

Review focuses on autologous cell therapy that can be applied to cardiac surgery

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The combination of cell and gene therapy is rapidly raising clinical interest, although their combination has been under investigation for several decades. This is mainly due to the availability and feasibility of clinically relevant gene delivery options. This review focuses on cell therapies for heart failure and their use combined with cardiac surgery as well as with gene therapy. The review also provides insight into how financial and authority-based decisions and restrictions influence research in this field. Particular focus is given to autologous cardiac cell therapy that can be applied concomitantly to a cardiac operation.

This review focuses on the possibilities for intraoperative processing and isolation of autologous cells, particularly atrial appendage-derived cells (AADCs) and cellular micrografts, and their straightforward use in cell transplantation for heart failure therapy. We review the potential of autologous tissues to serve as sources for cell therapy and consider especially those tissues that are used in surgery but from which the excess is currently discarded as surgical waste. We compare the in-culture-expanded cells to the freshly isolated ones in terms of evidence-based cost-efficacy and their usability as gene and RNA therapy vehicles. We also review how financial and authority-based decisions and restrictions sculpt the landscape for patients to participate in academic-based trials. Finally, we provide an insightful example of AADCs isolation and processing for epicardial therapy during coronary artery bypass surgery.

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