

Preaponeurotic Endoscopic Repair for the Management of Diastasis Recti

Jordan Gonzalo Llerena Velasteguí¹, Andrés Sebastián Velasteguí Zurita², Ana Cristina Terán López³, Antonio Ortega Mejía⁴, Luis Eduardo Pérez Rojas⁵, Fernando Jose Dumar Otero⁶, Victor Andres Diaz Rincon⁷, Sebastián Alberto Álvarez Vélez⁸, Jose Gregorio Villa Pertuz⁹

¹General Physician, Pontificia Universidad Católica del Ecuador <https://orcid.org/0000-0002-3876-1150>

²General Physician, Pontificia Universidad Católica del Ecuador <https://orcid.org/0000-0002-1310-2802>

³General Physician, Universidad de las Américas, Ecuador <https://orcid.org/0000-0001-8054-2456>

⁴General Physician, Universidad Cooperativa de Colombia <https://orcid.org/0000-0003-2443-3778>

⁵General Physician, Universidad del Rosario, Bogotá <https://orcid.org/0000-0001-9968-4649>

⁶General Physician, Universidad Libre, Barranquilla <https://orcid.org/0000-0002-2836-9307>

⁷General Physician, Universidad del Norte, Barranquilla <https://orcid.org/0000-0002-0625-5659>

⁸Intern Physician, Universidad del Sinú, Montería 0000- <https://orcid.org/0002-3732-4821>

⁹General Surgery, Universidad de Cartagena, Colombia

*Corresponding author: Jordan Gonzalo Llerena Velasteguí, General Physician, Pontificia Universidad Católica del Ecuador, Ecuador



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ABSTRACT

Background: Diastasis recti is an increase in the distance between the rectus abdominis muscles in the midline caused by weakness in the anterior abdominal wall. Patients with diastasis recti commonly present with a midline bulge with or without other symptoms. The preaponeurotic endoscopic repair is performed with a suprapubic approach and in both iliac fossae. A new preaponeurotic cavity is created with dissection of the subcutaneous cellular tissue, followed by rectification with barbed suture.

Methodology: A narrative review was carried out through various databases from January 2012 to February 2022; the search and selection of articles was carried out in journals indexed in English. The following keywords were used: Endoscopic repair; preaponeurotic; diastasis recti; physiotherapy.

Results: Diastasis recti is an increase in the distance between the rectus abdominis muscles in the midline caused by weakness in the anterior abdominal wall. Currently there are different therapeutic approaches for diastasis recti, among which we can highlight physiotherapy and surgical approach which can be open surgery, laparoscopic surgery and robot-assisted surgery. The preaponeurotic endoscopic repair allows us to resolve the parietal defect with the placement of a reinforcement supraaponeurotic prosthesis.

Conclusion: His review offers updated and detailed information on the treatment options that exist to date, as well as highlighting the importance of preaponeurotic endoscopic repair

Introduction

Rectus diastasis is considered an unusual increase in the space between the rectus abdominis muscles in the midline, this is caused by weakness in the anterior abdominal wall. Most experts consider that there is weakness, thinning and widening of the linea alba and weakness of the abdominal muscles [1,2]. Common complaints are signs and symptoms caused by diastasis recti from patients in various fields, including plastic surgery, emergency medicine, general surgery, gynecology, obstetrics, and family medicine [3,4]. The perception of the lump or other symptoms by the patient are of great importance in diagnosis and treatment. Additionally, several studies have been conducted to identify the normal versus enlarged distance between the rectus muscles [5,6]. Patients with this condition often present with a midline bulge with or without other symptoms [7]. It is important to explain to the patient that there is no true hernia or future risk of complications. But for patients who report discomfort and/or cosmetic concerns, treatments should be offered and discussed [8]. The preaponeurotic endoscopic repair is performed with a suprapubic approach and in both iliac fossae, creating a preaponeurotic cavity with dissection of the subcutaneous cellular tissue, posteriorly, rectification is performed with barbed suture. Reinforcing the wall with polypropylene mesh [9]. Drainage is systematically left. Due to the patient's complaints and the aesthetic problems that diastasis recti could have, it is convenient to carry out this work in order to show all the treatment options that exist to date as well as to highlight the importance of preaponeurotic endoscopic repair [10,11].

