International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

Double Chamber Right Ventricle in Pregnancy

INPLASY202550072

doi: 10.37766/inplasy2025.5.0072

Received: 22 May 2025

Published: 23 May 2025

Chadha, N; Siddiqui, Z; Joseph, N; Holland, E; Ortoleva, J; Misra, A; Das, A; Rosenthal, E.

Corresponding author:
Noor Chadha

noorkchadha@gmail.com

Author Affiliation:
Boston Medical Center.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Piloting of the study selection process.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202550072

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 May 2025 and was last updated on 23 May 2025.

Noor Chadha and Zara Siddiqui contributed equally to this work.

INTRODUCTION

Review question / Objective The aim of this systematic review is to examine the following question: How is double-chamber right ventricle managed in pregnancy?

Rationale Double chamber right ventricle (DCRV) is a rare congenital heart anomaly that can lead to heart failure, making it a high risk condition to manage in pregnancy (1). However, its management in pregnant patients has been rarely described in the literature. Therefore, this systematic review aims to understand how DCRV is diagnosed and managed in pregnancy in order to inform future perinatal care of patients with this high risk condition.

Condition being studied Double chamber right ventricle is a rare form of right ventricular outflow tract (RVOT) obstruction in which an anomalous muscle bundle divides the right ventricular cavity into two chambers - a high-pressure proximal chamber and a low-pressure distal chamber. Some patients with DCRV are asymptomatic, but severe RVOT obstruction can lead to right heart failure. The physiologic changes of pregnancy can increase the chances that patients with RVOT obstruction may develop right-sided heart failure through various mechanisms, including increased blood volume and cardiac output, structural remodeling and lower threshold for cardiac arrhythmias, and possible development of obstetric complications such as preeclampsia (2). Yet, DCRV in pregnancy has been rarely described in the literature.

METHODS

Search strategy We plan to search the following databases: Pubmed, EmBase, and Web of Science. Our search terms are adapted from two

prior systematic reviews regarding cases of double-chambered right ventricle outside of pregnancy (3,4). In PubMed, we use the following search terms: ((“double-chambered” OR “two-chambered” OR “anomalous muscle bundle” OR “DCRV”) AND (“right ventricle”)) AND (“pregnant” OR “pregnancy”). In EmBase, we use the following search terms: (DCRV OR double chambered OR two chambered OR anomalous muscle bundle) AND (right ventricle) AND (pregnant or pregnancy). In Web of Science, we use the following search terms: (ALL=(DCRV OR double chambered OR two chambered OR anomalous muscle bundle)) AND (ALL=(right ventricle)) AND ALL=(pregnan*).

Participant or population Any pregnant patient with a known diagnosis of double chamber right ventricle (DCRV) during pregnancy will be eligible for this review, with no exclusions based on ethnicity or age. Only studies that specifically describe a case of a pregnant patient with DCRV will be included. Fetal cases will not be included.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Any study design describing a case of double chambered right ventricle in pregnancy will be included.

Eligibility criteria Inclusion criteria - describes a case of double chambered right ventricle in pregnancy. Exclusion criteria - only describes fetal cases, does not describe DCRV, or only describes cases outside of pregnancy.

Information sources Electronic databases - PubMed, Web of Science, and EmBase.

Main outcome(s) Main outcomes of our review include method of DCRV diagnosis, cardiac management strategies during pregnancy, pregnancy management strategies, delivery outcome, and pregnancy complications.

Data management From each study selected, two authors will collect data on how DCRV was diagnosed, what cardiac interventions or considerations were described in the study, what pregnancy management considerations were described in the study, what the delivery outcome of the pregnancy was, and any pregnancy complication that arose. Two reviewers will individually select studies for inclusion using the described search terms and inclusion criteria. Disagreements will be handled through discussion to achieve consensus. If further support is required to achieve consensus, a third reviewer will be consulted.

Quality assessment / Risk of bias analysis Quality assessment of all included analyses will be conducted using JBL critical appraisal tools.

Strategy of data synthesis Our synthesis will only involve qualitative analysis given the limited number of expected case reports in our review. We will utilize a table to synthesize method of DCRV diagnosis, cardiac management strategies during pregnancy, pregnancy management strategies, delivery outcome, and pregnancy complications described in each article.

Subgroup analysis Not applicable given qualitative systematic review of case reports.

Sensitivity analysis Not applicable given qualitative systematic review of case reports.

Country(ies) involved United States.

Keywords Double chamber right ventricle; congenital heart disease; pregnancy.

Contributions of each author

Author 1 - Noor Chadha - Author 1 is conducting the systematic review and drafting the manuscript.
Email: noorkchadha@gmail.com
Author 2 - Zara Siddiqui - Author 2 is conducting the systematic review and drafting the manuscript.
Email: zhsiddiqui96@gmail.com
Author 3 - Emily Rosenthal - The author is providing maternal fetal medicine expertise, contributing to the development of the selection criteria, and is editing the manuscript.
Email: emily.rosenthal@bmc.org
Author 4 - Naima Joseph - The author is providing maternal fetal medicine expertise, as well as reading, providing feedback, and approving the final manuscript.
Author 5 - Erica Holland - The author is providing maternal fetal medicine expertise, as well as reading, providing feedback, and approving the final manuscript.
Author 6 - Jamel Ortoleva - The author is providing anesthesia expertise, as well as reading, providing feedback, and approving the final manuscript.
Author 7 - Amrit Misra - The author is providing cardiology expertise, as well as reading, providing feedback, and approving the final manuscript.
Author 8 - Anuka Das - The author is providing family medicine expertise, as well as reading, providing feedback, and approving the final manuscript.

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