Linear Durotomies Instead of Classic Duramater Openning in Severe Stroke Decompressive Craniectomy

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Introduction

Preventing extrusion and the consequent brain injury associated with wide dural opening is a challenge for the neurosurgeon.

We proposed a modification in the dural opening consisting of three frontoparietal and two temporal durotomies in decompressive craniectomy for malignant cerebral infarction. Therefore we achieve pressure reduction without allowing extrusion of brain tissue.

Methods

In this pilot study we aimed to evaluate two concepts: Decompressive Craniotomy with Linear Durotomies (DCLD), and its comparison with the Decompressive Craniotomy with wide durotomy and classic duroplasty (DCCD).

Data were collected in the period between 2012 and 2015. Nineteen patients with severe ischemic stroke of the middle cerebral artery were enrolled.

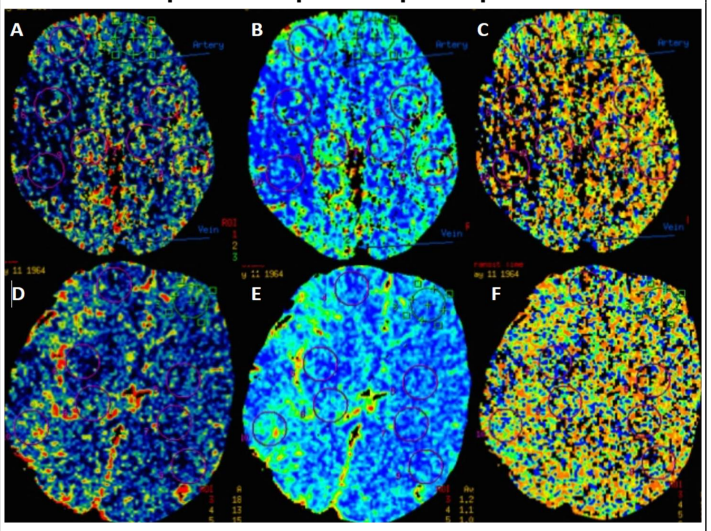
Results

The mean age of the patients was 52.2 years, 12 men and 7 women, with a mean period from ictus to surgery of 1.2 days.

The mean Glasgow Coma Score (GCS) on admission in the Classic Duroplasty group was 12 points, two of them had GCS less than nine, four presented with anisochoric pupils and a 50 % overall mortality rate.

In the Linear Durotomies group, mean GCS was 12, one with GCS less than nine, one with anisochoric pupils, overall mortality was 33%.

CT perfusion pre and post operative



A: preoperative cerebral blood flow

B: preoperative cerebral blood volume

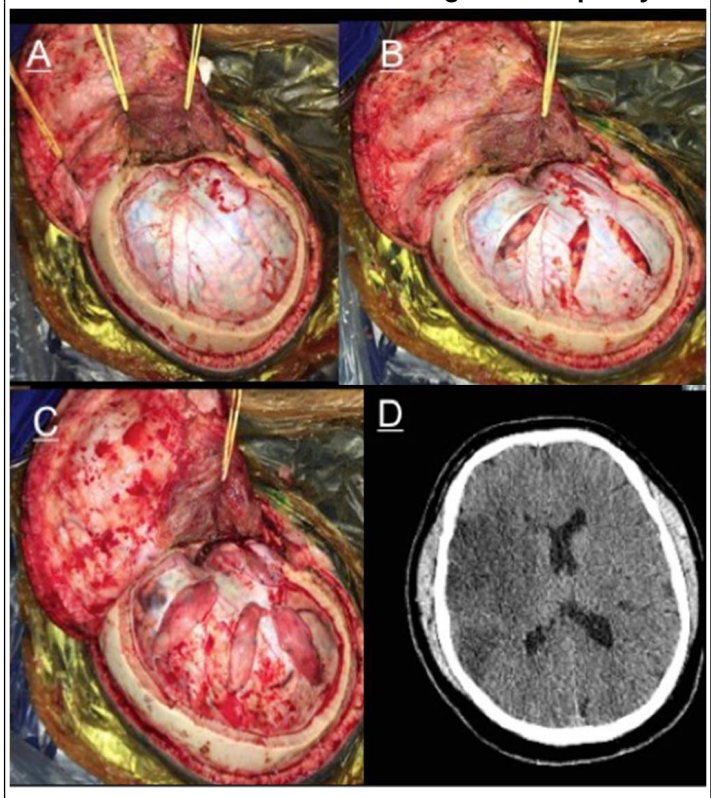
C: preoperative mean transit time

D: postoperative cerebral blood flow

E: postoperative cerebral blood volume

F: postoperative mean transit time

Linear Durotomies and Autologous Duroplasty



A: Dural aspect after craniotomy

B: Linear durotomies alloing cerebral tissue expansion

C: Placement of autologus graft over dorotomies

D: Admission CT scan