Materials and Methods

A systematic review was carried out. Implemented databases: PubMed, Scielo and ScienceDirect, among others. The selection of articles was carried out in journals indexed in English from the years 2012 to 2022. The DeCS and MeSH methodology was used to identify keywords such as: Endoscopic repair; preaponeurotic; recti diastasis; physiotherapy. We identified 58 original and review publications associated with the theme, 28 articles met the specified inclusion requirements, among which we highlight

articles that were in a range not less than the year 2012, full text articles and that reported on endoscopic repair. preaponeurotic for management of diastasis recti. Articles that did not have sufficient information and that did not present the full text at the time of review were taken as exclusion criteria.

Results

Diastasis Recti

Patients with this alteration note a general feeling of instability and/or a bulge in the midline of the anterior abdominal wall, the increase in abdominal pressure worsens the symptoms reported by the patient. Stress urinary incontinence and back pain have been shown to be caused by diastasis recti [12,13]. While diagnostic and treatment options should focus on the patient's perception of the lump or other symptoms, several studies have been conducted to look at normal versus enlarged distance between the rectus muscles. Most experts consider that a separation of more than two centimeters can be considered abnormal but keeping in mind that there may be less or more with or without bothersome symptoms [14]. Diastasis recti can be confused with a ventral hernia; however, there is no fascial defect in diastasis recti. Diastasis recti is associated with conditions in which there is increased intra-abdominal pressure, including pregnancy and obesity, as well as diseases that lead to weak connective tissues [14]. Patients with diastasis recti commonly present with a midline bulge with or without other symptoms. The indication for treatment of diastasis recti is based on the patient's perspective and complaint [15].

Treatment Options for Diastases of the Rectus Abdominis

Currently there are different therapeutic approaches for diastases of the rectum, among which we can highlight those found in Table 1 [14-17]. Surgery may be considered when physical therapy fails to reduce abnormal widening of the linea alba and discomfort is severe. We suggest that surgery can be considered 6 to 12 months after delivery, as the diastasis may resolve naturally during this period [18].

Table 1: Treatment Options for Diastases of the Rectum.

Handling	Synthesis
Physiotherapy	The doctor may begin treatment of diastasis rectum by referring the patient to a physical therapist for conservative (non-surgical) treatment. Many studies recommend starting physical therapy 6 to 8 weeks after delivery. Conservative interventions are exercise, postural education and back care, external support with elastic tubular bandage or corset and/or aerobic exercises. To date this method is not widely disseminated or recommended due to the little evidence from clinical trial analyses.

<p style="text-align: center;">Surgical</p> <p style="text-align: center;">(In all the techniques described, a plication of the fascia of the rectum is performed.)</p>	<p>Open Surgery. The success rate is high overall, with most studies reporting a recurrence rate of 0% 6 months after open surgery. The most commonly used open approach is a classic abdominoplasty with suprapubic transverse incision extended laterally to the anterior iliac ridges to visualize the rectus muscles and the linea alba. Other incisions are also possible: supraumbilical incision in the midline, typically used in cases of other coexisting conditions (nephrectomy and hernia). The left suprapubic incision, extended 2–3 cm upwards; and ventral incision in the midline, which extends from the xiphoid process to the pubic area. Plication can be performed with or without mesh reinforcement. Mesh is often used when there is a co-existing hernia.</p> <p>As for plication techniques, the surgeon can use single or double layer suture, interrupted or continuous, and absorbable, slow-absorbing or permanent sutures.</p>
	<p>Laparoscopic surgery. The success rate of laparoscopic surgery is high, with most studies reporting a recurrence rate of 0% 6 months after surgery. A laparoscopic technique is commonly used when diastasis and ventral hernia coexist, but it can also be used for the treatment of diastasis of the rectus abdominis only. Several different placements of trocars are used, most commonly suprapubic and periumbilical or suprapubic and in both iliac fossae.</p> <p>Mesh is often used when there is a co-existing hernia. The technique of one or two layers and interrupted or continuous plication is possible, and absorbable, slow-absorbing and permanent sutures can be used.</p>
	<p>Robotic-assisted surgery. Robotic-assisted surgery offers new possibilities for minimally invasive treatment for specific indications. In a systematic review comparing robotic-assisted laparoscopic repair with open and laparoscopic repair of ventral hernias, the length of hospital stay of patients was reduced by an average of 3 days with robotic-assisted repair compared to open repair. Robot-assisted repair offered technical advantages in closing the hernia defect and a higher rate of defect closure was achieved with robotic-assisted repair compared to laparoscopic repair. However, the operating time was significantly longer for robot-assisted repair compared to open repair with an average difference of 84 min.</p>



Figure 1: Incision in the suprapubic midline and in both iliac fossae.

