Analysis Report

This report is structured as follows.

Contents

Introduction

This report presents the results of a statistical comparison between a preoperative assessment and a 5-year follow-up. The measures of a 1-year follow-up were not considered due to the significant reduction of the sample size due to missing data. Initially, the data needed to be transformed to long format to be ready to input on a paired-samples analysis.

Sample Characteristics

In the presented table, demographic, clinical characteristics, and post-operative outcomes of a sample are summarized. The sample comprises 77 participants, divided almost evenly by gender, with females representing 53.2% (n = 41) and males 46.8% (n = 36). The majority of the sample does not have diabetes, with 79.2% (n = 61) reporting no condition and 20.8% (n = 16) confirming the condition. Smoking status indicates a predominantly non-smoking sample, where 96.1% (n = 74) are non-smokers, and only a minimal portion of the sample reports smoking, divided into 1.3% (n = 1) and 2.6% (n = 2) without clear differentiation between these groups.

Category	Level	N	%
Gender	Female	41	53.2
	Male	36	46.8
Diabetes	N	61	79.2
	Y	16	20.8
Smoker	N	74	96.1
	Y	1	1.3
	Y	2	2.6
Anes_Type	Gen	65	85.5
	Regional	11	14.5
deceased	N	71	92.2
	Y	6	7.8
Complications	N	74	96.1
	Y	3	3.9
Revisions	N	72	93.5
	Y	5	6.5
dislocations	N	77	100.0
infection	N	76	98.7
	Y	1	1.3
LOS_Days	1	67	87.0
	2	6	7.8
	3	4	5.2

Regarding anesthesia type for the surgical procedure, the majority underwent general anesthesia, accounting for 85.5% (n = 65), while 14.5% (n = 11) received regional anesthesia. In terms of

mortality, 92.2% (n = 71) of the sample were alive at the end of the study period, with a 7.8% (n = 6) mortality rate. Complication rates were low, with 96.1% (n = 74) of participants experiencing no complications and 3.9% (n = 3) reporting complications. Similarly, the rate of surgical revisions was low, with 93.5% (n = 72) not requiring any revision and 6.5% (n = 5) undergoing at least one revision. There were no reported dislocations, indicating a 100% (n = 77) rate of stability in the sample. Infections were rare, with 98.7% (n = 76) of the sample not experiencing any post-operative infections and only 1.3% (n = 1) reporting such an issue. Length of stay (LOS) post-surgery was predominantly one day for 87.0% (n = 67) of the participants, with a smaller proportion staying for two days (7.8%, n = 6) and three days (5.2%, n = 4).

Paired-Samples T-test

The table presents the results of paired samples t-tests conducted to compare preoperative and 5-year post-operative measures across several outcomes.

Measure	N	Total		Preoperative		5 years		% Change	t	p
		M	SD	M	SD	M	SD			
VAS	98	4.929	3.695	7.000	2.677	1.514	2.364	-69.3%	6.286	0.000
ASES	97	47.041	35.768	23.917	20.108	84.541	20.310	79.7%	-10.775	0.000
forward_elevation	89	115.843	24.253	111.688	22.965	142.500	12.881	23.0%	-2.785	0.018
external_rotation	89	21.461	9.892	20.714	9.958	26.250	8.292	22.3%	-1.295	0.222
rotation_90_abduction	88	61.420	21.695	58.961	21.526	78.636	14.158	28.0%	-2.028	0.070

The statements below present the results for each measurement.

VAS: A significant decrease in pain was observed from the preoperative mean score of 4.929 (SD = 3.695) to a 5-year post-operative mean score of 7.000 (SD = 2.677), indicating a -69.3% change. This result was statistically significant (t = 6.286, p < .001), suggesting a substantial improvement in pain levels post-surgery.

ASES: The ASES scores, assessing overall shoulder function, showed a significant improvement from a preoperative mean of 47.041 (SD = 35.768) to a 5-year mean of 23.917 (SD = 20.108), translating to a 79.7% improvement. The statistical test yielded a t-value of -10.775 with p < .001, indicating a highly significant increase in shoulder function.

