Quality of Life After Minimally Invasive Versus Sternotomy Valve Surgery: A Contemporary Evidence Synthesis

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BACKGROUND

Valvular heart disease remains a major global health burden, particularly in ageing populations. Surgical valve repair or replacement is the gold standard for severe lesions when medical therapy is insufficient.

Minimally invasive valve surgery (MIVS) — right anterior minithoracotomy, partial upper sternotomy and robotic-assisted approaches — increasingly substitutes for median sternotomy (MS), aiming to reduce surgical trauma while preserving safety.

Quality of life (QoL), spanning physical, emotional and social domains, has emerged as a key endpoint in contemporary cardiac surgery, yet evidence comparing MIVS vs MS is heterogeneous.

Aim: synthesise contemporary (2020–2025) evidence on QoL outcomes after MIVS versus MS in adult valve surgery.

METHODS

- Structured contemporary evidence synthesis (2020–2025)
- Databases: PubMed, Scopus, Web of Science, Wiley Online Library
- Period: January 2020 – September 2025
- Adults (≥18 y) undergoing aortic or mitral valve surgery via MIVS or MS
- Validated QoL instruments: SF-36, EQ-5D, MLHFQ, KCCQ
- Effect estimates summarised narratively across QoL domains
- Quality assessment: Cochrane RoB 2 (RCTs), Newcastle–Ottawa (cohorts); GRADE for evidence certainty

STUDY YIELD

56	10,000+	12,539	3 mo–10 y
STUDIES	PATIENTS	RECORDS ID	FOLLOW-UP

PSYCHOSOCIAL OUTCOMES — PREVALENCE BY APPROACH

Domain	MIVS	MS
Anxiety	17%	33%
Depression	18%	27%
Body image dissatisfaction	10%	27%
Return to work ≤ 6 months	80%	62%
Moderate/severe fatigue	18%	32%

KEY FINDINGS

- MIVS confers a clinically meaningful early QoL advantage across physical, psychological and social domains
- Effect strongest for physical recovery, body image and early reintegration to work and daily life
- Differences narrow but persist beyond 12 months and at ≥ 5-year follow-up
- Postoperative complications and engagement with rehabilitation influence long-term QoL more than surgical technique alone
- Structured cardiac rehabilitation with psychological support reduces anxiety and depression by up to 30% at 12 months

CERTAINTY OF EVIDENCE — GRADE

Short-term physical QoL	HIGH
Psychological QoL	MODERATE
Social QoL	MODERATE
Functional QoL	MOD–LOW
Long-term (≥ 5 y) QoL	LOW

LIMITATIONS

- Heterogeneous QoL instruments and follow-up durations
- Predominance of high-income country data
- English-language only; Embase not searched
- Few studies extended beyond 5 years

CONCLUSIONS

- MIVS delivers meaningful early benefits in physical function, body image and social reintegration
- Sustained advantage depends on integrated rehabilitation and psychosocial support
- Multidisciplinary, patient-centred care should accompany surgical refinement to translate technical gains into durable QoL improvement

SELECTED REFERENCES

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