Preaponeurotic Endoscopic Repair

A preaponeurotic endoscopic approach allows us to resolve the parietal defect with the placement of a reinforcement supraaponeurotic prosthesis, which will reduce recurrence, increasing plastic safety, without entering the abdominal cavity, with good aesthetic and functional results [19]. Rectus diastasis

was associated with midline defects in 100%. The preaponeurotic endoscopic repair is performed with a suprapubic approach and in both iliac fossae. A new preaponeurotic cavity was created with dissection of the subcutaneous cellular tissue and then rectification was performed with barbed suture. The wall is reinforced with polypropylene mesh. Drainage is systematically left [18].

Surgical Technique

Under general anesthesia and endotracheal intubation, the patient is placed in the dorsal position with the legs apart. The surgeon is placed between the legs; the wizard is located to the right or left according to preference [19]. An incision is made in the suprapubic midline; a preaponeurotic space is created; an optical trocar is placed, the neocavity is infused with pressure between 8 and 10 mmHg, then the 5 mm working trocars are placed, they are placed in both iliac pits under direct vision, as shown in Figure 1 [18-23]. Then the dissection of the subcutaneous cell tissue up to 3 cm beyond the bilateral costal margin and laterally to the anterior axillary lines is completed. Plication of the sheath of the rectum with bearded suture is performed from the xiphoid appendix up to

5 cm subumbilical. If necessary, the release of aponeurosis from the external oblique is carried out outside the outer edge of the rectum [24]. Hemostasis control and neocavity washing are performed. Then a light mesh of acroporous polypropylene 22 cm long × 15 cm transverse is placed or placed of the appropriate size to cover the area of detachment of the external oblique if it was performed [25]. The prosthesis is fixed with trackers, straps or resorbable stitches. The navel is reinserted with internal or external sutures. Aspirational drains were placed systemically in 100% of cases, with a permanence of approximately 3 days. Removing when the remnant was less than 50 cc per day [26].

Discussion

The study carried out by Majke et al, in which they consider that the first step for proper management of diastasis recti is physical therapy. The second treatment option should be surgery, open or laparoscopic, both with high success rates. The surgical approach includes different plication techniques. Recurrence and complication are low, with improvement in lumbar pain, urinary incontinence and quality of life [27]. Another study conducted by Salvatore et al analyzed the evolution of 172 patients who underwent preaponeurotic endoscopic repair between August 2017 and December 2019. One hundred twenty-four patients were followed up for at least one year. Sixty-three patients responded to a satisfaction and quality of life survey 12 months after surgery. It was concluded that endoscopic repair is safe and effective for the treatment of diastasis recti [28]. We consider the implemented methodology to be a strength, with respect to the literature search, selection of relevant articles, quality assessment and data extraction. Therefore, we could conclude that the endoscopic approach for the repair of diastasis recti is a good alternative to surgical treatment, and thus improves the quality of life of patients.

Conclusion

Diastasis recti is an increase in the distance between the rectus abdominis muscles in the midline caused by weakness in the anterior abdominal wall. Most experts agree that there is weakness, thinning, and widening of the linea alba and associated abdominal muscle weakness. Currently there are different therapeutic approaches for diastasis recti, among which we can highlight physiotherapy, in which the doctor can start the treatment of diastasis recti by referring the patient to a physiotherapist for conservative treatment. The other approach is surgical, which can be open surgery, laparoscopic surgery, and robot-assisted surgery. The preaponeurotic endoscopic repair allows us to resolve the parietal defect with the placement of a reinforcement supraaponeurotic prosthesis, which will reduce recurrence, increasing plastic safety,

without entering the abdominal cavity, with good aesthetic and functional results.

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Jordan Gonzalo Llerena Velasteguí. Biomed J Sci & Tech Res



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