacrylate and methacryloxysulfane) is a synthetic glue with high hemostatic properties.

MATERIALS AND METHODS

From January 1997, at the Cardiac Surgery Department of the Children's Hospital Regina Margherita of Turin, the glue Glubran has been applied in 22 patients of an age between 2 days and 13 years for hemostatic purposes.
The people under examination, chosen on basis of such potential hemorrhagic risks to compromise the post-operative course, included 15 patients who suffered from complicated congenital cardiopathy and 7 patients who had to undergo a surgical re-operation. All operations have been carried out in extra-corporeal circulation and with different hypothermic degrees.
In all cases the glue has been applied exclusively after having considered that a perioperational bleeding would have worsen significantly the prognosis of the client and after that other manoeuvres or hemostatic materials showed to be inefficient.
The glue has been applied by a syringe with small needle (0,5mm) to form a thin transparent film along the suture line between the biologic and/or synthetic tissues. Those materials have been used for the reconstruction of the vascular or cardiac walls and therefore submitted to different pressure values.
In the surgical re-operations the product has been applied locally on the sutures and spread in homogeneous way on the wide bleeding areas.

RESULTS

The good efficiency of the hemostatic power of the glue has been verified in all patients. In the cases in which has been formed material accumulation, due to an application error, the excess has been removed easily with forceps and the glue has been reapplied correctly. The glue has showed not only to be able to block the bleeding through the suture lines but also in controlling wide spreading hemorrhages which resulted from the surgical dissection in the re-operations.

The behaviour on long terms of the glue has been evaluated in those patients in whom the sternum, which was left open on the moment of the operation, has been closed afterwards. During the surgical exploration carried out at the moment of the closing of the sternum after a few days or weeks of the operation, the places where the glue had been applied did not present adherences with the surrounding tissues nor visible alterations.
Also there have not been verified complications and undesirable effects that can be caused by the use of the product nor at short neither at long terms.

DISCUSSION

In the pediatric cardiac surgery the post-surgical bleeding represents a complication that may condition sometimes the surgical result in an unfavourable way.
We have individualized two groups of patients at risk in whom a probable bleeding could have conditioned the post-operational course in such way to compromize severely the patient's life.
One group included patients who suffered from complicated congenital cardiopathy in which the surgical correction expected large cardiovascular structure reconstructions with the execution of long sutures or the suture of anatomic structures unreachable once the filling of the heart was started.
A second group included patients submitted to a re-operation in which the bleeding risk, attached to the dissection, would have caused undoubtedly major incidence.
The bleedings, which are difficult to control in patients with already compromized cardiovascular conditions, make the operative risk worse. Furthermore the use of heparin, which is necessary in all patients submitted to operations in extra-corporeal circulation and the duration itself of the cardiopulmonary bypass alter the coagulability of the blood. A similar bad effect on the coagulation may happen when the operations are being carried out in hypothermia.
It becomes therefore essential to minimize the surgical duration by the use of suitable materials to assure a prompt hemostasis.
Our experience with the use of the synthetic glue Glubran is positive. The glue shows to have noteworthy adherence and hemostatic properties acting rapidly and efficiently in absence of short terms and long terms complications.

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