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Diaphragm plication yields similar results in patients following univentricular palliation and biventricular repair. A 10 years experience.

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Background: Adequate respiratory function is essential following univentricular palliation. Hence, diaphragm paralysis after staged Fontan surgery due to uni- or bilateral phrenic nerve palsy may require prolonged mechanical ventilation. In this setting, diaphragm plication has been proposed.

Objective: We sought to determine incidence and results of diaphragm plication focusing on potential differences between patients following biventricular repair and univentricular palliation in our center during a 10 years experience period.

Design/Methods: A retrospective analyse of all consecutive patients who underwent diaphragm plication between 2005 and 2015 was performed. Outcomes were compared between the groups following univentricular palliation and biventricular repair.

Results: Diaphragm plication was performed in 25 patients in 27 phrenic nerve palsy identified cases following 8120 procedures (0.3%). 11 of them presented with functional univentricular heart (7 following a Glenn anastomosis, 1 TAPVR repair , 1 Blalock Taussig shunt, 1 total cavopulmonary connection, 1 unknown procedure). The remaining patients had undergone biventricular repair (3 AVPR, 5 VSD, 1 GVA, 1 Fallot, 1 pulmonary valve agenesis, 1 truncus and 1 aortic coarctation). Mean age at plication was 10 months in univentricular group and 2.1 in biventricular one ($p=0.65$), with median delay between surgery and plication of 16 days in uni and 14 days in biventricular surgeries, with a trend to be shorter now. There was no hospital mortality in both groups. Mean time on mechanical ventilation, mean time on the intensive care unit, and mean time of hospitalization after plication was 24 hours, 3 and 10 days in univentricular group and 24.5 hours, 3 and 11 days in biventricular one, respectively (all p values >0.05).

Conclusions: The incidence of diaphragmatic paralysis following congenital heart surgery is very low. Diaphragm plication is an effective and safe treatment of diaphragmatic paralysis. The procedure yields similar results in patients presenting with functional univentricular heart and in patients following biventricular repair. Early application is warranted to prevent prolonged ventilation and length of stay.