ROWAN-VIRTUA School of Osteopathic Medicine

Comparative analysis of abdominoplasty versus minimally invasive techniques in the surgical treatment of diastasis rectus abdominis in postpartum women: a systematic review

Emily Forester OMS-II, Aziz Sadiq, DO, FACOS, FACS

Background

Diastasis rectus abdominis, commonly referred to as diastasis recti, is the separation of the left and right sides of the rectus abdominis muscle. Diastasis recti is associated with conditions that weaken the linea alba, such as pregnancy [1]. Stretching and thinning of the linea alba due to diastasis of the rectus abdominis predisposes associated hernia defects [2]. In practice, abdominoplasty with plication of the anterior rectus sheath is the most common surgical method for treatment of diastasis recti [3]. Recently, more studies have explored other methods for treatment of diastasis recti, including various minimally invasive surgical options. This article aims to describe the surgical options available for treatment of diastasis recti, as well as compare current data on the effectiveness of these treatment options.

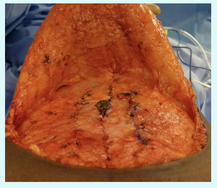
Methods

This study is a systematic review. Twelve studies ranging from 2015 - 2022 were included in this analysis. Studies were identified using PubMed, EMBASE, and Cochrane Library. In each database, the following search terms were used to identify relevant studies: ("Diastasis recti" or "diastasis rectus abdominis") and ("abdominoplasty" or "open approach" or "minimally invasive" or "eTEP" or "laparoscopic" or "endoscopic"). Data from the studies that met the inclusion criteria were analyzed descriptively. Statistical comparison of surgical outcomes between studies was performed using Fisher's Exact Test in SPSS.

Results

	Surgical Techniques	Average Operation Time
Open Approaches	Abdominoplasty and miniabdominoplasty [4,5]	158 minutes
Laparoscopic Preaponeurotic Approaches	Totally endoscopic sublay anterior repair (TESAR) [6], Preaponeurotic endoscopic repair (REPA) [7], and Full endoscopic subcutaneous approach [8]	195 minutes [6] 80 minutes [7] 99 minutes [8]
Robotic Approach	Robotic transabdominal retromuscular rectus diastasis (r-TARRD) [9]	192 minutes [9]
Enhanced-view / Extended Totally Extraperitoneal (eTEP) Approaches	eTEP Rives Stoppa (eTEP-RS) or eTEP Transversus Abdominis Release (eTEP-TAR) [10]	203.5 minutes or 291.5 minutes, respectively [10]

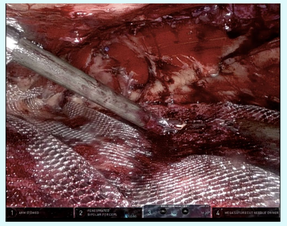
- There is no significant difference in the rate of seromas, surgical site infections/complications, or hematomas between abdominoplasty and minimally invasive surgical techniques ($p > 0.05$)
- No significant difference in reduction of pain or improvement of urinary stress incontinence was reported among patients receiving minimally invasive or abdominoplasty repair ($p > 0.05$)
- Among the minimally invasive techniques for the repair of diastasis recti, no significant difference in readmission rates were reported ($p > 0.05$)
- No significant difference in diastasis recti recurrence rates were seen following minimally invasive and abdominoplasty repairs, except for the increased recurrence rates seen with the r-TARRD technique, which reported recurrence in four out of 45 patients within one year post-operation ($p < 0.05$) [9]



Intraoperative image during abdominoplasty following plication of the anterior rectus sheath [11]



Plication of the anterior rectus sheath in the preaponeurotic myofascial plane prior to mesh onlay during the laparoscopic REPA procedure [7]



Intraoperative image during robotic eTEP repair with mesh

Conclusions

Our analysis suggests that patients with diastasis recti now have the option to choose from multiple effective surgical approaches for their diastasis recti repair. When deciding on the optimal approach for the repair of diastasis recti, it is important to tailor the surgical method to the patient's desired treatment outcome. If the patient indicates a desire for the removal of excess abdominal subcutaneous tissue, abdominoplasty may be a better surgical approach. Alternatively, if the patient puts a greater emphasis on shorter recovery time and smaller surgical incisions/scars, minimally invasive approaches may be a better surgical option.

Limitations

Among the already limited data on minimally invasive repair of diastasis recti, current studies of minimally invasive approaches contain small sample sizes. These small sample sizes may skew the proportions of surgical outcomes, especially in comparison to data from the more abundant research on the use of abdominoplasty for the repair of diastasis recti.

References

1. Janes LE, Fracol ME, Dumanian GA. Appreciation of Postpartum Changes of the Rectus Muscles in Primary and Repeated Abdominoplasty. Plast Reconstr Surg. Aug 2019;144(2):197e-204e. doi:10.1097/prs.0000000000005862
2. Baumann DP, Butler CE. Diastasis recti and primary midline ventral hernia: the plastic surgery approach. Hernia. Oct 2019;23(5):1017-1018. doi:10.1007/s10029-019-02055-y
3. Manetti G, Lolli MG, Belloni E, Nigri G. A new minimally invasive technique for the repair of diastasis recti: a pilot study. Surg Endosc. Jul 2021;35(7):4028-4034. doi:10.1007/s00464-021-08393-2
4. Bucaria V, Boccuzzi A. Autologous Dermal Mesh in Severe Postpregnancy Recti Muscles Diastasis. Aesthetic Plast Surg. Feb 2021;45(1):198-211. doi:10.1007/s00266-020-01991-w
5. Taylor DA, Merten SL, Sandercoe GD, et al. Abdominoplasty Improves Low Back Pain and Urinary Incontinence. Plast Reconstr Surg. Mar 2018;141(3):637-645. doi:10.1097/prs.0000000000004100
6. Fiori F, Ferrara F, Gobatti D, Gentile D, Stella M. Surgical treatment of diastasis recti: the importance of an overall view of the problem. Hernia. Aug 2021;25(4):871-882. doi:10.1007/s10029-020-02252-0
7. Cuccomarino S, Bonomo LD, Aprà F, Toscano A, Jannaci A. Preaponeurotic endoscopic repair (REPA) of diastasis recti: a single surgeon's experience. Surg Endosc. Feb 2022;36(2):1302-1309. doi:10.1007/s00464-021-08405-1
8. Bellido Luque J, Bellido Luque A, Valdivia J, et al. Totally endoscopic surgery on diastasis recti associated with midline hernias. The advantages of a minimally invasive approach. Prospective cohort study. Hernia. Jun 2015;19(3):493-501. doi:10.1007/s10029-014-1300-2
9. Cuccurullo D, Guerriero L, Mazzoni G, Sagnelli C, Tartaglia E. Robotic transabdominal retromuscular rectus diastasis (r-TARRD) repair: a new approach. Article. Hernia. 2022;doi:10.1007/s10029-021-02547-w
10. Taşdelen HA. The extended-view totally extraperitoneal (eTEP) approach for incisional abdominal wall hernias: results from a single center. Surg Endosc. Jun 2022;36(6):4614-4623. doi:10.1007/s00464-021-08995-w
11. Nahabedian MY. Diastasis recti repair with onlay mesh. Hernia. Aug 2021;25(4):855-862. doi:10.1007/s10029-021-02464-y