Laparoscopic plication and mesh repair for diastasis recti: A case series

Manash Ranjan Sahoo, Kumar A. T.

ABSTRACT

Introduction: Diastasis recti is a disorder defined as a separation of the rectus abdominis muscle into right and left halves which occurs principally in newborns and pregnant women. Reports on laparoscopic repair are rare. Usually, the patients themselves request treatment. We here present a series of three patients who underwent laparoscopic repair for diastasis recti.

Case Series: Three patients, all female, presented with something bulging out of the abdomen with no other symptoms. All were multiparous. Laparoscopically, linea alba was plicated in the midline after taking simple horizontal sutures all along the defect from xiphisternum to just below umbilical region creating a neo-linea alba. Then a tissue separating mesh was used to reinforce the plication either using tackers or transfascial sutures. Postoperatively, there was significant decrease in abdominal girth and patients complained of pain which decreased in 3–4 days and tightness in the abdomen which gradually reduced with time after discharge.

Conclusion: Laparoscopic plication of linea alba and placement of prosthetic mesh is very promising, safe operation for diastasis recti and could be the future for treatment of the same.

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INTRODUCTION

Diastasis recti is a disorder defined as a separation of the rectus abdominis muscle into right and left halves which occurs principally in newborns and pregnant women. Normally, the two sides of the muscle are joined at the linea alba at the body midline. There is no associated morbidity or mortality with this condition except for cosmetic reasons. There are no current guidelines on the treatment of diastasis recti. Divarication repair is not very popular because of associated morbidity and cosmetically unacceptable results. More recently there are various attempts by different surgeons to reduce the morbidity and length of scar associated with conventional open procedures [1]. Laparoscopic repair of diastasis recti has seldom been described in literature [2].

CASE SERIES

Three patients, all female, presented with a bulging of the abdomen in the midline in two patients, and cosmetic disfigurement in another one, with uncomfotability and no other symptoms. All were multiparous in the range of 35–45 years. There was no history of previous operation. There was no history of chronic cough and ascites in any patient. On examination in standing position midline bulge was seen. On supine position there was defect between both recti muscles. There were no surgical scar marks over the abdomen except for striae indicative of

previous pregnancies. Two females had three children and another one had two children. Ultrasound of abdomen did not reveal any hernias. Routine biochemical reports were normal. Under general anesthesia through a three port approach (Figure 1) laparoscopically, camera port (11 mm) in epigastrium right to the falciform ligament, two working port (6 mm) in right and left hypochondrium on anterior axillary line, linea alba was plicated in the midline after taking intracorporeal horizontal continuous sutures using ethilon double loop sutures (Figure 2) 2–3 cm on either side of midline through the separated rectus sheath all along the defect from suprapubic area till 5–6 cm above umbilicus tightened by reducing the intraperitoneal pressure to 8 mmHg and with manual compression over abdominal wall creating a neo-linea alba (Figure 3). Then a tissue separating mesh (physiomesh, Ethicon make) was used to reinforce the plication by placing over the plicated length and fixing with both tackers in a double crown fashion and transfascial sutures (Figure 4). After desufflation, the reduced girth of abdomen created loose skin folds (Figure 5). Adhesive compression bandage was given over the abdomen for about 72 hours and abdominal binder for eight weeks. Postoperatively, there

Figure 3: Completion of continuous suturing forming neo-linea alba.

Figure 4: Reinforcing the plication using tissue separating mesh (physiomesh).

Figure 1: Three port approach for repair of diastasis recti.

Figure 2: Continuous suturing of the two separated rectus muscle with their sheath using ethilon double loop suture intracorporeally.

Figure 5: Immediate postoperative photograph following surgery.

was decrease in abdominal girth of 12.4 ± 2.64 cm (range: 10–15 cm) after six months when compared with baseline measurement preoperatively, using measuring tape at the level of umbilicus which was considered statistically significant (p value <0.05). Patients complained of pain in the immediate postoperative period which decreased in 3–4 days and tightness in the abdomen which gradually reduced with time after discharge on fifth day. Follow-up at first month, third month, sixth month, and one year showed decreased in tightness in the abdomen and further decrease in girth of the abdomen. No patients have recurrence of abdominal bulging or bowel obstruction in the follow-up period.

DISCUSSION

Diastasis recti may appear as a ridge running down the midline of the abdomen, anywhere from the xiphoid process to the umbilicus. It becomes more prominent with straining and may disappear when the abdominal muscles are relaxed. It is more common in multiparous women due to repeated episodes of stretching. The condition must be differentiated from an epigastric hernia or incisional hernia, if the patient has had abdominal surgery. Hernias may be ruled out using ultrasound.

In some cases of adults, diastasis recti can be corrected and/or mitigated by physiotherapy. A study conducted at Columbia University Program in Physical Therapy established that the women utilizing the Tupler Technique exercises had a smaller diastasis than the control group who did not do these exercises. Controversy still exists regarding operative repair for diastasis recti [3, 4] and there are few studies which have assessed the effectiveness of surgical intervention. In extreme cases, diastasis recti is corrected during the cosmetic surgery procedure known as a tummy tuck by creating a plication or folding of the linea alba and suturing together. However, it is usually the patients themselves who request treatment. Many novel procedures have invaded all the specialties of surgery with the advent of endoscopy. Reports on laparoscopic repair are still very rare. Open procedures for diastasis recti have many complications [5, 6] such as hematoma, seroma formation, flap necrosis, hypertrophic scars, increased infection rate, contour abnormalities that may be permanent. However, laparoscopic repair is cosmetically more acceptable without significant associated morbidities and are promising future technique for repair of diastasis recti [2]. We too were able to give cosmetically excellent repair with disappearance of diastasis and reduction in girth of the abdomen.

CONCLUSION

Laparoscopic plication of linea alba and placement of prosthetic mesh is very promising, safe operation for

diastasis recti and could be the future for treatment of the same.

Author Contributions

Manash Ranjan Sahoo – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Kumar A. T. – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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