



Long-Term Outcomes of Robotic Transversus Abdominus Release at a Large Academic-Affiliated Community Hernia Center

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Introduction

The transversus abdominus release (TAR) procedure was first performed in 2006 after thorough cadaveric research to better understand the anatomy of the transversus abdominus muscle [1]. It is a posterior component separation technique, currently commonly used in abdominal wall reconstruction, that creates a large retro-muscular and pre-peritoneal space to allow for placement of a large prosthetic mesh to provide giant prosthetic reinforcement of the visceral sac. The first robotic TAR (rTAR) procedure was supposedly performed in December of 2013 at Greenville Memorial Hospital in Greenville, South Carolina [2]. After that, the first published literature on the rTAR were small cohorts from Bittner [3], Martin-Del-Campo et al. [4], and Gokal et al. [5] between 2018 and 2019. Since then, a few larger cohorts have been published and compared to open TAR, and one cohort looking at recurrence rate after 3 years (9.7%) was published in 2023 [6]. There is very little data following these patients further post-op than 3 years, and no data in the current literature about patient-reported quality-of-life outcomes. Our observational cohort study demonstrates one of the largest single-center, single-surgeon cohorts of rTAR patients with 1–8-year clinical follow-up, and likely the largest cohort with patient-reported quality-of-life outcomes.

Methods

The study was a retrospective observational cohort with a prospective follow-up portion. The retrospective portion of the study was conducted via electronic medical record review. Inclusion criteria were patients who underwent elective, robotic-assisted transversus abdominus release in conjunction with ventral hernia repair by a single surgeon, from May 2017 through June 2024, at ChristianaCare Hospital campuses in Newark, DE and Wilmington, DE. A quality-of-life survey was developed borrowing elements from the three most widely used and validated hernia surveys in the current literature; the Hernia-related Quality-of-Life Survey (HerQLes), Abdominal Hernia-Q (AHQ), and Carolinas Comfort Scale Questionnaire. This survey was graded on a Likert scale and consisted of ten statements to which patients responded to with a number.

Cohort Demographics

Overall (N=138)	Mean (SD)
Age	60.362 (11.607)
LOS (min)	2812.233 (1055.386)
Readmissions within 30 days	Nausea/Vomiting - 2 (1.44%) Cholecystitis - 1 (0.72%) Abdominal pain - 1 (0.72%) Pneumonia - 1 (0.72%) None - 133 (96.37%)
Defect Size (cm ²)	122.709 (53.655)
BMI	33.752 (5.476)
Mesh Area (cm ²)	850.891 (150.390)
Diabetes	No - 105 (76.1%) Yes - 33 (23.9%)

Questionnaire

1. My abdominal wall causes me physical pain.
2. My abdominal wall interferes with me performing activities of daily living (ie. Getting out of bed, bathing, getting dressed).
3. My abdominal wall makes me feel anxious.
4. I was satisfied by how my surgical team prepared me for the expectations of surgery and my recovery.
5. When I'm laying down, I have sensation of my mesh.
6. When I'm bending over, I have sensation of my mesh.
7. When sitting up, I have sensation of my mesh.
8. When exercising, I have sensation of my mesh.
9. When coughing or deep breathing, I have sensation of my mesh.
10. I feel as though I have had recurrence of my hernia.

Results

Results: Our 138-patient cohort showed an average operative time of 206 minutes, a single seroma (0.7%), 2 reoperations >30 days post-op for suture granulomas (1.4%), 5 readmissions within 30 days (3.6%), an average defect size of 122cm², and average mesh area of 850cm², average LOS of 2812 minutes (~46 hours). Only 69 patients were able to be reached for the prospective, survey portion of the study. The survey showed overall positive results in quality-of-life with 92.8% of patients denying pain, >85% of patients denying sensation of mesh with any activity or at baseline, 94.2% of patients returning to full activity, and only 2 patients with self-reported concern of recurrence, of which, each was ruled out. Ultimately, we were unable to identify a single patient in our cohort with recurrence within our study period.

Conclusion

Robotic transverse abdominus release provides a durable repair with high patient-reported quality-of-life outcomes at up to eight years of follow-up. These results suggest that with the increase in interest in robotic-assisted surgery, particularly in the field of hernia surgery, rTAR provides not only the previously demonstrated short-term benefits over open repair, but sustained long-term outcomes as well. True long-term recurrence rate data is still lacking however, it appears as though most rTAR data points to 0-5% at two years. Published open TAR series demonstrate rates closer to 3-8% at two years and 5-12% and higher at extended follow up. Our survey had almost entirely positive responses for each of the questions asked, and no patients were disappointed with their repair. Future research is warranted to validate the composite survey used in this study, possibly with a prospective multicenter quality-of-life registry.

References

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