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.
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.

Keywords: Diastasis recti, Laparoscopic plication, Linea alba, Tissue separating mesh

How to cite this article
Sahoo MR, Kumar AT. Laparoscopic plication and mesh repair for diastasis recti: A case series. Int J Case Rep Images 2014;5(9):610–613.
doi:10.5348/ijcri-201460-CS-10046

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

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

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.

Copyright
© 2014 Manash Ranjan Sahoo et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES
1. Zukowski ML, Ash K, Spencer D, Malanoski M, Moore G. Endoscopic intracorporeal abdominoplasty: A review of 85 cases. Plast Reconstr Surg 1998;102(2):516–27.
2. Palanivelu C, Rangerajan M, Jategaonkar PA, Amar V, Gokul KS, Srikanth B. Laparoscopic repair of diastasis recti using the 'Venetian blinds' technique of plication with prosthetic reinforcement: A retrospective study. Hernia 2009;13(3):287–92.
3. Nahas FX, Augusto SM, Ghelfond C. Should diastasis recti be corrected? Aesthetic Plast Surg 1997;21(4):285–9.
4. Lockwood T. Rectus muscle diastasis in males: Primary indication for endoscopically assisted abdominoplasty. Plast Reconstr Surg 1998;101(6):1685–91.
5. Chaouat M, Levan P, Lalanne B, Buisson T, Nicolou P, Mimoun M. Abdominal dermolipectomies: Early postoperative complications and long term unfavourable results. Plast Reconstr Surg 2000;106(7):1614–8.
6. Vastine VL, Morgan RF, Williams GS, et al. Wound complications of abdominoplasty in obese patients. Ann Plast Surg 1999;42(1):34–9.
Edorium Journals: An introduction

Edorium Journals Team

About Edorium Journals
Edorium Journals is a publisher of high-quality, open access, international scholarly journals covering subjects in basic sciences and clinical specialties and subspecialties.

Invitation for article submission
We sincerely invite you to submit your valuable research for publication to Edorium Journals.

But why should you publish with Edorium Journals?
In less than 10 words - we give you what no one does.

Vision of being the best
We have the vision of making our journals the best and the most authoritative journals in their respective specialties. We are working towards this goal every day of every week of every month of every year.

Exceptional services
We care for you, your work and your time. Our efficient, personalized and courteous services are a testimony to this.

Editorial Review
All manuscripts submitted to Edorium Journals undergo pre-processing review, first editorial review, peer review, second editorial review and finally third editorial review.

Peer Review
All manuscripts submitted to Edorium Journals undergo anonymous, double-blind, external peer review.

Early View version
Early View version of your manuscript will be published in the journal within 72 hours of final acceptance.

Manuscript status
From submission to publication of your article you will get regular updates (minimum six times) about status of your manuscripts directly in your email.

Our Commitment

Six weeks
You will get first decision on your manuscript within six weeks (42 days) of submission. If we fail to honor this by even one day, we will publish your manuscript free of charge.

Four weeks
After we receive page proofs, your manuscript will be published in the journal within four weeks (31 days). If we fail to honor this by even one day, we will publish your manuscript free of charge and refund you the full article publication charges you paid for your manuscript.

Mentored Review Articles (MRA)
Our academic program “Mentored Review Article” (MRA) gives you a unique opportunity to publish papers under mentorship of international faculty. These articles are published free of charges.

Favored Author program
One email is all it takes to become our favored author. You will not only get fee waivers but also get information and insights about scholarly publishing.

Institutional Membership program
Join our Institutional Memberships program and help scholars from your institute make their research accessible to all and save thousands of dollars in fees make their research accessible to all.

Our presence
We have some of the best designed publication formats. Our websites are very user friendly and enable you to do your work very easily with no hassle.

Something more...
We request you to have a look at our website to know more about us and our services.

We welcome you to interact with us, share with us, join us and of course publish with us.