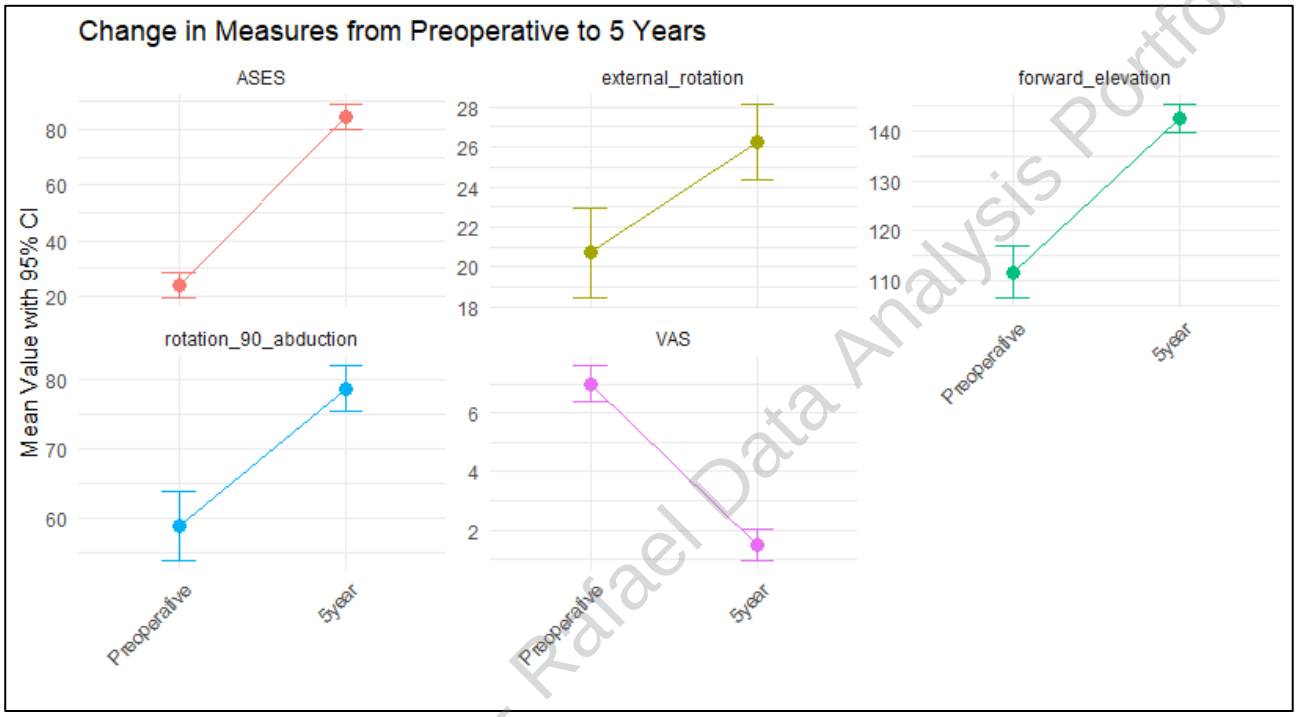
Forward Elevation: There was a statistically significant improvement of 23.0% in forward elevation, from a preoperative mean of 115.843 (SD = 24.253) to a 5-year mean of 142.500 (SD = 12.881) (t = -2.785, p = .018). This indicates an enhancement in the range of motion.

External Rotation: The change in external rotation was 22.3%, from a preoperative mean of 21.461 (SD = 9.892) to a 5-year mean of 26.250 (SD = 8.292), although this improvement was not statistically

significant (t = -1.295, p = .222), suggesting variability in recovery or the surgical impact on this specific motion.

Rotation at 90 Degrees Abduction: This measure saw a 28.0% improvement, from a preoperative mean of 61.420 (SD = 21.695) to a 5-year mean of 78.636 (SD = 14.158), with a t-value of -2.028 and a p-value of .070. The change approached statistical significance, although it did not meet the conventional threshold for significance.

The figure below illustrates the mean differences, with 95% confidence intervals.



In conclusion, this report has detailed the significant changes observed in patients from preoperative assessments to a 5-year follow-up, highlighting improvements across various measures of pain and shoulder function. Notably, the Visual Analogue Scale (VAS) and American Shoulder and Elbow Surgeons (ASES) score demonstrated substantial improvements, with statistically significant changes indicating a decrease in pain levels and an increase in shoulder function, respectively. These results are particularly compelling, given the rigorous statistical validation reflected in the p-values (<.001) for both measures. The findings on forward elevation also revealed a statistically significant improvement, further corroborating the positive outcomes associated with the surgical intervention.