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Cost-Effectiveness and Outcomes of Robotic Surgery in Abdominal Wall Repair: First-Year Analysis

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AIM

This study assesses the outcomes, costs, and learning curve of a robotic surgery program implemented in an Abdominal Wall Surgery Unit.

METHODS

A prospective observational study (April 2023–April 2024) analyzed outcomes of open, laparoscopic, and robotic abdominal wall surgeries performed by three specialized surgeons. Data included hernia characteristics, 30-day and six-month outcomes, and costs (direct and indirect), evaluated using the QTI estimation tool. A subgroup analysis focused on incisional hernias.

RESULTS

Abdominal Wall Surgery Unit Hernias repairs 2023 n=185	OPEN n=80	MIS		
		LAPAROSCOPY; n=84	ROBOT-ASSISTED; n=21	P-Value
COMPLEX n(%)	37(46,3)	22(26,9)	11(52,4)	**0,01**
ASSOCIATED PROCEDURE ; n(%)	5(6,2)	18(21,3)	3(14,2)	**0,003**
LENGTH OF STAY (days; mean(SD))	3,79 (10)	2,05(8)	2,8(8)	0,09
Complications; n(%)	22(27,5)	8(9,5)	6(23,8)	**0,01**
Clavien I-II n(%)	18(23,7)	7(8,3)	5(20%)	0,64
Clavien III-V n(%)	3(3,7)	1(1.6)	1(5)	0,47
SSO (Surgical Site Ocurrences)	15(18,8)	5(6%)	5(20%)	**0,02**
Seroma	9(11,3)	5(6)	5(20%)	**0,05**
Haematoma	6(7,5)	0	0	**0,01**
SSI (Surgical Site Infection)	0	0	0	-
One day Surgery n(%)	21(26,3)	37(44)	5(23,8)	**0,03**
Readmission n(%)	3(3,8)	2(2,4)	1(5)	0,81
Reoperation n(%)	0	0	0	-
Recurrence n(%)	2(2,5)	1(1,2)	0	0,66
Chronic pain n(%)	2(2,5)	1(1,2)	0	0,66

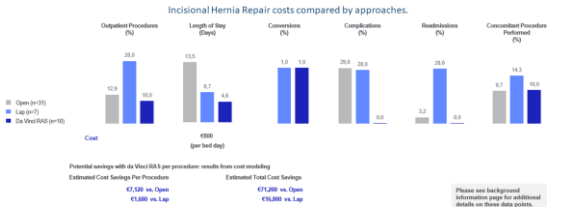

Table 1 AWS global surgeies outcomes and estimated costs compared by approach

Abdominal Wall Surgery Unit Incisional Hernias repairs 2023 n= 48	OPEN n=31	MIS		
		LAPAROSCOPY; n=7	ROBOT-ASSISTED;n=10	P-Value
COMPLEX n(%)	18(58)	5(71)	6(60)	0,68
ASSOCIATED PROCEDURE ; n(%)	3(9,6)	1(14)	1(10)	0,68
LENGTH OF STAY (days; mean(SD))	13,5(30)	6,7(14)	4,6(6,5)	0,37
Complications; n(%)	9(29)	2(28,6)	0	0,15
Clavien I-II n(%)	7(22,6)	1(8,3)	0	0,51
Clavien III-V n(%)	2(6,4)	1(8,3)	0*	0,51
SSO (Surgical Site Ocurrences)	7(22,6)	1(8,3)	0	0,64
Seroma	5(10,1)	1(14,3)	0	0,89
Haematoma	2(6,5)	0	0	0,56
SSI (Surgical Site Infection)	0	0	0	-
One day Surgery n(%)	4(12,9)	2(20,6)	1(10)	0,512
Readmission n(%)	1(2,3)	2(28)	0	**0,03**
Reoperation n(%)	0	0	0	-
Recurrence n(%)	1(3,2)	0	0	0,62
Chronic pain n(%)	0	0	0	-

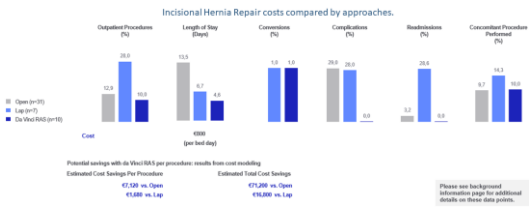

Table 13 incisional hernia surgeies outcomes and estimated costs compared by approach

CONCLUSIONS

Robotic surgery is cost-effective compared to open surgery and advantageous for incisional hernia repair, offering fewer complications and lower costs. Its cost-effectiveness compared to laparoscopic surgery is less definitive but supports its use for complex procedures through minimally invasive methods.