



Validation of TRI-SCORE in Endoscopic minimal invasive isolated tricuspid valve surgery (ITVS)

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Objective:

TRI-SCORE is a new risk score for predicting mortality after isolated tricuspid valve surgery (ITVS). This score has not been validated in minimal invasive Endoscopic cardiac surgery. We used the novel TRI-score to predict the outcomes of minimal invasive cardiac surgery for isolated tricuspid valve disease including redo cases in our practice.

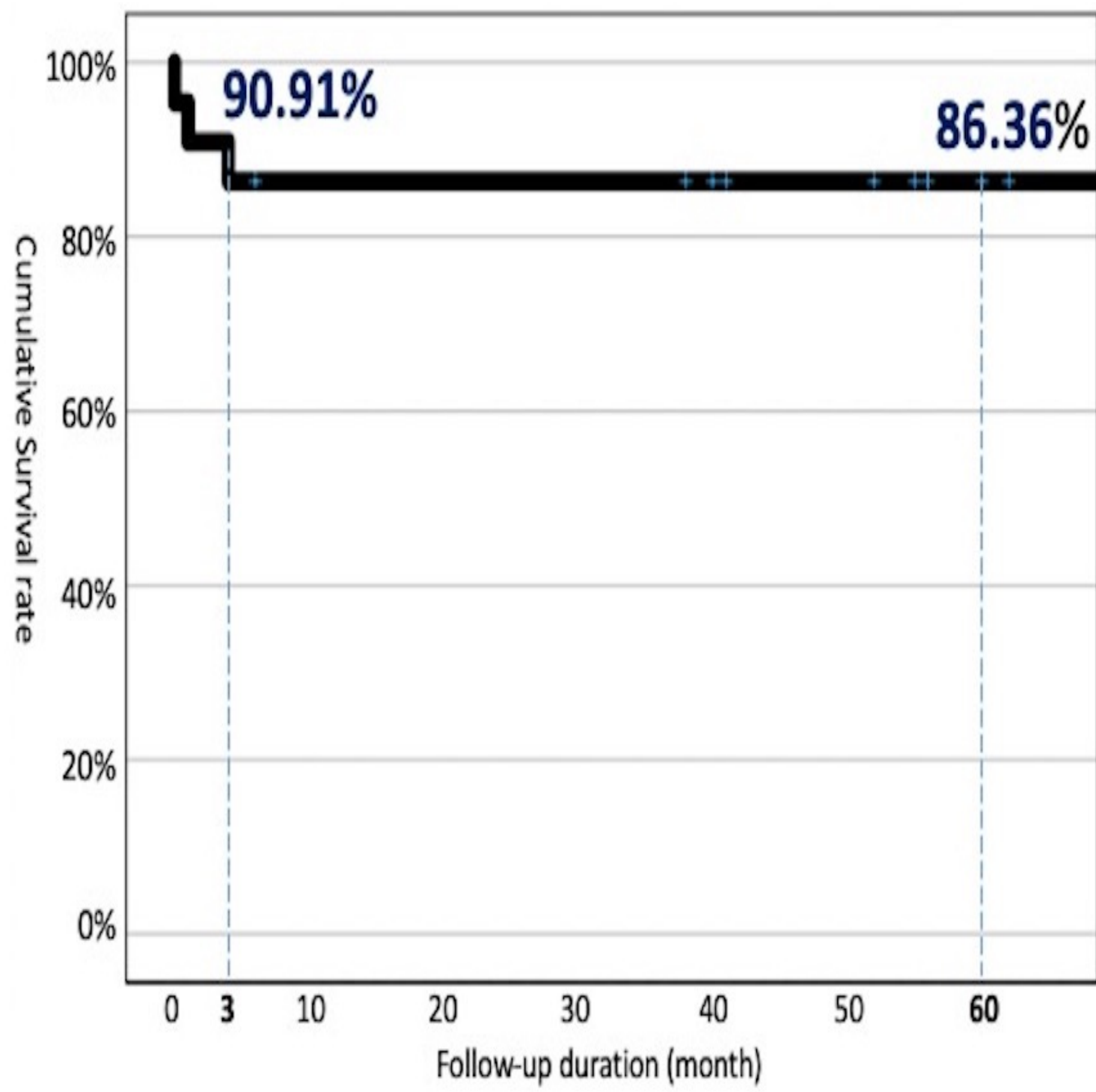
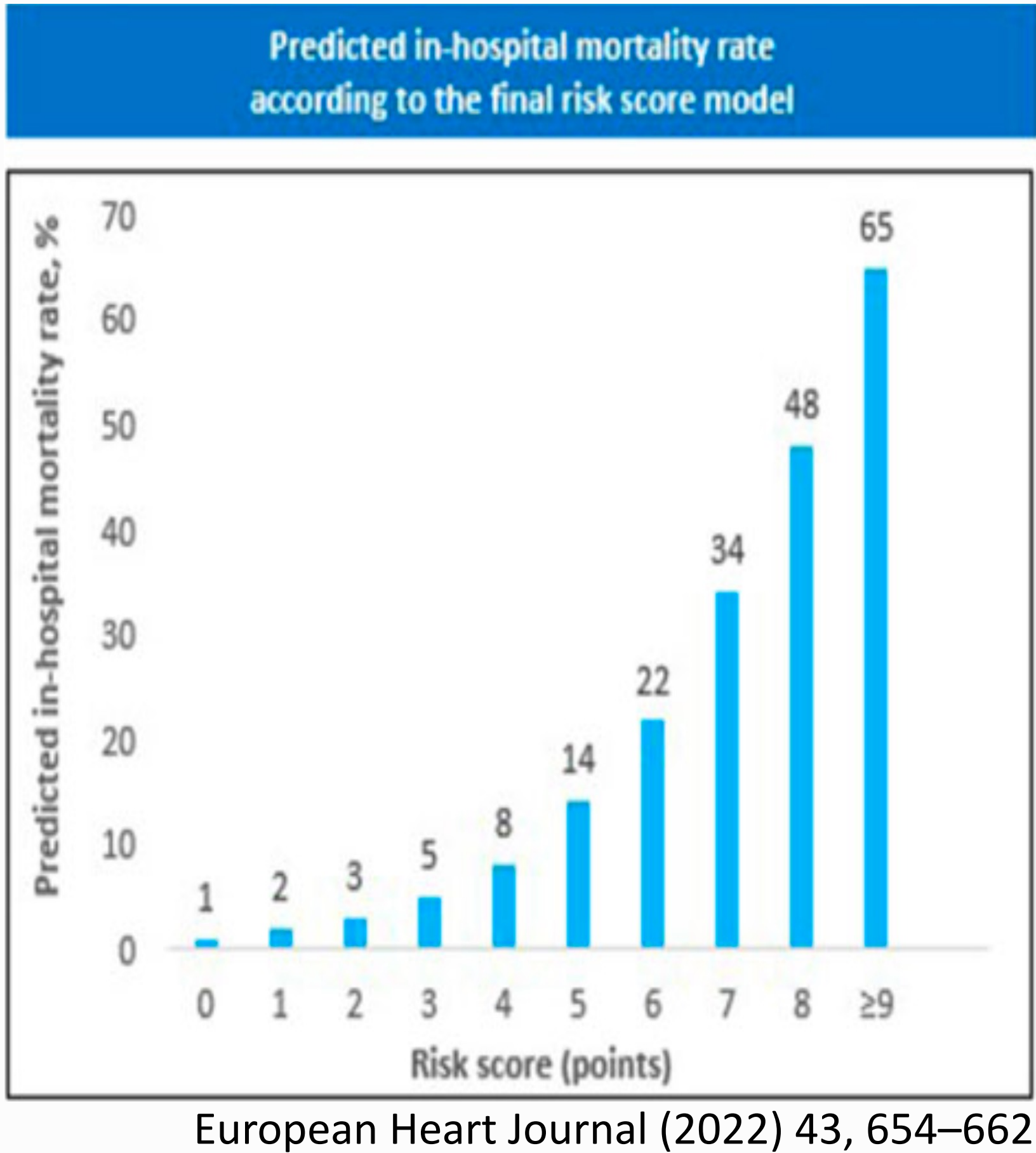
Methods:

In this retrospective study, we have collected data from patients who had isolated tricuspid valve surgery from **2008 to 2023 April** in our center. We excluded patients who underwent sternotomy or had combined procedures. In primary analysis, the short-term outcomes included intraoperative bypass times, blood loss volume, postoperative complications, durations of hospital stay and in-hospital mortality. Long-term survival after surgery was also collected.

Results:

A total of **24 patients** had minimal invasive endoscopic (ITVS) surgery to treat isolated tricuspid valvular disease. **The average point of TRI-SCORE is 3.13 ±2.13 and the average Logistic EuroSCORE is 12.88 ± 11.26%.** The average age of patients is 66.5±14.22 years old, 14 patients (58.33%) have previous cardiac surgeries. Intraoperative data reveals the average cross-clamping time is 65.4±46.5 mins and bypass time is 137.29±46.77 mins. Blood loss volume in average is 397±398ml. One patient needed a new permanent pacemaker during hospitalization. The average duration of ICU-stay is 4.46±9.84 days and post-operative stay is 12.58 ±9.85 days. **In-hospital mortality rate** of patients is **8.33% (2 patients)**. The average follow-up duration is 70.27± 49.91 months. **The 3-month and 5-year survival rate is 90.91% and 86.36%.**

Baseline characteristics		
Age	66.5	±14.22
Male	9	37.5%
Height	167.79	±11.40
Weight	72.71	±16.55
Body mass index	25.69	±3.90
Logistic EUROScore (%)	12.88	±11.26
TRI-SCORE (point)	3.13	±2.13
Age >=70	12	50.00%
NYHA III/IV	13	54.17%
Right heart failure signs	14	58.33%
Daily furosemide dose > 125mg	3	12.50%
GFR < 30 ml/min	0	0.00%
Total bilirubin >1.2 mg/dL	5	20.83%
LVEF <60%	5	20.83%
Mod/Severe RV dysfunction	1	4.17%
Operative data		
Cumulative bypass time	137.29	±46.77
Cumulative cross clamp time	65.38	±46.49
Non-cardioplegic myocardial protection	5	20.83%
Blood Loss volume (ml)	397.17	±398.20
Hospital stay and Survival		
ICU Stay	4.46	±9.84
Postoperative stay in days	12.58	±9.85
Total stay in days	16.67	±19.07
In-hospital mortality	2	8.33%
Follow up duration (M)	70.27	±49.91
3-month survival	20	90.91%
5-year survival	19	86.36%



Logistic Euroscore	Patient numbers	Mortality	Mortality	TRI-SCORE	Patient numbers
≤ 5%	5	1	0	≤ 3	12
5 ~ 22%	16	1	2	4 ~ 6	11
> 22%	3	0	0	> 6	1

Conclusions:

Within our case series, **the TRI-SCORE is better than Logistic EuroSCORE at predicting the risk of mortality in minimally invasive endoscopic isolated tricuspid valve surgery.** Both patients with in-hospital mortality had a TRI-SCORE above 3 points. We are now using TRI-SCORE to consent patients for ITVS as it is very good at identifying the patients at low risk following ITVS. We would recommend early surgery in patients with low TRI-SCORE and look forward to validating this in a multicenter cohort soon.