



The Role And Impact Of Japanese Nurse Practitioners As Surgical Assistants In Robotic-assisted Coronary Artery Bypass Graft Surgery

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i Background

Workload Crisis

- Reducing surgeon workload is a critical priority in Japan. Task-shifting to **Japanese Nurse Practitioners (JNPs)** is a key strategy for workforce reform.
- The role of JNPs has not yet been fully established in Japan.

Robot assisted CABG

- RA-CABG** is a minimally invasive strategy that requires highly coordinated bedside assistance to ensure procedural safety and efficiency.
- At our institution, the internal thoracic artery is harvested robotically, followed by direct-vision coronary anastomosis through a 3–3.5 cm thoracotomy, making the procedure technically demanding.

🎯 Objectives

Surgical assistance and perioperative management by JNP

- Evaluate whether JNP involvement as primary assistants affects **surgical efficiency** and **clinical outcomes** in RA-CABG compared to physician as bedside assistants.

🔧 Methods

- **Design:** Retrospective cohort study (n=199).
- **Procedure:** Single-vessel RA-CABG (LITA – LAD)
- **Term :** Surgical Outcomes Analysis 2020-2023.
- **System:** da Vinci Xi Surgical System
- **Surgical Assistant:** Responsibilities included robotic arm exchange, insufflation management, smoke evacuation, and assistance during coronary anastomosis.
- **Postoperative care:** postoperative management in collaboration with the attending physician.

Physicians Group n=108

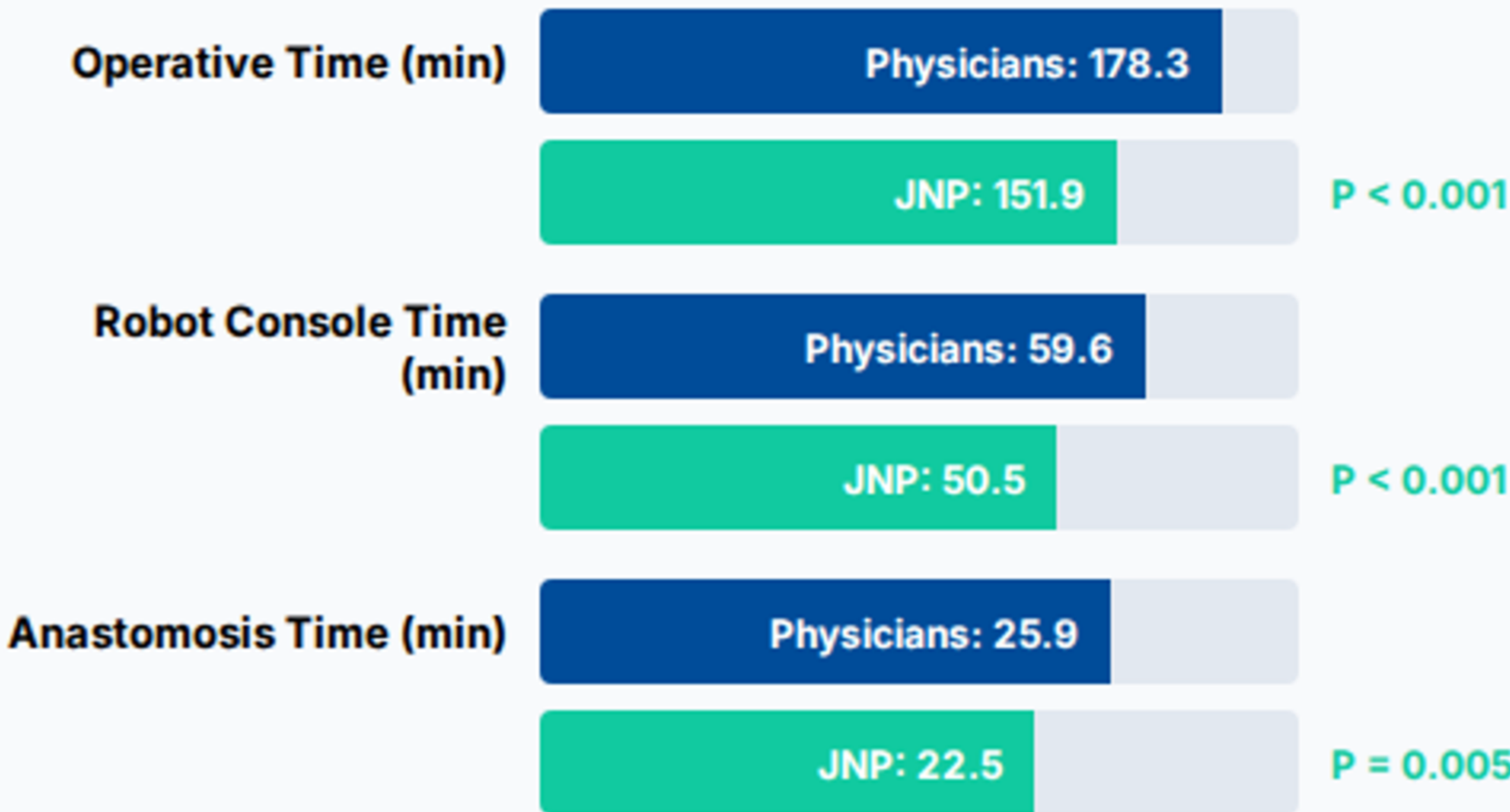
Assistance by 6 rotating physicians
(3 attending surgeons, 3 fellows)

JNP Group n=91

Assistance by 1 single dedicated JNP
for all cases



Key Results: Surgical Efficiency



Clinical Outcomes

Outcome Metric	Physicians (n=108)	JNP (n=91)	p-value
ICU Stay (days)	1.20 ± 0.93	1.20 ± 0.98	0.889
Postoperative Stay (days)	4.64 ± 1.93	4.35 ± 1.62	0.091
30-Day Mortality	0 (0%)	0 (0%)	—
Short term occlusion	0 (0%)	0 (0%)	—
Conversion	0 (0%)	0 (0%)	—
Mis-anastomosis	1(0.9%)	1(1%)	>0.999

No significant intergroup differences were observed in baseline patient characteristics.



Discussion : Why dedicated JNP Assistance may improve efficiency ?



Surgeon's Learning Curve

A dedicated JNP eliminated rotation friction, serving as a structural enabler for the primary surgeon to maximize their learning curve.



Nonverbal synchronization

Long-term collaborative experience fosters "nonverbal understanding" between the console surgeon and bedside assistant, minimizing technical lag time.



Seamless care

NPs optimize care from pre-op design through ICU management to discharge, permanent JNP drastically understanding between the prevent gaps common in shifting medical staff rotations.



CONCLUSIONS

Dedicated specialized bedside assistants may improve robotic surgical workflow

Dedicated highly specialized bedside assistants may improve surgical efficiency in RA-CABG without compromising clinical outcomes.

References

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