

Preoperative Botulinum Toxin A In Abdominal Wall Reconstruction: Five-year Propensity-matched Outcomes In >5,000 Patients

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Background/Introduction

- Preoperative botulinum toxin A (BTA) is used in abdominal wall reconstruction (AWR) to facilitate fascial closure.
- Long-term safety and outcomes remain unclear.

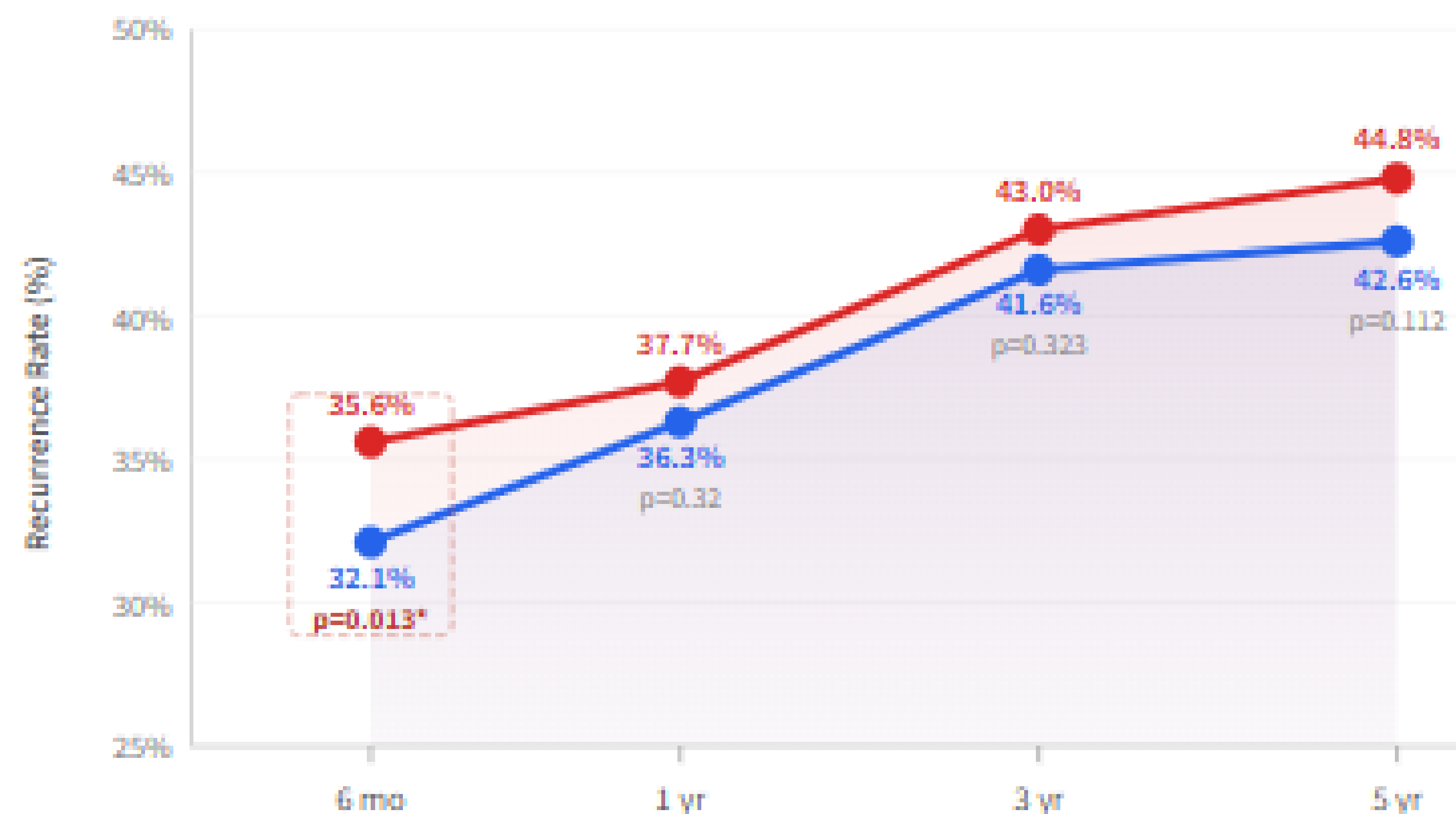
Methods

- Patients undergoing AWR with or without BTA were identified in the TriNetX US Collaborative Network.
- Propensity score matching was performed at each time point, yielding 1:1 balanced cohorts for all timepoints (6 months: 2,255 patients per cohort; 1 year: 2,508 patients per cohort; 3 years: 2,279 patients per cohort; 5 years: 2,432 patients per cohort).
- Outcomes assessed at every timepoint included hernia recurrence, reoperation, wound disruption, seroma, hematoma, surgical site infection (SSI), and overall infections.

