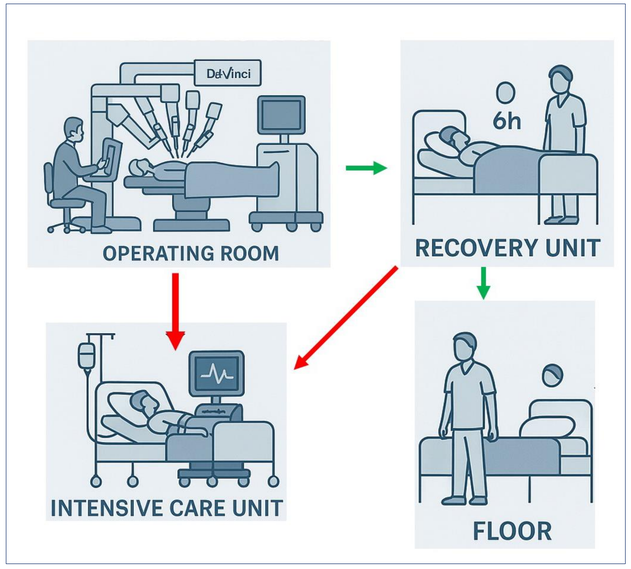
Feasibility and safety of an ultra-fast-track robotic program

E Sandoval, MJ Arguis, J Prats, M Cazalis, A Carramiñana, D Pereda
Hospital Clinic, Barcelona. University of Barcelona.

An ultra-fast-track (UFT) program consists in immediate extubation in the operating room (OR), transfer to the recovery unit and direct transfer to the ward without intensive care unit (ICU) admission. We sought to investigate its feasibility and safety.

The robotic UFT program started in February 2023. All cases except for aortic valve replacement were considered potential UFT candidates.



Patients were divided in 2 according to their UFT status (NO, n=124; YES, n=83). Data are presented as percentages and as median (IQR); comparisons between groups were made using the Chi-square test, the Fisher exact test or the Mann-Whitney U test, as appropriate.

	No Fast-Track (n=124)	Fast-track (n=83)	p-value
Age (years)	64.1 (51.8-73.4)	57.6 (47.4-65.4)	0.45
Gender (%male)	72 (58)	50 (60.2)	0.76
Weight (kg)	73.5 (62-80)	72 (59-81.5)	0.40
Height (cm)	168.5 (160.8-174.8)	168 (162.5-176.5)	0.55
Hypertension (%)	50 (40.3)	26 (31.3)	0.19
Dyslipidemia (%)	48 (38.7)	13 (15.7)	0.0003
Diabetes mellitus (%)	9 (7.2)	3 (3.6)	0.37
Prior CVA (%)	14 (11.3)	1 (1.2)	0.005
Prior ischemic cardiomyopathy (%)	12 (9.7)	6 (7.2)	0.62
Creatinine (md/dl)	0.92 (0.75-1.14)	0.88 (0.75-1)	0.89
Preoperative AF (%)	28 (22.6)	10 (12)	0.06
Preop LVEF (%)	60 (55-65)	60 (60-65)	0.16
EuroSCORE II	0.97 (0.7-1.49)	0.75 (0.6-1.04)	0.36
NYHA >III	32 (25.8)	8 (9.6)	0.003
Type of surgery:			
- Mitral	- 90 (72.6)	- 66 (79.5)	0.25
- Tricuspid	- 2 (1.6)	- 2 (2.4)	1
- ASD	- 11(8.9)	- 7 (8.5)	0.91
- Tumor	- 10 (8)	- 4 (4.8)	0.41
- Coronary	- 8 (6.5)	- 3 (3.6)	0.53
- Other	- 3 (2.4)	- 1 (1.2)	0.65
Etiology mitral disease (%)			
- Degenerative	- 76 (84.4)	- 62 (93.9)	0.079
- Rheumatic	- 10 (11.1)	- 4 (6.1)	
- Endocarditis	- 3 (3.3)		
- Secondary	- 1 (1.2)		
Type of prolapse (%)			
- Anterior	- 10 (12.5)	- 8 (12.2)	0.94
- Posterior	- 60 (75)	- 42 (63.6)	0.14
- Bileaflet	- 10 (12.5)	- 16 (24.2)	0.06
CBP time (min)	81 (69-103.25)	81 (68.8-95.5)	0.58
Ischemic time (min)	58 (46.75-73)	59 (45.5-68.5)	0.79
Total OR time (min)	180 (149-215.5)	170 (140.5-198)	0.08

	No Fast-Track (n=124)	Fast-track (n=83)	p-value
Extubation in the OR (%)	78 (62.9)	79 (95.2)	<0.00001
Mechanical ventilation (h)	0 (0-5)	0 (0-0)	<0.00001
Failed Fast-Track		11 (13.3)	n/a
Drainage in 24h	170 (105-350)	92.5 (60-168.5)	<0.00001
Reexploration (%)	2 (1.6)	3 (3.6)	0.39
Second clamp (%)	8 (6.4)	8 (9.6)	0.43
Transfusion (%)	18 (14.5)	9 (10.9)	0.53
Acute kidney injury (%)	4 (3.2)	1 (1.2)	0.65
Postoperative CVA (%)	1 (0.8)	0	n/a
Postoperative AF (%)	13 (10.5)	5 (6)	0.32
ICU stay (days)	1 (1-3)	0 (0-0.75)	<0.00001
Hospital stay (days)	4 (3-6)	3 (2-4)	0.0001
Survival (%)	122 (98.4)	83 (100)	0.51
MR at discharge <Mild (%)	79 (96.3)	64 (100)	0.25
ER visit/ Readmission (%)	36 (29)	26 (31.3)	0.78

Failed Fast-Track (n=11)
- Bleeding (n=3)
- Seizures (n=1)
- Logistics (n=2)
- Rhythm disturbances (n=1)
- Need low dose vasopressors (n=4)

Despite its limitations, our experience suggests that an ultra-fast-track protocol is safe and feasible within an established robotic cardiac surgery program, yielding a further 25% reduction in median length of stay and complete avoidance of ICU admission, without discernible safety concerns. Further studies are needed to investigate the economical impact of these results.