

# WORLD CONGRESS ON RHEUMATIC HEART DISEASE

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**Title:** MITRACLIP/TRICLIP VERSUS PASCAL IMPLANTATION IN PATIENTS UNDERGOING TRANSCATHETER TRICUSPID VALVE REPLACEMENT (TTVR) FOR TRICUSPID REGURGITATION (TR). WHICH SYSTEM IS PREFERRED? A POOLED META-ANALYSIS OF 2178 PATIENTS

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**Background & Aims:** In patients undergoing transcatheter tricuspid valve replacement (TTVR) for tricuspid regurgitation (TR), both MitraClip/TriClip and PASCAL implantation have emerged as viable treatment options. The MitraClip/TriClip system involves the percutaneous repair of the tricuspid valve using a clip device, while PASCAL implantation utilizes a transvenous, direct annuloplasty ring. Both techniques aim to reduce tricuspid regurgitation and improve patient outcomes, offering alternative approaches in the field of TTVR. In this study, we aim to compare their procedural success rates, reduction in TR severity, functional improvements, the occurrence of adverse events, and long-term outcomes in TTVR.

**Methods:** Five databases were searched until 4 May 2023. Original studies were only included and critically appraised using an adapted version of the Newcastle-Ottawa scale (NOS) for observational cohort studies and the Cochrane risk of bias (ROB) tool for randomised controlled trials. The risk ratio (RR) and mean difference (MD) with their corresponding 95% confidence interval (95% CI). The analysis was performed via R software version 4.2.2 (2022-10-31) and R Studio version 2022.07.2 (2009-2022) RStudio, Inc.).

**Results:** The database search identified 2239 studies, and 21 studies were finally included with 2178 patients who underwent TTVR either through MitraClip, TriClip or PASCAL. The overall ROB was moderate to high throughout the included studies. The meta-analysis results showed that TriClip has a superior efficacy in reducing vena contracta ( $P < 0.01$ ) compared to the other two valves: [MitraClip: (MD = -4.04; 95%CI -5.03, -3.05);, Pascal: (MD = -6.56; 95%CI -7.76, -5.35), and TriClip: (MD = -7.4; 95%CI -9.24, -5.56)]. Regarding the reduction in the tricuspid annular plane systolic excursion (TAPSE), the analysis favored MitraClip over both other valve systems ( $P < 0.01$ ) [MitraClip: (MD = -1.21; 95%CI -1.80, -0.62), Pascal: (MD = -0.19; 95%CI -0.36, -0.02), and TriClip: (MD = 0.5; 95%CI -0.44, 1.44)]. No significant difference was found regarding the procedural success rates which was high with all three systems. Notably, PASCAL was associated with a significantly longer fluoroscopy time ( $P < 0.01$ ) [MitraClip: (MD = 18.80; 95%CI 12.09, 25.51), Pascal: (MD = 37.35; 95%CI 31.39, 43.31), and TriClip: (MD = 29.60; 95%CI 26.15, 33.05)].

**Conclusions:** TriClip demonstrated superior efficacy in reducing vena contracta compared to the other two valves. MitraClip exhibited greater effectiveness in reducing TAPSE. The procedural success rates were high for all three valves, but PASCAL was associated with a significantly longer fluoroscopy time. There were no notable distinctions in effective regurgitant orifice area (EROA) and tricuspid regurgitant volume between the three valves. There were no significant variations in mortality, stroke rates, major bleeding, hospital stay, or procedural time among the different valves.