



Title	Feasibility of an animal model for long-term mechanical circulatory support with Impella 5.5 implanted through carotid artery access in sheep
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Citation	大阪大学, 2024, 博士論文
Version Type	
URL	https://hdl.handle.net/11094/98609
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論文内容の要旨

Synopsis of Thesis

氏 名 Name	今岡 秀輔
論文題名 Title	Feasibility of an animal model for long-term mechanical circulatory support with Impella 5.5 implanted through carotid artery access in sheep (総頸動脈アクセス植え込みでのImpella 5.5長期間循環サポートヒツジモデルの研究)
<p>論文内容の要旨 (Abstract of Thesis)</p> <p>Purpose: Impella is one of the mechanical circulatory supports applied to patients with cardiogenic shock. The strategy for implantation of Impella and its effect on cardiac recovery are controversial. An experimental animal model supported by Impella for the equivalent duration to clinical scenarios implanted by a less invasive procedure is required to be developed. The purpose of this study was to evaluate the feasibility of an animal model with myocardial injuries supported for four weeks by Impella 5.5 implanted through carotid artery access in sheep.</p> <p>Method: Impella 5.5 was implanted to four adult sheep weighing 60-72 kg through the proximal region of the left carotid artery without thoracotomy, and myocardial injuries were induced by coronary microembolization. The support by Impella 5.5 was maintained for four weeks, and the general condition and hemodynamics of the animals were observed. The position of Impella 5.5 and cardiac function were evaluated by cardiac computer tomography at two and four weeks after the Impella 5.5 implantation.</p> <p>Results: All four animals completed the four weeks of experimental period without major complications. In the animals whose inflow of Impella 5.5 was positioned above the level of the left ventricular papillary muscle, relatively high flow of Impella 5.5 was maintained under both awaking and anesthesia. Regardless of its position at the aortic valve level, pathological changes of the aortic valve were observed.</p> <p>Conclusion: The feasibility of the animal model supported for four weeks by Impella 5.5 implanted through carotid artery access in sheep was shown. This model is expected to contribute to studies for the long-term effects and clinical assignments of the mechanical circulatory support by Impella 5.5.</p>	

論文審査の結果の要旨及び担当者

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論文審査の結果の要旨

急性心筋障害に対し、経皮的補助人工心臓による長期左室負荷軽減効果のメカニズムの解明は急性心筋障害における心機能の更なる回復につながる重要な課題である。本研究の目的は急性心筋障害に対し経皮的補助人工心臓により長期循環補助を行う大型動物モデルを開発することである。

本研究ではマイクロスフェアによる急性心筋障害を導入し、4週間Impella 5.5で循環サポートするヒツジモデルの作製を達成した。

本研究は今後、急性心筋障害に対する長期左室負荷軽減効果のメカニズムの解明に寄与するものと考えられ、学位に値するものと認める。