Results

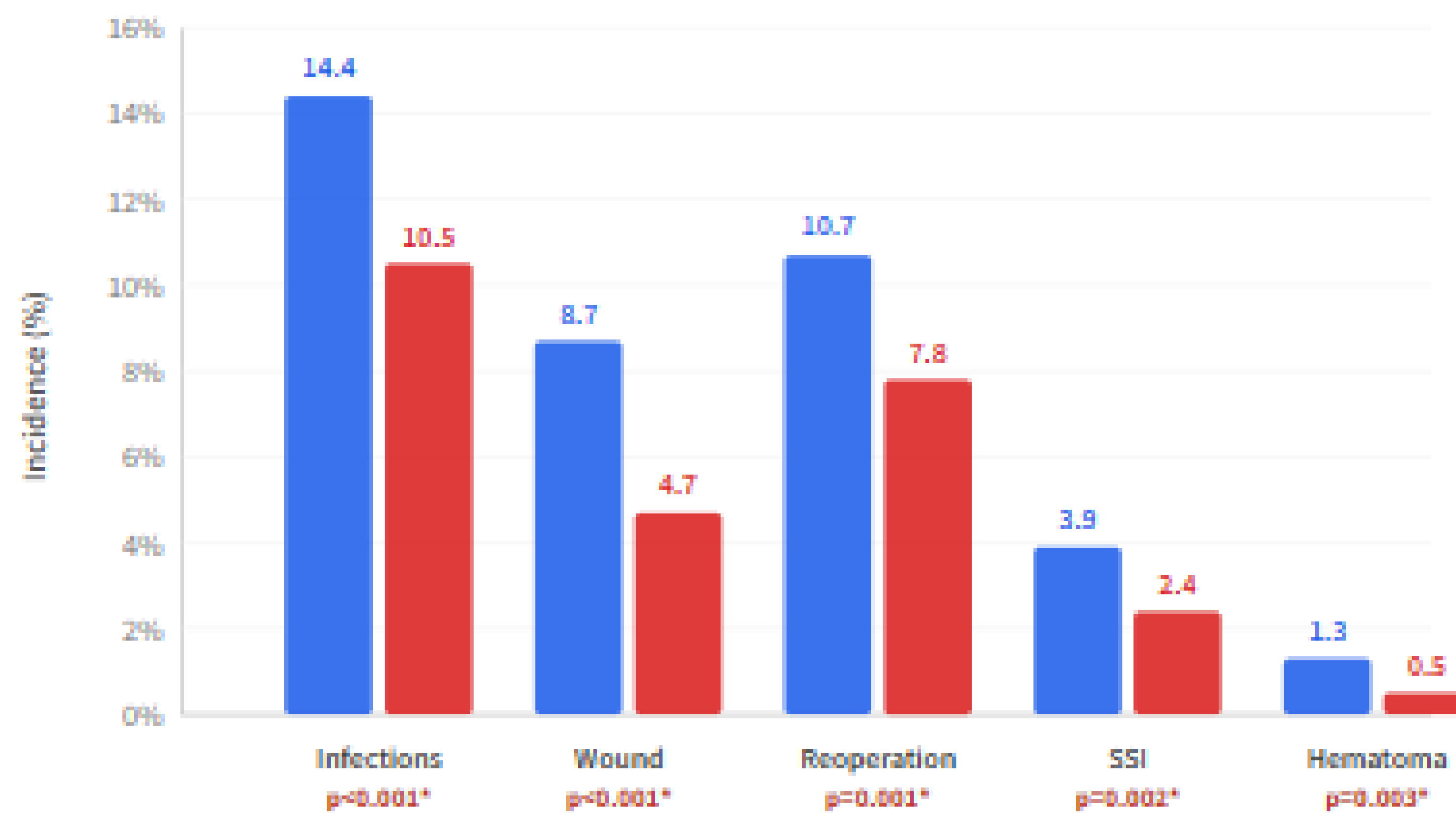
A Hernia Recurrence Over Time

Recurrence rates converged after an early BTX advantage at 6 months



B Postoperative Complications at 6 Months

BTX cohort demonstrated significantly higher complication rates (all p<0.05)



■ BTX + AWR ■ No BTX + AWR * Statistically significant (p < 0.05)

Propensity score-matched cohorts (1:1). Cohort sizes: n ≈ 2,255–2,508 per group at each time point.

AWR = abdominal wall reconstruction; BTX = botulinum toxin; SSI = surgical site infection.

- At 6 months, BTA was associated with lower hernia recurrence (32.1% vs. 35.6%; $p=0.013$) but higher rates of reoperation (10.7% vs. 7.8%; $p=0.001$), wound disruption (8.7% vs. 4.7%; $p<0.0001$), hematoma (1.3% vs. 0.5%; $p=0.003$), SSI (3.9% vs. 2.4%; $p=0.002$), and overall infections (14.4% vs. 10.5%; $p<0.0001$).
- Similar patterns persisted at 1, 3, and 5 years, with recurrence differences becoming nonsignificant by year 1 and remaining insignificant till the 5-year timepoint (42.6% vs. 44.8%; $p=0.112$).
- At 5 years, reoperation (20.3% vs. 13.4%) remained significantly higher with BTA ($p<0.0001$).
- There was no statistically significant difference in risk of seroma across all timepoints.

Results

Outcome	Follow-up	Botulinum AWR (%)	No Botulinum AWR (%)	p-value (Difference)
All Infections	6 Months	14.40%	10.50%	<0.001
	1 Year	17.60%	11.90%	<0.001
	3 Years	22.60%	15.30%	<0.001
	5 Years	25.10%	16.80%	<0.001
Wound Disruption	6 Months	8.70%	4.70%	<0.001
	1 Year	9.40%	5.50%	<0.001
	3 Years	10.80%	6.60%	<0.001
	5 Years	11.30%	5.00%	<0.001
Seroma	6 Months	2.10%	1.70%	0.324
	1 Year	2.20%	1.80%	0.312
	3 Years	2.60%	1.20%	0.001
	5 Years	2.80%	1.70%	0.009
Hematoma	6 Months	1.30%	0.50%	0.003
	1 Year	1.60%	0.90%	0.031
	3 Years	1.60%	0.70%	0.002
	5 Years	1.70%	1.00%	0.047
SSI	6 Months	3.90%	2.40%	0.002
	1 Year	4.60%	2.30%	<0.001
	3 Years	5.40%	3.30%	0.001
	5 Years	5.20%	2.40%	<0.001
Reoperation	6 Months	10.70%	7.80%	0.001
	1 Year	14.70%	9.10%	<0.001
	3 Years	17.60%	13.20%	<0.001
	5 Years	20.30%	13.40%	<0.001
Hernia Recurrence	6 Months	32.10%	35.60%	0.013
	1 Year	36.30%	37.70%	0.32
	3 Years	41.60%	43.00%	0.323
	5 Years	42.60%	44.80%	0.112

Table 1. Comparative outcomes of patients undergoing AWR with or without BTA

Conclusion

- Preoperative BTA is associated with reduced early hernia recurrence but increased complication and reoperation rates over time.
- Careful patient selection is required.